

# Conference Proceedings

Volume 2: Research and Reflective Papers

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## 15<sup>th</sup> International Entrepreneurship Forum (IEF) CONFERENCE

### Conference Theme

**The Globalisation and Internationalisation of SMEs and New Ventures:**  
Travels with Eclectic Charlie, Digital Mary, Networked Nadia and Impactful Shona

Venice, Italy  
14-16 December, 2016



# Introduction

We present two volumes of the proceedings of our 15th International Entrepreneurship Forum (IEF) Conference on 'The Globalisation and Internationalisation of SMEs and New Ventures'. We met in Venice on 14 to 16 December 2016, and had a memorable intellectual and reflective time with Eclectic Charlie, Digital Mary, Networked Nadia, and Impactful Shona!

We had more than 100 committed delegates deliberating, debating and discussing numerous aspects of international entrepreneurship and the global agenda for SMEs in today's digital world. Thirty two countries and the knowledge and experience of their academic researchers, policy makers, consulting professionals, non-governmental institutions and industry practitioners came together in mid-December in the glorious surrounds of San Servolo island in Venice. Together we shone a light through the fog of obfuscation of knowledge as much as we wrapped up warm in the cold of a very foggy, very Venetian winter. We had planned study visits, keynotes reflecting the topical issues of our time, panel sessions sharing ideas, knowledge of good practice and policy on key sub-themes, and research papers from across the world covering a wide range of issues on internationalization and globalization of SMEs.

Our study visits took us to the famous Shoe Cluster of Riviera del Brenta, the Shoe Museum and Villa Foscari, where we learnt much about the creative design thinking that underpins Italian innovation. This was then followed by a visit to the San Daniele Ham Cluster in San Daniele del Friuli near Udine where areal insights into the production, marketing, selling and constant improvement of prosciutto ham generated much food for thought not to forget the delicious lunch spread laid on by our hosts.

The Shoe Cluster visit laid the foundation for our opening event at the Venice Chamber of Commerce Industry, Craft and Agriculture of Venice Rovigo Delta Lagunare, in San Marco. The explanation of the role and function of the IEF was followed fittingly by a comprehensive elaboration of the work of the Organisation for Economic Co-operation and Development (OECD) for SME internationalization by Lamia Kamal-Chaoui, the Director of the Centre for Entrepreneurship SMEs and Local Development, at the OECD. Details of her talk can be found later in these volumes. A truly international panel of distinguished policy makers and business practitioners from Italy, Mexico, Abu Dhabi, France and Slovenia was marshalled by Sergio Arzeni, the President of the International Network of Small and Medium Sized Enterprises (INSME). Excerpts from this first day are presented in Volume 1. The conference photographs demonstrate much better than words can do the ebullience and warmth of the networking among delegates that marked our first conference dinner at the famous Harry's Bar in Venice -an unforgettable evening by all accounts!

Sandwiched in between the two visits and on 15 December, we all took on the serious responsibility of research and practice led discourse and reflection. Setting the tone for the day were the keynotes from Zoltan Acs on entrepreneurial match making in the digital age, policy development on SME internationalization at the OECD by Jonathan Potter, and the resiliently innovative Italian clusters by Massimo Deandreis of SRM - Studi e Ricerche per il Mezzogiorno, and Mario Volpe of Ca Foscari University, Venice, Italy. A range of panel sessions covering female entrepreneurship, the role of technology, public policy, transnational entrepreneurship and impact investment tackled critical and highly topical issues offering nuanced perspectives on entrepreneurship and SME internationalization. The plenaries and the panel sessions open up the treasure house of research by a carefully selected group of academics and reflective practitioners who elaborated upon the critical elements of new ventures and SMEs in 40 odd papers. The richness of their endeavor was captured in the various parallel paper sessions and now in Volume 2 of the proceedings. To all our speakers, panel chairs and panelists, paper presenters and session chairs - we salute you for your effort and inputs!

The plenary keynotes, the panel sessions and the research papers became part of a funnel of discourse on the theme of the conference and beyond. They helped to give life to Eclectic Charlie and Dunning's model of internationalisation together with the stories of Digital Mary, Networked Nadia and Impactful Shona, Charlie's 21st century counterparts stretching Dunning's paradigm to embrace new ways, new channels and novel forms of engagement on the global stage of innovation and business as usual (or unusual). We understood through the diversity of research from various countries and regions that while globalisation seeks level playing

instrumentation on uneven ground, internationalisation continues to represent opportunities for growth, productivity and innovation. Correlations are difficult to find and an exposure to globalisation does not necessarily prepare firms for internationalisation. There is a gulf of difference between the standardisation of markets across the globe and internationalisation of production.

This conference provided a platform for the generation of new ideas, insights and practices related to the idea of an agenda for the globalisation and internationalisation of SMEs. They also demonstrated what the Global Innovation Index (2015) pointed to, namely that innovation-driven growth is no longer the prerogative of high-income countries; there are tangible examples of effective innovation policies being introduced by developing countries with corresponding positive outcomes.

IEF's partners are the Venture Academy, Essex Business School, University of Essex, the conference is being co-organised with The International Networks for SMEs (INSME), the OECD Centre for Entrepreneurship and the Local Employment and Economic Development at Paris, France, and the Forum for Sustainable New Ventures in the UK. It is in such partnerships among willing producers and users of good ideas and robust practice that we find the means with which to run successful events. To all our partners many thanks indeed for making this IEF conference worthwhile. All our other sponsors and partners – Qatar Development Bank, Venice International University (Ambassador Vattani for his support). We are appreciative of the time and space afforded by the Venice Chamber of Commerce, the collaboration and complete involvement of T2i Innovation Agency, the Industry and Higher Education Journal for their continuing engagement with the IEF conferences and of course the IEF's journal (JEIEE published by Sage) for being the main receptacle for the prospective publication of selected papers from the conference.

Turning finally to all the incredible people, we turn first to offer special thanks to Sergio Arzeni, for masterminding the partnership with INSME, and Italian collaborators, our speakers from Mexico, Abu Dhabi, and crucially our continuing relationship with the OECD and its Centre for Entrepreneurship, not to forget the inspirational touch in arranging our social gathering at Harry's Bar on 14 December and Osteria da Codroma restaurant on 15 December. The INSME Secretariat team of Maddalena Iesué and Livia Marcantonio deserve our applause for their help throughout the development of conference programme, as does Silvia Casalini and her team for their wonderful administrative assistance before, during and after the event. We will now not forget the best boat tickets to buy amongst many other things. Anilkumar D. Dave and Roberto Santolamazza of T2i gave us invaluable support with the final arrangements at the Chamber of Commerce apart from making highly topic interventions during the deliberations. Our photographer, Davide Giacometti has done a fine job with his photos and the conference video as I hope you will all agree. Busayo Ajayi representing the Forum for Sustainable Ventures was instrumental in managing the financial aspects of the conference, so many thanks go out to him for the partnership that he provided through his Forum. I cannot imagine anyone attending the conference, or for that matter having any interaction with the IEF for our event (even if you didn't make it to Venice!) not to have come across Elena Koshcheeva the person who was always in touch with you, the conference administrator who attended to almost every aspect of the conference, from attending to the delegates, the preparation of the banners, the conference packs, the conference programme, the management of the reception desk, the booking of rooms, hotels, and all things that made up two days of our lives in Venice. Quite remarkable!

Finally, thank you to all the delegates for it is you who make our conferences work. We hope that all of you enjoyed being involved and engaged pro-actively to create a diverse and productive agenda for entrepreneurship at a time when the world genuinely seeks new ideas and trajectories of development at home and abroad. By the time you receive these copies electronically, many unpredictable happenings would have started to alter the reality of our lives in and with SMEs across a so-called 'post truth' world. Let us hope that the ideas, the evidence, and all the expertise that were on display at the 15th IEF have a bearing on the truth of 2017 and beyond.

Jay Mitra

January, 2017

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# **Sub-theme 1:** **Impact and Sustainability**

## **Performance aspects of lean manufacturing in the context of intrapreneurship**

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### **Abstract**

Manufacturing processes are usually imbedded in cross-company value and supply chains. Most manufacturing companies are currently encountering the obligation to react on their rapidly changing network environments. For companies, to remain competitive and keep their position in the global supply chains, continuous improvement of production system processes has become a necessity for each company. Competition is continuously increasing standards for supply chain management and meeting the customer satisfaction. Lean manufacturing is recognized as one of the best solutions for improving the performance for production systems in various industries.

Lean manufacturing consists of lean tools such as 5S, Kaizen, TQM, lean thinking and lean training and it can be regarded as a standard of modern operation in the industrial organization. But there exists still not a clear mechanism for companies to measure the performance after the implementation of lean manufacturing and there are significant number of companies have to deal with failures in the implementation of Kaizen to improve organisational performance. Besides that, lean thinking represents a success factor for organization development paving the way to intrapreneurial concepts in lean management. Modern manufacturing concepts which are embracing networked enterprises are emphasising approaches for production in networks. Here the modular company represents a promising production model which is based on a fractal approach and extends lean manufacturing.

The paper investigates the relationship between lean manufacturing, organizational development, and structural frame conditions in the context of intrapreneurship in a case study of a modular manufacturing company which is based on a lean production concept. The research is empirically validated by using data samples from business reengineering project in an internationally operating high-tech manufacturing enterprise from Estonia. The empiric analysis is based on semi-structured expert interview data and secondary data revealing the synergies among lean practice bundles and networked production enterprises in the context of intrapreneurship.

### **1. Introduction**

By following Reichhart and Holweg (2007), lean manufacturing is one of the best solutions for production systems in various industries. Lean manufacturing consists of lean tools such as 5S, Kaizen, TQM, lean thinking and lean training (Lanigan, 2004; Ramakrishnan and Testani, 2010). As Collins (2008) pointed out,

the Kaizen lean tool represents the most widely adopted by the various industries around the globe but often the implementation of Kaizen fails to improve organisational performance (Taleghani, 2010).

Kaizen is a lean manufacturing term that means continuous improvement and a successful Kaizen system should involve each employee in a company, from top management to the bottom of the hierarchy in the industrial organization. Each employee should be motivated to come up with small improvement advice on a regular base and that not only once in the specific period; the Kaizen process should be continuous and remain in the company as a main part of the activities. Japanese largest companies, such as Canon, Toyota, and Nissan, collect totally an average of sixty to seventy ideas per employee each year and choose the best ones for execution (Cannon, 2008). In most cases, these improvement ideas are not suggestions for key changes, Kaizen is an event in order to realise tiny changes which enhance output, safety and efficiency while decreasing waste. The Kaizen ideas are not limited to a specific area such as production, marketing and management; Kaizen is open to make changes anyplace where enhancements can be achieved. Zayko et al. (1997) emphasised the creation of a lean thinking approach in the organisation as a base to transfer lean concepts into practice in several steps. One important term in this context which is widely used in current organisations is lean training (Womack and Jones, 1996).

Very often, when an organization faces a business crisis, the management starts to implement lean management concepts comprising lean manufacturing, Kaizen events or cost reduction programs but very often so late that a downsizing of the company is necessary. But literature review reveals that not many studies were conducted to evaluate the implementation of 5S, Kaizen and generally of lean manufacturing implementations, especially the question if a lean approach can help companies to survive, or even to compete with larger competitors or companies from emerging markets with the low generic costs. Shah and Ward (2003) stressed that different lean tools are often implemented by companies often in parallel so that the final performance effect will surpass the sum of performance effect of an individual lean best practices.

Despite the fact that according to several studies lean manufacturing is regarded as a standard for modern operations in industrial organization, it exists still not yet a clear mechanism for a company to succeed after the implementation of lean culture in the industrials organizations (Guinipero et al ,2005). In the paper the authors investigated the benefits of a lean management approach as a basic platform for modular enterprise and under which frame conditions to achieve a higher level of efficiency. Based on empiric measures the research analyse the impact of fractal and network based production concepts on the business performance and which role intrapreneurship plays for the implementation of amalgams of lean and modular enterprise structures.

## **2. Intrapreneurship, Fractals and Production Networks**

Pinchot (1984) introduced the term intrapreneurship and defined intrapreneurs as "Those who take hands-on responsibility for creating innovation of any kind, within a business". Most scholars have investigated research questions how managers and employees could be inspired to behave entrepreneurially, to create innovations, to obtain profit and growth through these innovations and to foster the creation of new businesses within existing organizational framework (Burgelman, 1983; Zahra, 1993; Brazeal, 1993; Bowman, 1999; Sathe, 2003). In this understanding intrapreneurship refers to initiatives of employees in organizations to undertake something new, i.e. the intrapreneur uses innovation and creativity to transform an idea into a profitable venture within an organizational environment so that an intrapreneur can be considered as an "inside entrepreneur" who follows the objectives of his organization.

The concept of intrapreneurship gained increasing importance in the context of smart production and especially in the concept of Industry 4.0, i.e. the fusion of the virtual and the physical world towards cyber-physical systems (CPS) within dynamic production networks in order to achieve flexible and open value chains in manufacturing of complex mass customization products in small series up to lot size 1 (Kagermann et al., 2013). Current research on Industry 4.0 highlights the importance of intrapreneurship in the frame of the fractal

company concept together with new business models for smart supply chain and operations management which are suitable even for the SME sector (Olaniyi and Reidolf, 2015; Prause, 2015, 2016).

Warnecke (1996) published his visionary concept of a fractal enterprise in the context of modern operations management and highlighted self-similarity, self-organization, self-optimization, goal-orientation, and dynamics as winning attributes of flexible and adaptable manufacturing organizations. In his approach he stressed intrapreneurship as a success factor of fractals and he pointed out that fractal organizations are linked via high performing ICT systems and they decide individually about the type and scope of access to their data. Warnecke's classical fractal concept was further developed by several scholars like Canavesio and Martinez (2007) who worked on manufacturing fractals describing an innovation activity that deploys the "fractal units" - a flexible relationship network made up of autonomous, but interdependent manufacturing fragments into the organizational structure. This concept is capable of producing highly complex patterns that merges all the enterprise functions of an integrated organisation to improving the speed of operations and the ability to adapt quickly to changes in the environment (Shin et al. 2007).

Fractals give room for the integration of information and the manufacturing structures that especially help in the alliances of the fractals as they work together (Panetto and Molina 2008). Sometimes in an organisation, each project is seen as a fractal and it is autonomous, self-optimizing, self-learning and goal-driven entity. Here experiences are combined to achieve the deliverables and each project stores the information which is in turn use as learnings to allow room for future improvement. As it is seen in project management, fractals are set of projects in a portfolio but each project runs on its own is still connected to others and the overall strategic objective of the firm (Canavesio and Martinez 2007). The broader and overall goals are made centrally and information is cascade down the fractals implying that the fractal unit is organised bottom-up, units at the topmost levels take up project that otherwise cannot be handled by the lower ordered fractals hence ensuring teamwork for the entire project and guarantying a firm delegation of authority (Strauss and Hummel 1995).

The organisational central database provides a holistic view of the company's overall system and is used to make schedules and to execute them. This way information flow is constantly improved for better resource allocation (Shin et al. 2009). For example, decisions such as task scheduling, cost controlling, salary payment or even budgeting can be simplified and delegated or attached to the use of IT (self-optimising). This requires little supervision as middle managers will no longer be as important as they are in everyday companies. It will also ensure timely information that will help fractals to make decisions and respond to issues as they come up (Strauss and Hummel, 1995). Through this system, control is less complicated and easily understood (Ryu et al., 2003). On employees' orientation, a fractal is a part organisation which gives room for entrepreneurship to all employees. Each tasks like quality, use of resources, work speed, and consistency is solved autonomously. One key factor to bear in mind is that each project is given to and executed by the most suitable fractal even if it is with collaboration with other fractals (Strauss and Hummel, 1995).

Besides that, fractals enjoy the property that they can be integrated into production networks as well as into modular enterprises so that the fractal concept is compatible with modern production and supply chain approaches (Sydow and Möllering, 2009). The most well-known example of a modular enterprise is production plant of the "Smart" car in Hambach (France) which belongs to the Daimler-Benz holding. The Hambach plant has a very small production depth of about only 10% and is organised in a way that the system partners which are supplying the large modules of the smart car are actively integrated into the assembly process by taking their contribution to the production work. The business units of the different companies working together in a modular enterprise like the Hambach plant can be considered as fractals.

Since SMEs are more and more forced to go into different forms of collaborations and networking the fractal manufacturing organisation can be considered as future solution for the agile work of SMEs as virtual entities in the network with much bigger and grounded enterprises since it is designed to combine the logistic attributes of lean production with the strategic configuration of agile capabilities (Panetto and Molina 2008; Raye, 2012).

### 3. Methodology and case study

Primarily, the research used a qualitative approach to the problem solving. Nevertheless, the research employed practices of both qualitative and quantitative research, i.e. both forms of data were collected at the same time during summer and spring 2016 and then integrated the information in the interpretation of the overall results. The research methodology was based on a mixed exploratory approach by using qualitative case study methods together with semi-structured expert interviews as well as quantitative analysis of internal business process data. Additionally, other field methods such as observations were combined quantitative assessments. The empiric measures concern the Estonian production plant of an international operating high-tech company which headquarter is based in Scandinavia. The research was conducted during in the packaging department in Tallinn during a business process reengineering project towards a lean management manufacturing system in the company which was initiated by the management of an Estonian production plant in order to improve performance.

The Estonian production plant started in the 1990ies when Estonia became independent from Soviet Union. Most of the products manufactured in Tallinn plant are delivering to the target market's customers located in Eastern Europe and Central Asia. A couple of years ago the company faced economic and political recession which had a negative impact and it causes the rapid decrease in production. Consequently, the company started downsizing plans accompanied by the introduction of lean concepts in order to cut costs and to avoid losses. The business reengineering activities also touched the packaging department of the Estonian where the first decision of the management at the beginning of the costs cutting activities in the packaging department was dedicated to downsize the packaging unit by reducing the space and man power for completing the packaging cycle and the inventory. During all times, the total number of internal and external of employees in the packing unit never exceeded 250 persons so that the considered case can be regarded as an SME.

After the economic situation recovered due to increasing incoming orders the available space in the vicinity of the factory became too small so that the company was forced establish an outsourcing contract with a new partner companies for the logistics and completion of the packaging cycle. Since the Scandinavian headquarters of the Estonian production company decided to re-establish only those business units in Estonia which are needed for the delivery of the products to the customers, important business units are not available in the Estonian plant like the packaging design part, there exists only a central packaging design part in the headquarters. This decision avoided a duplication of business units but also made it complicated for the Estonian plant to achieve changes in packaging department since all process modifications needed to be negotiated with the central design unit in the headquarters. In the case of an approval of a business process change by the headquarters the decision had to transfer to the packaging partners to assist the redesigning process and propose new complete solution package to make all necessary changes according to the company's guidelines. This whole process was very slow and the lack of packaging designers in Estonia made all changes in the packaging department to a big challenge.

The packaging department was organised in form of a modular enterprise for networked production comprising four different company units, namely the packaging department of the Estonian production plant itself, the subunit of the global logistics service provider and the three Scandinavian packaging materials suppliers which are integrated into the supply chain in a form of cooperative engineering partners for packaging providing more than 90% of the complete packaging solutions. The global logistics service provider is fully independent of the Scandinavian company and has its headquarters in Germany whereas the three packaging materials suppliers also have their headquarters in Scandinavia and during the expert interviews it turned out that the three packaging material suppliers are linked together with the production company by cross-ownerships via a Scandinavian financial holding.

The packaging process still starts in packaging department of the production company where the products are prepacked and then forwarded to the service site of only of the three packaging suppliers where the packaging is finalised and the inventory and distribution services are organised. In the current construction, the finalised products come into the residual packaging line where they are prepacked in form of a single shrink pallet and from there they are transferred with the help of an inbound logistic supplier to the packaging

production area of a subcontractor not far away from the production site where the packaging process is completed. In this construction all autonomous business units of the four involved companies are acting as fractals inside a modular packaging enterprise so that the complete packaging process operates in a networked “virtual” company.

About three years ago the management of the Estonian production plant decided to start a business reengineering project in order to increase efficiency of the complete the production cycle including the packaging department. As already mentioned the main objective was to establish a lean manufacturing system for all parts of the supply chain and the related project work was executed between 2015 and 2016. The project work used Kaizen events in different department of the manufacturing company in order to develop a lean manufacturing framework. The aim of the events in the packaging department was to reduce the packaging material cost and to create a new design for the full product packaging. The target of the project was to reduce the cost in the packaging department up to 65% which turned out to be a very ambitious objective.

Beside the use of Kaizen events the Estonian management integrated Tallinn University of Technology into the business reengineering project and the results of engineering research and simulation showed cost savings potential for the packaging department up to 60% due to the use of new packaging materials and designs which the three existing material providers were not able to deliver. Additionally, the cost savings of the packaging processes in the modular packaging enterprise required new process design which touches the workflows in all involved fractals. Applying the new solutions to the production line needed more time than what the member expected and a lack of authority in decision making and the dependency from the headquarters caused no possibility until now to unlock the efficiency gains for the modular packaging enterprise due to wrong business environment in the fractals.

The expert interview in both enterprises brought to light that all three companies use different lean tools in their processes including pull systems, just in time and Kanban concepts but the involved employees are not well acquainted with the lean framework which automatically causes problems within the modular “packaging” enterprise since a lean approach will change everything within the entire organizations and as well a lean management concept will lead to a reengineering of business processes and value streams, i.e. a lean culture will change the mind set of front-line workers who are responsible for more cooperation, coordination and for innovation and continuous improvements for the business processes in the modular company.

A speciality of the whole construction is that the main company as well as its principal partners have their headquarters in Scandinavia which makes all communication and decision processes more complex. In the expert interviews it turned out that the three packaging material suppliers are linked together with the production company by cross-ownerships since all involved companies are part of the Scandinavian financial holding. Despite the fact that Morck and Keung (2003) are stressing the important role that family firms are playing in a free economics, it is important how the parts of a family business are linked together. In the case study the main policies of the owners was to force the cooperation between firms of the family group with the consequence that competition was abolished which reduced significantly the competitive advantages of the whole holding. In addition to that, the forced cooperation in the financial holding cancelled the freedom of choice among a variety of suppliers which was exactly the case in the principal company when the sourcing of packaging material was restricted to only three packaging providers.

From the interviews the authors gained also the insight that the main company and its suppliers don't have an idea how and why to implement a lean management system. Furthermore, the experts assumed that the company is out of the budget and they were not aware that there exists a budget towards lean invests. This empiric results was in line with the investigations of Peter J. Sherman (2014) who found out that most of the companies have an excuse not to implement lean systems, and the one of those reasons is that the "company is out of the budget to implement the lean". Consequently, new managerial solutions as lean tools came only under consideration when the gap between revenue and expenses increased and so economic pressure was put on the enterprise. But a lean success requires a lean supply chain management which cannot achieved when the partners are not lean. So the company only had two options, either to end the cooperation with the existing suppliers or to switch with all key partners to lean business.



In the interview one of the high profile engineers in the company made clear the access to the data is not easy within the enterprise. Problem analysis and solution generation requires process data about costs, time and quality, in order to improve efficiency and business performance. Controllability is the base for all reengineering and improvement processes which require access to primary process data. Although the company is fully modern and producing high-tech products, the process of getting access to the necessary data somehow bureaucratic. The access to the data can be the base of major changes and make ready the company for full implementation of lean management. Generally, information technology supports the process of decision making and assists the improvement of the communications' quality to simplify the processes of decision making. The fortunate condition was helping the branches of the mentioned enterprises located in highly developed IT countries. So the networked fractal enterprises easily could achieve and reach the goals with linking different parts, connect and integrate each unit to others. In the Estonian branch, many units are missing, and the most completed group is the headquarters with the complete business units and production lines altogether. It is one of the reasons that it makes the Estonian branch depended on headquarter. Moreover, this is one of the pressing problems which most of the employees suffering from it. The issue cause of many slow processes and make the decisions difficult.

## 4. Discussions

Like described in the case study the packaging department is organised as modular company with different fractals. Modular company with fractal approach extend lean manufacturing approach but requires special frame conditions (Sydow and Möllering, 2009). By comparing the properties of the case study with these frame conditions it turns out that in the packaging department these frame conditions are not safeguarded in the current organisational situation which leads to a deadlock situation because the options for inner company innovation and entrepreneurial decisions are clearly set but the intrapreneurial freedom is too constrained to implement improvements. Further problem is related to missing access to fractal data for the packaging department which makes a coordination and management within the modular company impossible.

The case study highlighted furthermore a lack of intrapreneurial freedom and decision power among employees which takes the company away from the main goals. In this case of fractal organizations the best performing examples giving the highest authority and decision power to the managers and leaders within the company. By analysing the empiric data, it became visible that the employees were not acquainted with the lean culture and engaged workforce not aware what lean management can add to the organization. In the lean supply chain management terms, one of the essential tools is just in time in inventory and even in production. For example when both or one of them completely not adapted to the JTI tool then the process perverted. Also, it repeated when the collaboration of two partners which are not at the same level of lean implementation. Consequently, the company maintains high transaction costs cause of not a complete implementation of lean different aspects which they are influencing practically everywhere in the enterprise. The result reflected in the packaging unit which is running expensive projects to reduce the cost of packaging. The empiric activities identified as the main reason for that behaviour again the lack of lean culture among the employees causing a missing mind set for continued improvements between employees as well as the absence of authority to change and innovate. In this sense, it can state that all partners in the modular packaging enterprise experienced a lack of intrapreneurial freedom together with missing entrepreneurial skills and mind sets so that the necessary frame conditions of self-organization, flexibility and intrapreneurial behaviour like they identified crucial to the success of the concept of fractal and modular enterprises not fulfilled.

The forced cooperation policy also was valid when the Estonian company tried to improve efficiency and looked for new reliable suppliers with more competitive prices. The forced cooperation was implemented by the holding – wide regulation that strategic changes of vendors as well as business process changes in the company, including the packaging department, have to be approved by the financial holding company. Moreover, the decision power is fully or sometimes partly denied for the company branches in Estonia, i.e. the Estonian production plant is only able to realize strategic business process changes after approval of the

Scandinavian headquarters which reduced the entrepreneurial freedom of the Estonian subsidiary and its departments significantly.

The research brought to light that business processes in the modular packaging enterprise were far from being efficient and competitive. By following Peter Drucker (1991), we argue that a genuine source of competitive advantages is productivity and it is practically impossible to increase the productivity only by increasing the wages; there is the additional need to change also the working culture. And additionally, Liker and Rother (2011) subjoined that continues improvement is something that the personnel is not assured automatically how to achieve, so it needs entrepreneurial mind set and skills as well as the appropriate frame conditions, which was not safeguarded in the investigated situation.

Finally the case study pointed out a lack of access to primary process data making it impossible to measure, control and improve the business processes. Consequently, the lack of information flows within and between the fractals of the modular packaging enterprise makes it nearly impossible to achieve and reach the goals of the networking parts. The timely information for fractals is crucial to make decisions and respond to issues as they come up (Strauss and Hummel, 1995). But information is also necessary to back and support the intrapreneurial decisions in the fractals to safeguard costs, time, quality and allocation of resources as well as collaboration with other fractals (Strauss and Hummel, 1995). All these frame conditions were not realised in the modular packaging company so that it no surprise that the performance gains were not able to unlock until now. Changes in the frame conditions represent necessary preconditions to improve the efficiency in the production network.

## Conclusions

The lean management implementation started almost thirty years ago, and it's improved and customized fit with the diverse variety of enterprises. Being lean in companies continued evolution from lean production to lean management, thinking and culture. Modular enterprises which are realising a fractal approach in production networks can be considered as an extension of a lean manufacturing approach but a successful implementation of a modular company requires special frame conditions.

The case study of the packaging department of an Estonian production plant showed all characteristics of a modular company based on different fractals cooperating in form of a networked enterprise. The frame conditions for a successful modular company require intrapreneurial freedom and decision power, adequate information supply and flows, lean supply chain structures and a lean culture structures. These frame conditions were not fulfilled in the case study so that it was impossible to unlock significant efficiency gains up to 60%. Since the number of internal and external employees in the modular packaging company never exceeded 250 persons the case study and its results are also including the SME sector.

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## **The role of training, coaching and networking in the entrepreneurial process**

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Keywords: *Entrepreneurial Process, Training, Coaching*

### **Abstract**

In the recent literature on entrepreneurship, there is a broad consensus on the positive impact of training, coaching and networking on business creation and entrepreneurial performance. This study goes further than previous literature by investigating the role of each of these activities in the entrepreneurial process. This process refers to the identification and exploitation of economic opportunities and includes: entrepreneur's vision, business plan preparation, business financing, business creation and business growth. We adopted a mixed methods approach to data collection and analysis. An online survey and face-to-face interviews were conducted with 79 participants to a micro-business development program and 26 staff members. Data were analysed using content analysis and structural equation modeling. Our findings show that training and coaching have different functions in a business development program. Coaching helps entrepreneurs to shape and refine their vision while training has an impact on their technical and business competencies and provides them with a better knowledge of their economic, trade and technological environment. Networking has a positive impact on the clarity of the entrepreneur's vision and contributes to better knowledge of business environment. Finally, our results suggest that coaching has a direct effect on reducing uncertainty while training has an indirect effect on the decrease of uncertainty through a better knowledge of business environment.

## **Want Sustainable Productivity? Incentivise Investments In Innovation**

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Keywords: *Innovation, R&D, Investment, Productivity, Incentives*

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### **Abstract**

Research and development (R&D) and innovations derived from R&D have been argued to be the engine of economic growth for hundreds of years. With supporting data the paper establishes the vital role of innovation in the value chain and sustainable growth of economies. In order to convert these strategies into tangible outcome we need right tools, skills and funding. Tools are provided by research methodologies underpinned by the application of project management principles. Skills come from higher education and training in science, engineering and technology. The sources of funding are mainly from the governments and private industries where the latter provides the major share. To generate additional funding the author argues that governments should offer a tax break to multi-national companies for additional investment in R&D above the threshold of R&D intensity.

For the 'post- Brexit' United Kingdom a new R&D strategy is of particular importance when the supply of the EU research money will discontinue.

### **Introduction**

HM Treasury's paper entitled 'Fixing the foundations: Creating a more prosperous nation' (HM Treasury, 2015) is praiseworthy. It contains many good ideas and initiatives aiming to focus on 'world beating productivity'. It recognises that that the longer term productivity of an enterprising economy like the UK depends on 'public and private investment in infrastructure, skills and science'. The main driver of productivity is higher production of goods and services with efficient resources. Higher production comes from increasing global demand created by innovative new products which are delivered by high investment in R&D (research & development) and skills. R&D is the starting engine of the value chain and productivity. The government commitment in the science capital is robust but the overall investment intensity in R&D does not go far enough. This is the missing link of achieving a sustainable growth in economy and productivity. My article is not a critique of the HM Treasury's paper, it aims to complement it by presenting a case of why we need more investment in R&D and how it could be done'

### **The Impact of Research and Development**

Research and development (R&D) and innovations derived from R&D have been argued to be the engine of economic growth for hundreds of years. Karl Marx started the debate in the nineteenth century by suggesting that innovations could be associated with waves of economic growth. Innovations are the outcomes of R&D and not inventions from serendipity. The rates of return both inform us of how important R&D is for growth and



provide one of the main justifications for government subsidies to R&D. Firms' decisions to undertake R&D are based on the rate of return to R&D.

The OECD in their recently published Innovation Strategy (OECD, 2010) highlight that innovation will become an ever more important driver of growth in recognition of the structural landscape of many developed. However the debate is on between (a) where is the best return of R&D expenditure and (b) whether state or industry is more effective in the transformation of human and environmental well-being by R&D investment and activities.

It is relevant to observe from the OECD data (OECD, 2010) that knowledge based high-tech economies of the G20 group. (viz. USA, Japan, South Korea, Germany, UK, France, Canada and Australia) are investing between 1.86% and 3.56% of GDP in R&D. This is indicative of the experience of these countries delivering the positive impact on their economic growth by relatively higher R&D investments compared to emerging economies. Can a project management approach provide some pointers? We will explore this in later sections of this paper.

### **R&D Roles of State and Industry**

Another big issue of R&D investment is whether state or industry should play a big role and who is more effective. A traditional view is that more recent innovations and scientific developments are associated with industry rather than state (e.g. polythene by ICI, ballpoint pen by Reynolds Pen, Zantac by Glaxo, photocopying by Xerox, Windows operating system by MicroSoft, iPhone by Apple and son on). The large companies have specialised in particular areas and aimed to provide scientific leadership by large amount of R&D investment. However this 'myth' is challenged in a recent publication by Mazzucato (2013) who argues that the entity that takes the boldest risks and achieves the biggest breakthroughs is not the private sector, it is the much-maligned state

It is difficult to accept or reject the argument of more outcomes of fundamental innovation by the state as compared to the businesses because it is very difficult, if not impossible, to measure the benefits of all research patents resulting from state funded and business funded research programmes. However if there is any correlation between the R&D investment and outcomes then approximately 7 out of 10 outcomes are coming from businesses. This crude analysis does not prove the possible domination of either player but provides the power of investment in each camp. It is also arguable that the focus of business R&D is more on business related new products and processes whereas the emphasis of state funded research is more on fundamental research providing fundamental outcomes and where the state can take the boldest risks to obtain breakthrough results. However it is beyond argument that a larger share, around two-thirds, of R&D investment comes from the private sector and industries should be incentivised. Before we come to this incentive let us address R&D challenges and tools to take up these challenges.

### **Challenges of Research and Development**

It is not doubted that innovation and in general research and development (R&D) have significantly improved the quality of life, especially during the last 50 years. Although the outcome of R&D is rewarding the road map to the destination is unpredictable. There are many publications emphasising different aspects of challenges for specific R&D initiative.

The following section briefly addresses some of the generic challenges of R&D leading to the risks and uncertainties of success.

#### *– Challenge of funding R&D expenditure*

Arguably the biggest challenge of initiating a research and development activity, especially if it relates to basic research is to find money to start because it is very difficult to develop a business case. In the case of developing a new product from the current product portfolio it may be relatively easy to prepare a preliminary cost benefit analysis based on previous experience. The sources of funding are from governments, industries,

individual companies, trust funds (e.g. Wellcome Trust), grant funds (e.g. Yozma fund in Israel), crowdfunding (e.g. NESTA website). risktaking investors such as venture capitalists and not the least tax incentives.

– *Challenge of managing scientific freedom*

There is a deep rooted cultural challenge amongst R&D scientists and managers that a scientist's 'spirit of innovation' should be given freedom to exercise and the idea of applying formal control (e.g. cost control and project planning) is viewed as an impediment to free thinking. On the other hand R&D departments do not have unlimited funds or cycle times. This cultural challenge may also result in separating research and development into two distinct departments. There is also a view that research is for scientists and development is for engineers. This demarcation, unless it is genuinely based on knowledge and experience, is not helpful. To address this challenge to enhance the success of R&D initiatives one approach is to apply project management tools and processes and at the same time to ensure the spirit of innovation and the need for sufficient time for the research to yield results.

– *Challenge of managing risks*

Research and development are by definition exploring new opportunities often in uncharted territories and thus carrying many risks. The main and obvious risks are related to uncertainties – uncertain cost, uncertain time scale and uncertain outcomes. There are also some less obvious risks. One such risk is 'appropriability risk' (Trott, 2006) to reflect the ease with which competitors may imitate a newly developed product. However this risk regarding the management of intellectual property are relatively well protected through patents, trademark and copyright protection. The fast moving consumer goods) innovations tend to focus more on cumulative technologies and line extensions.

– *Challenge of attracting talent*

The challenges of attracting appropriate skills and talents in R&D organisations is twofold. First, R&D tasks require specialists in particular areas and it is not surprising that research laboratories deploy more PhDs than in other departments. Companies also need to identify creative talents in their hiring policy to have the best chance of generating new product ideas. It is also important to engage high potential project leaders to manage the multi-stages of a R&D programme cycle. It is relatively easy to recruit qualified scientists and specialists but it is difficult to attract creative talents and high fliers to the R&D environment.

– *Challenge of globalisation*

Globalisation is an overarching 'mega-trend', which will increasingly shape the world during the next decades. Globalisation offers both opportunities and challenges for research and development. After more than a decade of widespread global R&D expansion, multinational companies expected their international research and product development functions to deliver results. Globalisation also creates the opportunity of reverse innovation (Basu and Wright, 2016). Reverse innovation refers broadly to the process whereby goods developed as inexpensive models to meet the needs of developing nations, such as battery-operated medical instruments in countries with limited infrastructure are then repackaged as low-cost innovative goods for Western buyers.

## *The Challenge of Functional Tensions*

One of the greatest challenges involved in delivering a typical R&D project on time and within the allocated funding is the inherent tension between two contrasting elements. On the one hand there exists the softer, creative R&D culture; on the other, the far more driven ethos behind project management. The Project Manager has the mandate which covers mediation between representatives of different cultures, the nature of which is driven by very opposing forces. A businessman is motivated by financial benefit, while a researcher is inspired by personal curiosity and creativity.

Interestingly, some authors (Zedtwitz et al, 2004) argued that these challenges and tensions were not negative per se. Their recommendations included one effective approach of managing these tensions - the application of integrated project and programme management in R&D.

## **The Importance of Project Management in Research and Development**

Having discussed why research and development are so important for the sustainable growth for both businesses and national economies and also the challenges we can explore the importance of Project Management in R&D. A simple argument is that R & D work is, by definition, hard to predict but the formal disciplines of project management can provide a means of helping to plan, organise and control multi-disciplinary projects without stifling innovation. This argument appears to be too simplistic but it merits further development.

The study by Cowley (2005) analyses company survey results (based on 60 successful and unsuccessful projects of Canadian firms) to develop eight major factors to help distinguish between successful and unsuccessful R&D projects. These factors relate very closely to project management principles. Cowley also suggests a decision model where the R&D process is broken down into five stages. These stages are comparable to the 'stage-gate process', first published by Cooper (2001). The concept of these stages are based on the principles of 'manageable chunks' and progressive risk control embedded in the discipline and rigour of project management.

Turner and Cochrane (1993) described in their 'goals and methods' matrix four types of projects based upon whether the goals and methods of a project are well defined or not. For example, projects with well- defined goals and well defined methods are Type 1 projects, typified by engineering projects. Type 3 projects are typically information systems projects where methods are well defined, but the goals are ill defined. According to the model by Turner and Cochrane (1993) both Type 2 and Type 4 could relate to innovation and new product development initiatives where methods are not well defined. In other words these initiatives in general lack the rigour of project management methodology.

## **Research and Development Strategy**

A company's survival depends on its efforts to create new customer value in the form of a new business, new product, new technology or a new process. The creation of new values are outcomes of R&D and their successful deliveries are carried out by projects. We need a R&D strategy. The competitive challenges in today's R&D environment and global marketplace are forcing organisations to be more responsive, agile and efficient than ever before (Basu, 2015). Arguably these challenges are more dominant in the development of drugs in the biopharmaceutical industry. The average drug development cost has increased from \$500 million in 1996 to nearly \$1 billion in 2002. To select the project of optimum value we need a carefully developed portfolio strategy.

The Portfolio strategy represents a company's choice as to which set of projects balances the potential delivery of R&D results over time. Ultimately the portfolio strategy determines which R&D projects should be funded and at what levels. The best practices of R&D strategy propose a variety of approaches for selecting the R&D portfolio, such as financial, strategic, scoring and 'bubble diagram' (e.g. *Pearl, Oyster, Bread & Butter* and

*White Elephant*). The 'bubble diagram' or the risk reward matrix is often compared with the 'growth-market share' matrix of Boston Consulting Group ([www.bcg.com](http://www.bcg.com)) where the product portfolio is grouped as *Star*, *Wild Cat* (*Question Mark*), *Cash Cow* and *Dog*. In this comparison *Pearl* is like *Star*, *Oyster* is like *Wild Cat*, *Bread and Butter* is like *Cash Cow* and *White Elephant* is similar to *Dog*. A recommended approach to using the 'bubble diagram' (Basu, 2015) is shown in the following three steps:

- Assign each R&D project to an appropriate quadrant of the 'bubble diagram' based upon quantitative evaluation of the project opportunity and risk
- Capitalize on *Pearls*, eliminate or reposition *White Elephants*, and balance the resources devoted to *Bread-and-Butter* and *Oyster* projects to achieve alignment with overall strategy
- Use the understanding of the 'bubble diagram' quadrants to regularly review the project portfolio to shape the way for managing individual projects.

## Way forward

The boundaries of research are continually changing and my analysis indicates some key areas of research strategy including:

- Genetic engineering where the direct manipulation of an organism's [genome](#) is conducted by inserting a new DNA in the host genome or by synthesizing the DNA, and then inserting this construct into the host organism.
- Medical research for ageing population to find better treatments for age related ailments such as dementia and Alzheimer's and various forms of arthritis
- New digital and mobile technology including miniaturisation and cloud computing
- Alternatives to fossil fuel energy including solar, tidal and wind power
- New generation of environment friendly motor cars including electric and hybrids

In order to convert these strategies into tangible outcome we need right tools, skills and funding. Tools are provided by research methodologies underpinned by the application of project management principles. Skills come from higher education and training in science, engineering and technology. We also know that the sources of funding is mainly from the governments and private industries where the latter provides the major share. So here is a question to the Finance Minister, do you incentivise businesses to invest more in innovation and R&D. The answer is obviously yes. It can be argued the 'Patent Box' incentive by the previous UK government encouraged large companies to apply to lower their corporation tax. UK Government (HMRC, 2007) has also introduced arguably a complex process of claiming corporate tax relief for R&D related employee cost, staff provider cost, material cost, utility cost, clinical trial cost, software cost and selective capital cost. But we need more to incentivise investment at the front end of R&D. This how you may consider doing it. In addition reducing the corporation tax (which is being legitimately manipulated by some multi-national companies) offer a tax break for additional investment in R&D above the threshold of R&D intensity. Depending on the type of industry the threshold should vary (e.g. Pharmaceuticals 12%, Automotive 4%, FMCG 2%). The details of the incentive scheme can be worked out with further analysis, but the principle is sound. The proposed scheme should also simplify the present system for qualifying R&D tax relief. Investment in innovation and R&D stays in the country to create sustainable productivity, growth in employment, a firm knowledge base and a resultant growth in the national economy ensuring intellectual properties at the start of the value chain.

Around £730 million a year of European Union (EU) money is spent on research and development in the UK (Royal Society, 2015). Following the referendum result of leaving EU by the United Kingdom, or the so called *Brexit*, there is more pressure on the UK Government to generate funding for R&D from the private sector. The proposed scheme should deserve a serious consideration from the UK Government.

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## **Creative-Traditional Sector Cooperation for Innovation and Blue & Green Growth: Case Study from the Baltic Sea Region**

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*Keywords: Cultural And Creative Industries, SMEs, Design-Driven Innovations, Blue And Green Growth, Cross-Sectorial Innovation*

### **Abstract**

At the turn of culture and economics, cultural and creative industries (CCIs) stimulate business, technology and society as well as drive innovations within individual regions as well as on a cross-border level. That makes CCIs and thus culture, creativity and design significant elements of modern, post-industrial and knowledge-based economy.

Being important vehicle of regional and national economy, SMEs have become a topical issue on policy and business agendas. The key aim is to increase the strategic focus of SMEs by making them more innovative, thus contributing to competitiveness and growth, as innovation is the key to both (European Commission, 2012).

In order to embed creativity, culture and design in traditional SMEs practices (maritime and green SMEs) contributing towards the blue and green growth on the regional and European level, thus strengthening business growth, smart specialisation and a better response towards economic, social and environmental challenges, in summer 2015 a cross-border spin-off project “CTCC – Creative Traditional Companies Cooperation” within the South Baltic Programme was launched by partners from Germany, Poland and Lithuania representing cross-sectorial consortium: universities and business development organisations. The project aims at setting up creative-traditional companies cooperation network across the Baltic Sea to strengthen innovation ecosystem, creating and implementing new products and services as well as business models integrating both sectors – creative and manufacturing enterprises.

When it comes to realistic and feasible business models and practical collaboration between creative and traditional manufacturing/service business arrays from the maritime and green technologies field for entrepreneurs, it is evident that special SME suitable implementation concepts are hardly to find. The research activities and results of the CTCC project will bring out a collaborative approach encouraging both industries – creative and traditional – to cooperate and develop new products and services that are more sustainable, innovative and user-friendly. The role of design and the CCIs as well as cultural contribution with which they are associated yields a key economic issue. The real challenge lies not just in designing better products, services and processes, but also in designing entirely new business models. Not only Europe, but specifically the South Baltic Sea Region needs a creativity and design-driven policy to help Member States to initiate mature policies for development and offer of arguments to support appropriate investments in SMEs business, smart growth and sustainable living.

The paper follows a qualitative research approach building upon concepts of innovation, strategy, creativity, and research streams, reflected in the context of intercultural, interdisciplinary and heterogeneous environment as the South Baltic Sea Region represents. In the frame of the project as a case study, a series of expert interviews were conducted and empirical expert observations made in form of qualitative surveys and experts assessments. The presented results are based on summary reports of empirical research activities.

The paper presents expectations and needs of entrepreneurs from both creative and traditional sector. It demonstrates an endeavour on how to establish a cross-sectorial process for efficient transfer of knowledge for innovation between the two sectors, setting strong platform of international cooperation for innovations in the region.



## **Sustainable Entrepreneurship: The Impact of Innovative Ecopreneurs at the Base of the Pyramid (BOP)**

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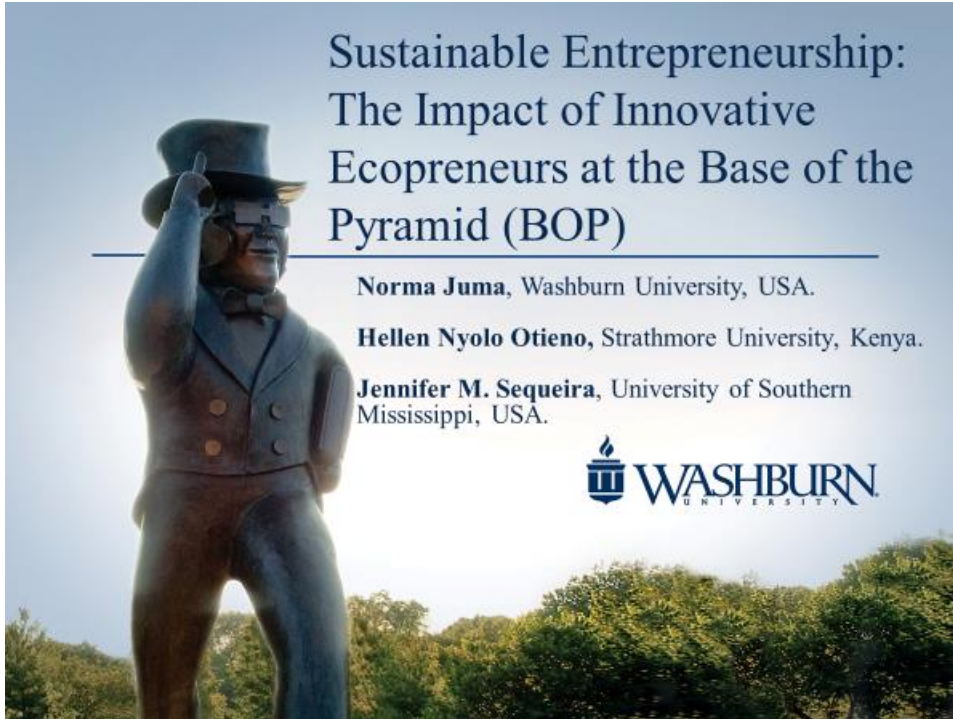
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### **Abstract**


This qualitative study focuses on the factors that motivate ecopreneurship at the base of the pyramid, the key challenges and the strategies used by these ecopreneurs to build economically viable businesses while maintaining a focus on core environmental and social values. Extant research suggests that ecopreneurs at the base of the pyramid primarily engage in necessity driven ventures. This study demonstrates however that ecopreneurs' motivation to launch new ventures appear to be multifaceted and as such may be driven by necessity, opportunity and personal convictions to correct market failures that may have led to environmentally degrading economic behaviors in their communities. Findings also indicate that these ecopreneurs at the BOP were strategically aligned with highly supportive collaborative networks of private and public institutions which also enabled these ecopreneurs to begin and sustain viable businesses.

Reference 14 (Presentation)



## Sustainable Entrepreneurship: The Impact of Innovative Ecopreneurs at the Base of the Pyramid (BOP)

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## Agenda

- Main theoretical issues /conceptual framework
- Research Methodology
- Key findings
- Implications for policy and practice
- Future research



Question 1

## Main theoretical issues /conceptual framework

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- Market systems have adversely affected the environment by:
  - ✓ failing to deal with *negative environmental externalities* and
  - ✓ *undervaluing natural resources*, leading to their over-exploitation and depletion.
- Governments have sought to deal with the problem through a *mix of command-and-control and market-based instruments*, with limited success.
- One of the most potent alternatives for dealing with such market failures is *ecopreneurship*
  - ✓ A process by which entrepreneurs introduce eco-friendly (or relatively more eco-friendly) products and process into the marketplace.



Question 1

## Main theoretical issues /conceptual framework

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- *Sustainable entrepreneurship* \_meeting the needs of the present without compromising the ability of future generations to meet their own needs (United Nations, 1987).
- The conception of *sustainable entrepreneurship (profit-driven)* differs substantially from explorations of *social entrepreneurship (mission-driven)* (Dees, 2001; Mort et al., 2003)
- Sustainable entrepreneurship is often defined by its alleviation of *environmentally relevant market failures* through the exploitation of potentially profitable opportunities.
- In this paper we seek to address the *environmentally relevant subclass* of sustainable entrepreneurship



Question 2

## Research Methodology

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### Design

- Qualitative case study design
  
- Most appropriate method for exploring or discovering a new area (Miles & Huberman, 1994)
  
- Triangulation to increase the robustness of the research
  - ✓ Semi-structured interviews,
  - ✓ micro-ethnography and
  - ✓ document analysis (Eisenhardt, 1989).



Question 2

## Research Methodology

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### Analysis

- Notes taken during interviews, observation and reflection were typed up after each site visit unless captured in video recordings.
  
- Where possible data collection and analysis were done concurrently, this process not only speeded up the analysis but also allowed emerging themes to be more thoroughly investigated while we were still in the field (Eisenhardt, 1989).
  
- Throughout this process we maintained meticulous memos which facilitated the coding process (Miles and Huberman, 1994).





Question 2

## Research Methodology

### Analysis

- The coding system will tightly couple the data from all sources to the research questions (see table 1) in order to secure fit with the aim of our study and the findings.
  - ✓ Maintain a scrupulous chain of evidence (Dixon and Clifford, 2007).
- Use the qualitative analysis software NVivo 10.0 to conduct our analysis.



Question 2

Table 1: Interview guide and links to original research questions

Interview Guide	Research Questions
What are the organization's major goals?	Research question 1(Motivation Prompts): Opportunism vs altruism; probing the main motivation - social value, environmental conservation, profitability, etc....
How do you measure performance/firm success?	Research question 1: (Motivation Prompts): evaluate if the ultimate goal is profits, social value, environmental conservation or all.
What service(s)/product(s) did your clients use prior to the launch of your company or other similar players in your industry?	Research question 1( Motivation Prompts): To what extent has the model facilitated poverty alleviation, minimized local deforestation, reclaimed Arid and Semi-Arid Lands (ASALs) amongst other sustainable entrepreneurship goals.
Do you think that your company operates in a way that is different than that of your non-sustainable counterparts?	Research question 2 (challenges): Competitive environment
Apart from the things we have already mentioned, what are the key challenges that you face?	Research question 2 (challenges Prompts): probing beyond the competitive environment
Identify policies that create and deter an enabling environment for your company.	Research question 3 (Government policies Prompts): Impact of policies.
Describe your marketing policy/ financial policy (how did you raise your seed capital/growth capital; what are your plans for scaling up in the future); what are your human resource policies (how do you screen potential employees).	Research questions 2 and 3: policy issues at firm and country level.



Question 2

## Key Findings

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- Ecopreneurs' motivation to launch new ventures cannot be reduced to a simplistic dualistic model. Their motivation appears to be ***multifaceted***.
- Ecopreneurs may be motivated by both necessity and opportunity drivers, and these may not necessarily occur in ***a linear or sequential*** manner as suggested by Williams (2008).
- This phenomenon is more ***widespread than suggested*** by Minniti, et al (2005).
- The ecopreneurs pursued viable business models that were ***financially self-sustaining*** and most of them diversified their ***revenue streams***.



Question 4

## Implications for Policy and Practice

- Given that roughly 80 percent of the population of Kenya lives on just 16-20 percent of the country's land
- ***Collaborative networks*** of private and public institutions working together with ecopreneurs at the BOP to increase productivity
- ***Afforestation and reforestation*** through innovative initiatives such as agronomic, agroecology, agroforestry, etc.
- We are still in the process of analyzing the government policies and their impact on ecopreneurs at the BOP.



Question 5

## Future Research

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- Empirically test the model in Kenya and other countries using a larger sample.
- Do comparative studies: country, continent



Figure 1: Innovative Ecopreneurs at the Base of the Pyramid (BOP)



Clockwise 1) Alice the greenhouse farmer. 2) James at his strawberry farm. 3) Martha's group have lined up to learn how to make the charcoal briquettes, which generate an income and help to save trees. 4) Raphael Rebo- Avocado Grower.









## **Socio-Emotional Wealth (SEW) as a Key Factor Shaping Sustainability of the Family Business**

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*Key Words: Family Business, Succession, Tangible And Intangible Assets, Socio-Emotional Wealth, Necessity – Opportunity Entrepreneurs, Trust-Based Social Relations.*

### **Abstract**

Rather often we have to confront with the pessimistic views on the future of the Family Business (FB). Contrary to this prognosis, the FB is not only present but also improving its position in the global economy and playing a key role in the European economy too. According to the Fortune 500 company list, the share of FB increased from 15 per cent in 2005 to 19 per cent in 2014 in the global economy. McKinsey predicts that in 2025, these companies from the emerging world will account for 37 per cent of all companies with annual revenues of more than USD 1 billion, up from 16 per cent in 2010. In the case of the European economy, FB represents 40 per cent of the Fortune 500.

In addition, FB represents 60 % of employment and more than 60 million jobs in the private sector. Among many internal challenges of FB in the five years' time, the importance of the 'company succession' is increasing together with the renewing technology and 'attracting the right skills/talents'. (Global Family Survey, 2015).

This paper is focusing on the transfer of Socio-Economic Wealth (SEW) as a key intangible asset within the intergenerational changes in the FB. The paper outlines the various concepts (narrow vs. broad) of the SEW and special attention is paid to the risk taking and risk adversing entrepreneurial attitudes. In this relation, the authors made a distinction between the 'opportunity' and 'necessity' entrepreneurs. Using empirical experiences based company case studies in three European countries (Hungary, Poland and the UK), the paper is focusing on the transfer of the following key components of the SEW to the next generation: trust-based social-system, generic human values (i.e. openness, mutual respect, correctness, etc.). The key lesson of this analysis is the following: transferring physical assets in the succession process seems to be less important than the transfer of the intangible ones embedded in the company's culture. Further systematic international comparative studies – combining quantitative and qualitative research tools - are necessary to get more accurate picture on the impacts of transferring both intangible and tangible assets in the FB.

The methodological foundations of this presentation based on literature review and particularly on the first hand company case study experiences. Cases study method was purposefully selected as a qualitative research tool. Instead of single-case study method we used the so-called multi-case or multi-sites case study

strategy relying on the experiences of the ten company case studies carried out in the three countries of the INSIST project (2014-2016).<sup>1</sup>

## 1. Introduction

Half a century ago, management scholars drew a rather pessimistic picture of the future of the family business. They anticipated *'... the hereditary principle to fade fast, because of the greater ability of professionally-run public firms to raise capital and attract top talent. In fact, family firms have held their ground and, in recent years have increased their presence among the global business'* (The Economist, 2014:2). In spite of this prognosis the FB is not only present but also improving its position in the global economy. According to the *Fortune 500* company list, the share of FB increased from 15 % in 2005 to 19 % in 2014 in the global economy. In addition, the well-known consulting firm McKinsey predicts that *'in 2025, family companies from the emerging world will account for 37 per cent of all companies with annual revenues of more than USD 1 billion, up from 16 per cent in 2010.'*<sup>2</sup> In the case of the European economy, FB represents 40 per cent of the Fortune 500. According to the latest Eurofound report (2015), within the small and medium sized (SME) sector, the FB sector creates more than four fifths (85 %) of the new jobs. Employment within the FB represents almost two thirds (60 %) of jobs or 60 million people on European level in the private sector.

Within the next year, more than two thirds of FBs expect changes both in ownership and management in Europe. More precisely, one fifth (22 %) of them plan to pass the ownership of the business to the next generation (NxG), almost one quarter (24 %) of them are planning to transfer management of FB to the next generation and more than one fifth (23 %) are thinking of appointing a non-family CEO but keeping family ownership/control. This trend is recognised by the European Commission's 'Entrepreneurship 2020 Action Plan' too: *'... the transfer of business ownership with the transfer of management from one generation to the next, is the greatest possible challenge facing family business'* (Niebler, 2015:8). The situation is similar in Hungarian economy: according to the leading consulting firms, generational changes will take place almost in the two thirds of the firms. (Napi.hu, 2016:7)

This paper presents an analysis of the special features of the succession process in the FB. Succession has a central function to sustain survival -'survivability' - of the business. Succession means the transfer of business to successor in a broadest sense, that it is, '... all forms of the transfer of leadership and financial responsibility are included'. (Goydke, 2016:51). Socio – economic wealth (SEW) is an often underestimated intangible component of this process in comparison to the tangible ones (i.e. physical assets, financial resources). The intangible assets like patterns of social relations, to work diligently, to be frugal, to retain reputation of the firm in the local community, networking with other firms etc. are playing key roles in the longevity of the Family Business (FB). The experiences analysed in this chapter based on the literature review and particularly on the first hand company case study experiences. (Annex 1 presents the short description of the companies surveyed.) Cases study method was purposefully selected as a qualitative research tool to *'... understand how people interpret their experiences, how they construct their world and meanings they attribute to their experiences.'* (Tomory, 2014:60). In our analysis, instead of single-case study method we used the so-called multi-case or multi-sites case study strategy relying on the experiences of the ten company case studies carried out in the three countries – Hungary, Poland and the UK – of the INSIST project (2014-2016).<sup>3</sup> (See the Annex 2 on the main characteristics of the company case study method!)

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<sup>1</sup> Intergenerational Succession in SMEs Transition (INSIST) is supported by the EU Erasmus +.

<sup>2</sup> <http://www.economist.com/news/business/21629385-companies-controlled-founding-families-remain-surprisingly-important-and-look-set-stay>

<sup>3</sup> 'In multi-case study research, the single case is of interest because it belongs to a convincing particular collection of cases. The individual cases share a common characteristic or condition. The cases in the collection are somehow categorically bound together. They may be members of a groups or examples of a phenomenon.' (Stake, 2006: 5, In: Tomory, 2014:61).

The paper is organised as follows. Besides concluding remarks, there are five sub-sections. The introduction is presenting the importance of the FB. The next section identifies the main characteristics of the SEW. Section 3 examines the risk taking attitudes of entrepreneurs and section 4 role of psychological ownership. Section 4 outlines the transfer of such intangible assets as values, identity, networking, etc. Section 5 explains both positive and negative sides of the trust based – social relationships in the FB. The section 5 analyse the importance of transfer of generic human values and embedded knowledge in the survivability of the FB.<sup>4</sup>

## 2. The Concept of ‘Socio-Emotional Wealth’ (SEW)

The SEW belongs to the ‘umbrella concept’ of the *social capital*, which was first systematically studied in the early 20<sup>th</sup> century and indicated the importance of the ‘... social cohesion and personal investment in the community. It evolved to highlight the importance of the networks of personal relationships to provide basis for trust, cooperation and collective activities.’ (Goto, 2014:88-89)

The concept of SEW stresses the importance of the non-financial benefits of family members from the business and ‘... family members are said to attempt to manage their business not to maximize financial returns but to reserve or increase the socio- emotional endowments they derive from the business...they may work against the interests of non-family owners ... preserving family control of the firm by avoiding profitable investments and initiatives that would threaten such control’ (Miller – Le Breton-Miller, 2014:713).’

SEW has a variety of outcomes, both positive and negative, depending very much on the socio-economic environment of the firm’s operation. For example in a stable and slowly changing market context a conservative or risk averse attitude and the drive of the family to control the business to secure position for the next generation could be beneficial. However, if the context is that competition is intense, price pressure is constant and technological change is speeding up then this conservatism becomes “dysfunctional” and may result in the “strategic stagnation” (Bertrand-Schoar, 2006) of the company. In addition, motives or priorities of SEW may result - especially in the long term perspective – in significant positive outcomes, such as: ‘... care for reputation in the community and thus solicitous treatment of stakeholders may create loyal partners who can actually help enhance financial performance (Miller – Le Breton-Miller, 2014:714-715).’

To better understand the various outcomes of the SEW identified in the company case studies of the INSIST project, it would be productive to use Miller – Le Breton-Miller’s (2014) approach which makes a distinction between the “narrow and short-term” and “broader and long-term” dimensions of SEW. The following table summarises the characteristics of both “restricted” and “extended” SWE:

**Table 1. Contrasting Restricted Versus Extended SEW Priorities**

	<b>Restricted SEW</b>	<b>Extended SEW</b>
<b>Typical SEW priorities</b>	Permanent job security and access to business resources for all current family members	Long-term well-being of motivated later generation, able and willing to nurture the firm
<b>Focal stakeholders</b>	Immediate family	The family over time, the business and all its stakeholders
<b>Related theories</b>	Agency and behavioural agency theory, family altruism	Stewardship theory, stakeholder theory, sustainability
<b>Governance arrangements</b>	Family dominated leadership and governance – regardless of capability	Competent, motivated family members only; balance between family and non-family executives and directors
<b>Strategic outcomes</b>	Strategic conservatism or stagnation, sparse investment in the business, risk	Generous investment in products and processes; continuous reinvestment in the business and its renewal

<sup>4</sup> Chapter of Csizmadia-Makó-Heindrich in this special number is focusing on the complex character of the learning and on the importance of its transfer during the business transfer.

	version, family extraction of funds from business	
<b>Commercial outcomes</b>	Inferior growth and longevity	Superior growth and longevity
<b>SEW outcomes</b>	Nepotism, entrenchment, family control of firm	Family pride in their offering(s) and relations with stakeholders and the community

Source: Miller – Le Breton-Miller, 2014:717

### 3. SEW: Dominance of the Risk-Taking and Pro-Growth Attitudes

Attitudes of family owners/managers towards the growth potential of the firm represent a core part of the literature. These attitudes have an important impact on the “survivability” of the FB and are rather often underestimated in the complex and long-lasting process of succession. In relation to this, it is necessary to mention the “loss” averse” / “risk averse” attitude of FB, which is reflected in entrepreneurial behaviour ‘... to scrutinise opportunities very carefully and eschew diversification into the new market areas, unless closely related to the existing line of business’ (Devins, 2015:23).

This loss adverse attitude depends very much on the scale of resources available for the entrepreneurs and on the competitive pressure. This vigilante, loss adverse behaviour of the owner/founder may result – in the short run - in growth- and innovation-resistant behaviour. However, from a long-term perspective this “anxious vigilance” should be interpreted as supporting the well-prepared, evidence-based and tested exploitation of the opportunities via growth and/or innovation.

Reviewing the company case studies experiences, we may identify the diversity of this “anxious vigilance” or, using a more appropriate term, “patient capitalist” attitudes of FB shaped by the SEW priorities of various types of entrepreneurs and generations.

Beside this general pattern found in the literature, it is worth calling attention to the following two broad categories of entrepreneurs: ‘Opportunity’ versus ‘Necessity’ entrepreneurs. In the case of the “opportunity” entrepreneurs, the ‘... main motif is the desire for ‘independence’ and a desire to ‘work for themselves’ (Mascherini-Bisello, 2015:13). In the other case, the so-called ‘necessity entrepreneurs ... are pushed into entrepreneurship because they have no other employment options’ (Mascherini-Bisello, 2015:13).

In the INSIST project countries we may identify visible differences in the rate of ‘necessity’ versus ‘opportunity’ entrepreneurs between Hungary, Poland and U.K. Due to the radical political-ideological and economic changes i.e. the shift from state-socialism to the market economy in the two transformational countries, a large segment of the workforce that was formerly employed by the state or cooperative owned firms lost their jobs and became unemployed. These people became the ‘forced entrepreneurs’. Both in the past and present, this pattern of entrepreneurship exists but its prevalence depends very much on the radical changes in the labour market created by intensive continuous re-structuring taken place both in the global and the national economies.

Looking at the percentage of “necessity entrepreneurs” in the three countries surveyed, their share in the group of the adult entrepreneurs is much higher – almost double – in Hungary and Poland than in the U.K. Comparing the groups of adult (35-64 years) and young (18-34 years) entrepreneurs, the differences remain between these countries. Surprisingly enough there is a relatively high amount of young “necessity entrepreneurs” in Poland in comparison even to Hungary. In the category of adults, the share of “necessity entrepreneurs” in Hungary and Poland is similar. However in the U.K. the share of this category of entrepreneurs is below the EU-28 average, as shown in the following table:

**Table 2. The Share of ‘Necessity entrepreneurs’ in the INSIST Countries – 2013**

<b>Countries</b>	<b>35-64 year old entrepreneur</b>	<b>18-34 year old entrepreneur</b>
Hungary	37%	23%
Poland	38%	42%
U.K.	21%	14%
EU-28 average	28%	17%

Source: Mascherini-Bisello, 2015:14

When considering “necessity entrepreneurs”, it is necessary to make distinctions in the case of Hungary and Poland between the generations who started FB in the aftermath of the collapse of state socialism at the beginning of 1990’s and the new generation who is choosing the carrier of an entrepreneur in the FB due to disillusionment with the other types of employment (e.g. working at large public or private firms with insufficient autonomy or promotion opportunities etc.).

The case of the Hungarian food processing (Quality Meat Ltd.) and the Polish construction companies (Pillar Ltd.) illustrate well both the first and second type of “necessity entrepreneurs”. In the first case, the owner-founder lost his job at the agricultural cooperative during the early mass privatisation movement that took place in the early 1990’s.

*‘My old workplace, the co-operative’s slaughterhouse and meat processing plant, closed down. But I did not want to be in others’ employment. I thought more of myself than to give up my independence. My wife and I had a little money saved and we started our micro-enterprise in 1992’ (Szentesi, 2015:5).*

In the second case of the Polish Pillar construction company the older son belonging to the second generation of entrepreneurs was dissatisfied with the large international company employment practice and left it for the family firm of his parents and became a successor too, alongside the younger son who had prepared to be entrepreneur from his childhood:

*‘The owner couple, Martin and Helena first realized they should start considering and planning the succession when their older son started working for an international corporation while still being a student. They were surprised he didn’t take a career in the family business for granted. Only then did the parents decide to plan and implement a succession process. They started talking with both sons about their possible future roles in the family firm. These conversations about engaging them in the future development of the company lasted for two years. Eventually, the sons agreed with each other and with the parents to undertake cooperation with their father. It should be mentioned that the older son was a bit disappointed with the work at the large global corporation and that was the main reason for changing his mind. In the meantime he gained significant business experience by working for the corporation and obtained an MBA management degree’ (Gorowski, 2015:5).*

The risk avoidance attitude of the FB – where the owner-founder is labelled as a “necessity entrepreneur” – relate to the short-term perspective of the business. However, if this “anxious vigilance” attitude is coupled with a long-term perspective of business, it is not at all contradictory with the pro-growth or innovation strategy. Quite on the contrary, this risk cautious attitude may help in the carefully prepared future development of the firm. This strategy dominates the overwhelming majority of the company case studies in the INSIST project.

Growth or innovation strategies were identified in all the company cases – with the exception of Hungarian Quality Meat Ltd. -. The growth and innovation driven firms in the company case study sample belong – without exception - in the category of the “opportunity entrepreneurs”. The strategy of these FB firms is characterised by “longer-term investment in business, rather than pursuit of short-term profits for dividends” (Devins, 2015:23).

We found within the same company case examples for both “risk-averse” and “pro-” growth” attitudes that reflected restricted and extended SEW. This is the case of the British Parodan Engineering, when the company grew under the management of founder/owner H. Woods, he ‘... tended to put friends and family members on the payroll ... this sometimes led to a mismatch between the skills required and the skills available in the business, (but) it did create a very loyal workforce with low staff turnover and strong morale’ (Wymer, 2015:8).

When his son Paul, the succeeding Managing Director took control, he

*‘... has a very clear vision for the company based on increasing capacity and profitability. He is keen to ensure people are hired for their skills and abilities and not just because of their relationship to the family... he needs to ensure he has the right people in place to realise the ambitious growth plans’* (Wymer, 2015:9).

Company case studies characterised by pro-growth or growth averse strategies are presented in Table 3.

**Table 3. Company case studies and the types of development strategies**

Countries	Pro-growth strategy	Growth averse strategy
Hungary	BI-KA Logistics Ltd. Fein Winery	Quality Meat Ltd.
Poland	Plantex Case Pillar Ltd. The WITEK Centre The WAMECH Company Ltd. DOMEX Ltd.	-
UK	Podiums Ltd. Parodan Engineering	-

In another case, György, the owner in the Hungarian BI-KA Logistics Ltd.,

*‘... has a motto, that ‘if it is not growing, it is decreasing’. He defined 5 KPIs that Gabriella (her successor in manager general) has to reach quarterly. In the last two years, she has exceeded even these ambitious requirements. Income improved by 20% and business results improved by 56% in 2013’* (Kiss, 2015:3).

As result of this growth strategy, BI-KA Logistics Ltd. is planned and the doubled its transport fleet in 2015. The Polish Plantex Case, which was founded at the beginning of 1980’s, is characterized by strong growth performance in the high-tech horticulture sector, too.

*‘In 1990, when a market economy was introduced in Poland, the company started developing more dynamically. The milestones in development were:*

- 1. 1997 - construction of a modern laboratory enabling sterile propagation, equipped with technologically advanced air filters and other high-tech equipment,*
- 2. 2003 – purchase of 3-5 ha of land near the City, in Village*
- 3. October 2008 onwards – implementation of GLOBALGAP®, a certified programme of quality assurance. This is a system of overall good agricultural practices aiming to protect the customer and environment.’* (Paszowska, 2015:1).

A growth strategy may focus on getting and keeping position in the niche market of the high-quality specialised product. This is the strategy of the Hungarian Fein Winery:

*'Fein Winery has no aspiration to reach a definite proportion of revenues coming from exports, however Fein wines could be found in the famous restaurants across Europe like the three Michelin star restaurant Fat Duck in London. The international market presence serves as a benchmark of quality. Direct orders are built on personal recommendations therefore reputation and quality has a high importance' (Gubányi, 2015: 4).*

A similar growth strategy characterises the British Podiums Ltd. shifting from products of other firms to product development, manufacture and installation. As a result of the new strategy both the productivity and profitability of the business improved significantly.

*'It was at this time that Paul (owner and managing director) developed a new strategic plan for the business. The external market was changing, with fewer opportunities for distributors of access platforms and specifics of work. This was being driven by technological changes and the wide availability of online information for clients to use. Paul began to change the focus of the business from sales of other companies' products to the development of tailored design, manufacture and installation of specialist access platform solutions. With his son taking an active role in managing the operational part of this, the business moved away from sales and service and Paul began to consolidate the business. The business became more knowledge-intensive with a design office being established and the development of systems for producing bespoke solutions no matter how simple or complex. The result of the change in strategic direction has been a significant improvement in the productivity and profitability of the business' (Devins-Marran, 2015: 4-5).*

Risk averse or strategic conservatism is located on the other extreme point of the scale of SEW. This strategy is represented by the Hungarian Quality Meat Ltd. According to the researcher who made this case study, the risk adverse strategy of the owner/founder should be explained by his fear of losing control as the company grows in size:

*'... the company has no plans for future growth. They (both the owner/founder and his two sons as successors) would like to keep the present size of the company ... they do not plan to open new shops in another town. They would not have enough time to check the operation of the new shop(s) and they do not want to employ another senior staff member' (Szentesi, 2015:4).*

#### **4. Transferring Intangible Assets in the Succession process**

The psychological ownership reflects both the owner/manager's and the potential successors' way of thinking or mental dimensions in relation to the business, family and the community in which the FB is embedded. For example, the owner/founder of the Hungarian Quality Meat Ltd. stressed several times during interviews the importance of *directness, honesty and trust* and he treated his two sons as successors through this lens:

*'I am a straight man and I expect it from others, too. There is something of me in both my sons. Károly Jr. is tougher and more consistent than László, in whom I discovered my more emotional side' (Szentesi, 2015: 12).*

In the British Podiums Ltd. case for the owner/manager, the key role of the experienced and knowledgeable "core" staff (non-family key employees) and their *identity with the firm* became visible during the difficult period of consolidation and re-structuring of the business activity. This was the key motif in implementing an "Employee Stock Ownership Plan" (ESOP) for their key employees which operates as a powerful incentive tool.

*'A key element of this plan was to strengthen the ties with existing managers working in the business ... For a variety of reasons (not least achieving effective tax efficiency for the owner, employees and the company) an Employee Benefit Trust was established to transfer 10% of the business to eight key employees. When the*

*company makes a profit, the managers share in the profit equally under this scheme. The “Employee Benefit Trust” acts as an incentive for managers to help make the business more successful and encourages retention, whilst maintaining the principle of family ownership’ (Devins-Marran, 2015:4-5).*

The Polish Plantex Ltd. is operating a highly-advanced micro planting plant, where the extremely rich professional experiences of the founder/manger guarantee the safe operation of the firm and at the same time demonstrate the key role of the *family ties in the collective learning process* resulting in a strong professional identity of the family members.

*‘The whole family perceive the family business as a bedrock and source of their professional identity. That’s why the position of Antoni, the founder and owner is so strong. Not only has he built a sound business but the family admires him for enormous professional knowledge, expertise and willingness to share it with the new generation. His leadership style is strong and individual, but he has no problems with delegating or sharing responsibilities. If there is any reluctance towards undertaking managerial duties, it’s due to the successors’ unwillingness to take over rather than any barriers on Antoni’s side’ (Paszowska, 2015:8).*

The Hungarian Fein Winery Ltd. case study is a good illustration of, how the FB firm is developing a *wide national-international network and social responsibility* to improve the economic performance of the local economy. Social responsibility is “transferred” and “maintained” by the family members (e.g. wife or, successor son) and not limited to the activity of the founder/owners. However, his example is an important driver in developing a strong identity with the *community of the wine business*.

*‘The founder manager, Tamás has begun to establish a social network and take responsibility for the local community after founding the family company in 2003. In various wine related organizations the founder manager plays a central role. An excellent example of this initiative is the so-called Etalon, a blend of four winemakers’ wines from the region...’(Gubányi, 2015: 6).*

## **5. Trust-based Social system in the FB: Its Strength and Risks of Erosion**

According to the literature of the FB one of the most important advantages of the family firms is the high level of social-cultural control – based on trust relations – which bind together both family and non-family employees in a common purpose.<sup>5</sup> The trust-based relations are the sources of the exceptional strength of FB, which often help the firm in navigating during the periods of severe economic difficulties. In this relation it is necessary to stress that, “... family firms are stronger than other type of business in the social capital, offsetting the weakness in human and financial capital to show the same or even better performance.” (Goto, 2014:8)

However, it is necessary to indicate the long and difficult process of trust building and consider the risks associated with its fast erosion. In this section, we intend to demonstrate both the positive impacts of the trust based strong ties and also their negative side effects resulting from a violation of trust in the business practice. According to the experiences of Polish FB literature review, ‘... close relatives (e.g. parents and offspring) have heightened inter-personal emotions because they care deeply about each other’s feelings and about

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<sup>5</sup> Trust and its anticipated positive impacts became rather popular in recent Hungarian economic literature. However, there are few attempts to develop and use concepts and indicators based on the consent of the community of social scientists. Our knowledge is even more limited on the time-consuming learning process of trust building by social actors in the field investigated (e.g. preparation of the succession process, developing common entrepreneurial actions, etc.). Due to lack of space and time, we intend only to outline some basic characteristics of the trust building process. Tolerance of one another’s interests and endeavours is only one component of trust. „This mutual respect for one another’s interests can be called ‘moral competence’. It’s abiding presence along with a second component – the partners’ professional competence, including work discipline – guarantee the long-term advantages of trusted relations. A third dimension of trust was time, which is in effect tantamount to testing the participants’ moral and professional competence and is seen as a period in which relations are based on mutual dependence, as opposed to unilateral dependence” (Kuczzi-Makó, 1997:183).



how they are perceived by each other. These emotional links can present advantages for family firms, as they can include loyalty, mutual understanding and trust, but they can also lead to misunderstandings and have a negative impact on the performance of a family firm' (Surdej, 2015:20).

The trust based strong social-cultural control in the FB – as British experiences indicate – has also a negative side of the coin when, “self - conflicting messages ... among family members through ongoing social interaction... giving rise to the confusion, frustration, disappointment, rivalry and emotional trauma that is commonly experienced by business founders, successors and other stakeholders, including family members and non-kin employees.” (Devins, 2015:27).

Polish family operating in the engineering and metalworking sectors adopted an employment practice supporting building up trust relations between family and non-family members in the company:

*‘The company has its own code of behaviour and all employees subscribe to it. The basic principle in the company relates to treating employees with respect. This includes providing proper remuneration, opportunities to gain new qualifications and support in times of personal hardship. Family members are close to and supportive of each other. All of them subscribe to the values described above’ (Konopacka, 2015:6).*

According to the Polish experiences, ‘... a family firm should avoid ambiguity between treating non-family members as if they are co-owners in times of sacrifices (expecting from them wage restraints) and treating them as dependent workers in times of prosperity (not sharing with them the benefits/profits)’ (Surdej, 2015:25).

This kind of ambiguity of owner-managers’ expectations in relation to non-family members may destroy one of the most important intangible assets in the FB: the trust-based social relations as a source of exceptional-long-term commitment of employees towards the firm. The anticipated result would be the following: short-term financial transaction (‘cash-nexus’) will replace the reciprocity-base regulation of employees’ behaviour in the firm.

## **5. Survivability of FB: the Key Importance of the Transferring Generic Human Values**

Survivability of the FB could be interpreted as a set or ‘... a combination of human, social and financial capital, working in a way that distinguishes family from non-family businesses’ (Devins, 2015:24).

In identifying the various components of the human and social capital it is worth stressing the importance of such values as openness, motivation to personal development and eagerness to learn and therefore support the beneficial effect of lifelong learning in regard to the survivability of the firm. The company cases illustrate well how these generic values function in business practice in shaping the complex and time-consuming process of succession. In the case of the Hungarian BI-KA Logistics Ltd, for the owner,

*‘... core human values are openness, learning behaviour, the need for development, respect and humility, acceptance of others, and beyond the materialistic world, how to give. Now I am able to give, but for this I need a management team who operate the system. If they run the company properly, I will be able to live this life in line with the values’ (Kiss, 2015:4).*

The continuous learning – formal training and ‘learning by practicing’ - are decisive factors in guaranteeing the sustainability of the British Podiums Ltd. too.

*‘Learning generally plays a key role in the sustainability of the business, and Podiums Ltd. supports the professional and technical development of their workforce, providing time off work to study and paying course fees where appropriate. However, much of the learning is on the job, with coaching and mentoring by peers*

*and leaders a key element of work-related and personal development. Progression is supported in the business with, for example, welders moving on to design positions and shop-floor workers being promoted to supervision and management positions' (Devins - Marran 2015:6).*

The rich theoretical and practical knowledge of the founder/manager and its smooth transfer to the next generation (NxG) or organisational (collective) learning are the key factors in the successful succession process in the case of the Polish Plantex Ltd:

*'Knowledge transfer is absolutely the key issue ... Antoni (founder/manager) willingly and enthusiastically keeps passing his incredibly broad knowledge to his family successors, while they are keen to learn and develop it as well as they can. All the family members have been taught from childhood and have it deeply ingrained in their minds that what each of them learns or finds out belongs to the family and may contribute to their prosperity' (Paszowska, 2015: 9).*

In another Polish case, the WAMECH Ltd founding owner

*'... has always underscored the importance of such values as honesty, reliability and respect for another people in business activities. Respecting these values helped him to gain the trust and respect of his employees' (Konopacka, 2015:6).*

A rather similar value system characterises the other Polish case, WITEK Centre:

*'In Karolina's family, universal values, such as respect for other people, their dignity and opinions, have always been very important. This has helped ensure good relations between family members, the people managing the companies and their employees' (Konopacka, 2015:5).*

Successful transfer of generic human values may not only strengthen both social and psychological ties in the FB but result in a strong identity with the family members. The family identity is further cemented by the strong ties with both professional and local communities, too. In this relation it is necessary to call attention to positive impacts of the Employees Stock Ownership (ESOP) and Management Buyout (MBO) schemes, which offering to the key non-family members a stock ownership in the family firms. According to the experiences of the British "Podiums Ltd." company, this kind of social innovation ('shared ownership') may intensify the commitment and loyalty of non-family members with the family-members.

All company case studies without exception indicated the core importance of assets of SEW and their smooth transfer in the forms of generic values (i.e. honesty, openness, correctness, reliability etc.) between various generation in the business transfer. These intangible assets to be passed to the next generation are often underestimated in the succession: *'... transferring the physical entity of the business itself may be less crucial than the transfer of its core values, such as entrepreneurial spirit, or of creating opportunities in general for the next generation, which can be facilitated by the building up of family (socio-emotional wealth) through business ...'* (Devins, 2015:24).

Risk taking or adverse attitudes, psychological ownership, social systems and values and knowledge transfer represent the multifaceted character of the SEW that shapes the complex and time consuming process of succession. Assessing their diverse outcomes in light of the company case study findings, it is worth stressing again the role of the radically changing social-economic environment both locally and globally. It is rather risky to assess beneficial or harmful effects of SEW without knowing the context of business operation. Not denying the well-known competitive advantages of the FB derived from its „patient capital” nature (e.g. dominance of the longer view, stable client relations based on truth etc.) we have to insist that *'...in today's economic climate family businesses acknowledge they will have to adapt faster, innovate earlier, and become far more professional in the way they run their operations'* (Global Family Business Survey, 2014:5).

In addition, we have to note that there is another particular characteristic of the SEW as intangible asset: it is almost impossible to copy by the firms' competitors.

## Concluding Remarks

Among the internal challenges in the FB in the next five years, the importance of the 'succession/ business transfer' issue was indicated by more than one third by the firms surveyed in the Global Family Business (2014). The other more important internal challenges are as follows: 'permanent innovation'; 'hiring and keeping talents and key staff'; and 'implementing new technology'. However, comparing these challenges between 2014/2012 we may say that the highest increase took place in the cases of 'need for new technology' and 'company succession planning'.

Illustrating the significant effects on employment for this issue, in Europe, annually almost half a million family firms facing this challenge employ almost 2 million people. Due to various difficulties analysed in the INSIST project, too '*... an estimated 150 000 businesses are forced to close each year with the loss of some 600 000 jobs*' (Niebler, 2015:13). Situation is rather similar in Hungary where in the near future, more than every second firm is facing the challenges created by the succession/business transfer. (Napi.hu, 2016)

Instead of the maximising the financial outcomes of the economic activity, the core aim of the FB is the survivability or longevity resulted by the right mix of human, social and financial capital. Reviewing the literature on the succession process we may say that relatively few attempts were made to better understand the key role of transferring such intangible assets as generic human values, embedded collective knowledge in the firm, etc. which, are essential components of the SEW. Due to this knowledge shortage, this chapter focuses on the illustrations of these assets in the business transfer.

For the better understanding the role of SEW, the authors are making distinction between its 'narrow' versus 'broader' versions, which may have significant impact not only on the commercial outcomes, governance arrangement but on such characteristics of SEW as entrepreneurial attitudes, trust-based social system, responsibility for the local community, networking, etc. Among them, the most important values are the entrepreneurial spirit and risk taking attitudes. In this relation is necessary to distinguish groups as 'necessity' and 'opportunity' entrepreneurs especially in Hungary and Poland.

To overcome the methodological shortcomings of literature survey and company case studies carried out in the INSIST project countries – Hungary, Poland and U.K. – we may recommend to test in the future by large-scale surveys the share of risk-taking or risk-adverse (or pro-growth/innovation or counter-growth/innovation) attitudes of the entrepreneurs in FB sector.

In relation with the transfer of intangible assets the company case studies indicated the importance treating employees with respect, closeness, mutual respect and supportive behaviours of owners/managers during the succession process. In addition, the successful transfer of such generic human values to the next generation of owner/managers as honesty, reliability, respect for other people's opinions and needs may contribute to maintaining the trust-based social system and cultural control. The trust-based social relations are playing key role in strengthening unique social capital in the FB, which may counterbalance its weakness in human and financial capital producing the same or better performance in comparison to the other types of business.

The results on the transfer of SEW of the countries participated in the INSIST project are not significant statistically, but shed light on its significant role and impact in the complex and dynamic process of the business transfer. Due to the unprecedented challenges of the succession in the life of the FB both in the EU and especially in such New Member States as Hungary and Poland, it would be advisable to launch large-scale surveys on the role of tangible (physical) and intangible (i.e. SEW, etc.) assets in the intergenerational succession process. In the EU the last large scale survey on the various features of the FB was carried out almost a decade ago (Mandl, 2008). Moreover, the better data collection on the succession/business transfer – ideally - requires the combination the large-scale surveys with the collective or multi-site company case studies. This kind of international research experiences may help to develop evidence instead of anecdote-based policy formation on the succession process both at EU and national levels.

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## Annex 1

### **II. 2. Short description of the company cases investigated<sup>6</sup>**

**BI-KA (HU):** Established in 1991, BI-KA Logistics provides domestic and international freight services and transportation, rail transportation, as well as transport of oversized, air, container, marine or dangerous goods, warehouse logistics services, full customs clearance, cargo insurance and consultancy in logistics. The business is exclusively business-to-business in nature and serves its' customers in 30 countries, mainly in the European markets. The company is continuously growing, and currently employs 103 people with a turnover of 16 million EUR, which means a 20.7% increase compared to the previous business year. To improve profitability, BI-KA Logistics plans to double its' vehicle fleet in 2015 and concentrate more on freight services. In 2010, after 20 years of intensive work György Karmazin, the founder of the company, was exhausted from the long working hours and started to think about making an academic carrier. He realized that he couldn't study and lead the company at the same time. At the age of 44, he decided to step back from the leadership. Since György's 2 children were too young for the succession, he decided to support someone from his own management team becoming the successor.

**DOMEX (PL):** The founder, Tomasz inherited two factory buildings and started to run his own enterprise in them in 1989. The company rents apartments, office and commercial space and operates as a developer. Currently the company employs 20 people. They are administrative employees and maintenance team workers. They are all employed with full time contracts. The company helps them gain new qualifications through training and conference participation. The wife and daughters of the doyen are company shareholders, but he remains a shareholder. His aim is to introduce his family members to running the business so that when he decides to leave the company, they will know how the company works and what projects and issues are of key importance to company success. Aside from her involvement in the company, the doyen's wife has her own business venture – a small bookshop. His older daughter completed a variety of studies and worked for a time at the university, but opted to join the company. She runs the branch concerned with letting apartments. His younger daughter runs a restaurant located in the company building. She established the restaurant herself and works to develop it further.

**Fein Winery (HU):** The winery was founded by Tamás Fein, who worked as economist, vintner, corporate leader, bank account manager at that time. The Fein couple decided to develop the wine cellar and press house in 1998. They bought 11 ha field and their estate was broadened to 21 ha in 2002. Fein Winery was officially founded as Limited Liability Company in 2003. The Fein family produces traditional, quality wines. The territory of the vineyard is 21 ha. The production results an average of 130 000 bottles per year. The wines produced from red grape varieties are merlot (5 ha), cabernet franc (4 ha), blue franc (4 ha), kadarka (2.8 ha) and syrah (1.2 ha). They have viognier (1.1 ha), pinot noir (0.6 ha), sagrantino (0.5 ha), tannat (0.5 ha), and portugieser (0.3 ha). The Fein Winery's distribution channels are a wine company<sup>7</sup> and its own sales channel. They operate ten shops in Budapest and five in other cities. Their own sales channel organizes wine tastings, dinners and an annual celebration. The founder and manager, Tamás and his wife, Zsófia, have two sons, the elder one is Károly, who will be the successor.

**Parodan (UK):** Parodan is a design and manufacturing company that produces special purpose production line machinery primarily for the Food and Drink, Automotive and Medical sectors of the economy. They have a diverse product range including robotics, ultrasonic welding, ultrasonic cutting, conveying and advance handling and control systems. Their main market is domestic business to business, with the food and beverage industry currently accounting for about 60% of their turnover. Harry Wood, the owner and founder of Parodan Engineering Ltd, started his career as a maintenance fitter. After retirement age, he decided to leave from the company. Harry and his wife are still the majority shareholders. All three of their sons have

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<sup>6</sup> The descriptions are based on the company case studies compiled by the INSIST project team members.

<sup>7</sup> With a number of award-winning wine store chain operates in Budapest and in other five towns for over 20 years.

worked for the company at some point and two remain fully engaged, currently holding directorships in the company. Since 2012, the new MD (Harry's son Paul) has restructured the company, appointed a board of directors, modernised production and stabilised the finances

**Pillar (PL):** The Pillar company was set up in the Eighties in Krakow, Poland, as a micro-business offering small refurbishing and construction services. Martin and Helena founded the business at the age of 35. At first the company based its existence on the housing deficits on the Polish construction market, but in the Nineties its profile changed into a 'classic' developing business: they bought land and built apartments and commercial premises for sale, mainly in Krakow. At present the company employs 70 people. They are highly qualified specialists, who have been with the company for many years. The owners have two sons working at the firm and the company will be inherited by them.

**Plantex (PL):** Plantex Horticulture Farm has been on the market since 1981, and since its beginning it has been dealing with innovative plant propagation. The company offers high quality products: young, healthy plants for further cultivation in nurseries and on plantations. At present the farm employs 81 people on a regular, full-time basis, and sells around 4 m cultivars per year. The plant hosts administration buildings (150 sq. m), laboratory warehouses (300 sq. m) and 1 500 sq. m of glasshouses. The village premises comprise a 1200 sq. m production hall and 7500 sq meters of land under foil. The founders have three daughters. The two elder ones have their own businesses and the youngest one is about to take over the business with her husband.

**Podiums (UK):** Paul Morton started out as a scaffolder working in the construction industry. In 1977 he saw an opportunity to collaborate with a business partner to establish Podiums Ltd. to hire out, and later sell, scaffolding equipment. During almost 40 years of operation Podiums Ltd. has been through a number of phases of growth and consolidation. The company website describes Podiums Ltd. as 'a leading company that provides workplace access solutions'. The company designs and manufactures bespoke access equipment and specialised tubular structures using aluminium, steel and fiberglass. The products are designed and fabricated to customers' particular requirements and to meet prevailing industry standards. Podiums Ltd. currently has a turnover of approximately £4m p.a., employs 29 people and has plans for further organic growth in the short to medium term. After a family incident Paul decided to step down from direct management and to delegate leadership to his son, Tim.

**Quality Meat (HU):** After having become unemployed due to the dissolution of the Farmers' Co-op, the two owners Károly Kovács and his wife decided to buy an old slaughterhouse and meat processing plant from their savings in 1992. The company started to grow and in 2004 a new and modern slaughterhouse was built and the meat processing unit was also revamped. The company's main line of business is meat processing and preservation. Every day an average of 100 to 130 pigs are slaughtered and processed depending on seasonality. The total capacity of the slaughterhouse is 60,000 pigs per year. The couple have two sons who joined the business and gradually took over daily management. The founder only kept control over finances.

**WAMECH (PL):** Prior to establishing the WAMECH Company, Piotr Wąsik worked as a designer in the Krakow-based Centre for Research and Development for Construction of Chemical Installations in Krakow and later, as an engineer in the Tobacco Factory in Krakow. He then moved to the private sector, joining a private developer, where he was responsible for financial issues, customer care, cost calculations and project implementation. The experience he gained prepared him thoroughly for running his own business. The WAMECH Company was founded in 1989. The company manufactures machines which improve the economics of production processes in accordance with lean manufacturing principles. The main focus of operations is on the design and production of road transport vehicles and industrial trucks used for materials handling. From the very start, the company has operated as a family firm. Piotr's father-in-law is the engineer Józef Kielar, who helped construct the first prototypes. At the beginning, the business was based on Piotr's own work and that of family members. It took quite a while to establish a design team. Piotr's wife, also an engineer, joined the company to look after the company's finances and to support her husband. Piotr and his wife have three children and have always dreamt that one day their children would take over the company.

The owner started preparations for the succession process some time ago, but the process had to be speeded up due to his illness. In 2010, his son, Wojciech, became the managing director just as the company celebrated 20 years of operation.

**WITEK Centre (PL):** During Poland's economic transformation, which began in 1990, Karolina and her husband started a trading business. They started with a small shop (20 sq. m) in the centre of Krakow, in which they sold china and glass crockery. As time went on, they managed to utilize another part of Karolina's parents' property, which extended their business activity. Growing demand for the furniture they were selling encouraged them to rent more and more retail space and their company continued to grow. The last stage of business development involved building a modern retail centre in the vicinity of Krakow, which continues to be expanded and developed. The company is active in the retail sector, selling furniture. Company assets were divided between Karolina and her children at an early stage. Today, each of them runs his or her own business independently, as separate legal entities.

### Main characteristics of the company cases investigated

	Country	Year of est.	No. of employees	Sector/Activity	Markets	Succession
<b>Parodan</b>	UK	1984	27	Engineering (design & manufacturing)	National	*
<b>Podiums</b>	UK	1977	30	Fabricating	Regional	*
<b>DOMEX</b>	Poland	1989	20	Real estate	Regional	**
<b>Plantex</b>	Poland	1981	81	Horticulture	Domestic / International	*
<b>Pillar</b>	Poland	1980s	70	Construction	Local	***
<b>WAMECH</b>	Poland	1989	77	Manufacturing (automotive)	International	***
<b>WITEK</b>	Poland	1990	260	Retail trade (furniture)	Regional	*
<b>Fein Vinery</b>	Hungary	1991	4	Food (wine producing)	Domestic / International	*
<b>BI-KA</b>	Hungary	1990	103	Logistics	Domestic / International	**
<b>Quality Meat</b>	Hungary	1992	45	Food (meat processing)	Local	**

\*Management transfer completed without ownership transfer

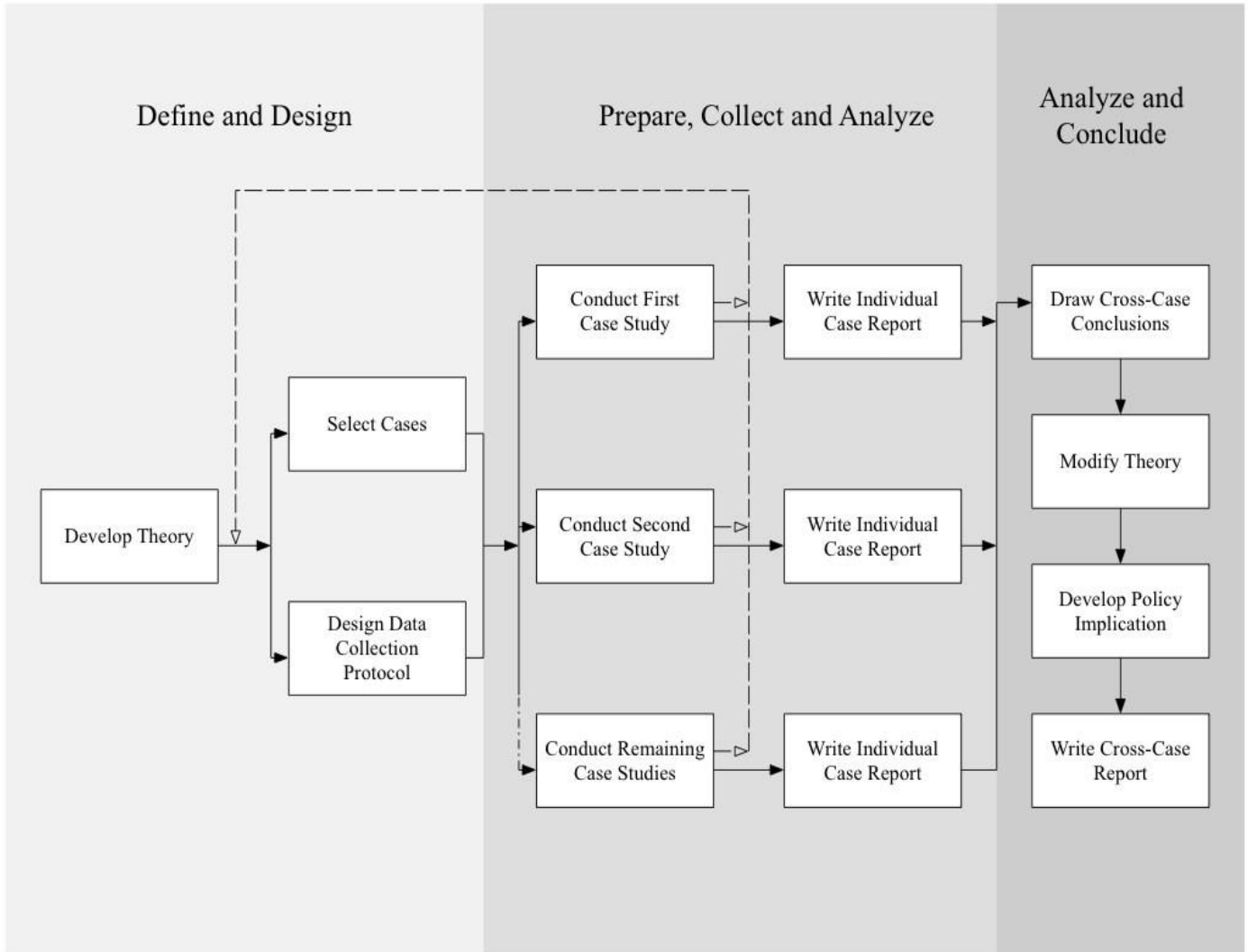
\*\*Management and ownership transfer under process

\*\*\*Management and ownership transfer completed



## Annex 2. Case Study Methodology – COSMOS Corporation

(Yin, 2009, p.57) Yin Case Study Research Design and Methods, in: Tomory, 2014 62)



## Reference 17 (Presentation)

Csaba Makó – Péter Csizmadia – Balázs Heidrich

### ***Socio-Emotional Wealth (SEW) as a Key Factor Shaping the Sustainability of the Family Business***

15th International Entrepreneurship Forum (15th IEF) Conference  
*The Globalization and Internationalisation of SMEs AND New Ventures:  
Travels with Eclectic Charlie, Digital Mary, Networked Nadia and  
Impactful Shona*  
Venice, Italy, 14-16 December, 2016.

### **Agenda**

- 1: The Context of the Family Business (FB)
  - 2: Brief Presentation of the INSIST (Intergenerational Succession in SMEs Transition) Project
  - 3: Concept of SEW: Its Narrow versus Broader Views
  - 4: Transferring Intangible Assets in the FB
    - 4.1. Trust-based Social System in the FB: Its Strength and Weakness
    - 4.2. Survivability of FB: Decisive Impacts of the Transferring Generic Human Values
  5. Opportunity and Necessity Entrepreneurs and their impact on the risk-taking
- Concluding Remarks

## 1: The Context of the Family Business (FB): survivability of the FB (1)

- **Pessimistic scenario**, *The Economist* anticipated in 2014: ‘... the hereditary principle fade fast, because of the greater ability of professionally-run public firm to raise capital and attract top talent.’ **Reality**: ‘...in 2025, FB from the emerging world will account for 37 per cent of all companies with annual revenues of more than UDS 1 billion, up from 16 per cent in 2010.
- **Age structure of business firms** – including FB – **in Europe will be older** with the following effects: ‘... older business firms are less innovative, and less dynamic, and less likely to employ new labour than younger firms. ((Naudé, 2016:6)
- In the **next year, more than two thirds of FBs expect changes in both ownership and management in the EU**. According to the European Commission’s ‘Entrepreneurship 2020 Action Plan’, ‘...the transfer of business ownership with the transfer of management from one generation to the next, is the greatest possible challenge facing family business.’ (Nieber, 2015: 8).

## 2: Brief Presentation of the INSIST (Intergenerational Succession in SMEs Transition) Project: participants and the methodology (2)

INSIST Project’s **participants** (<http://insist-project.eu>):

- Budapest Business School – coordinator (Hungary) (P1) (co-ordinator)
- Krakow University of Economics (Poland) (P2)
- Leeds Beckett University (U.K.) (P3)
- MAC-TEAM, Belgium (P4)
- AdInvest (France) (P5)
- MGYOSZ (Hungary) (P6)
- Employers’ Union of Malopolska LEWIATAN (Poland) (P7)

### **Methodology:**

1: **Secondary data analysis** the State of the art literature review on the succession process in the FB,

2: First hand company case study experiences. Instead of single-case study method the research consortium used the so-called **multi-case or multi-sites case study strategy** relying on the experiences of ten company cases carried out in the three countries – Hungary, Poland and the U.K.

2: Brief Presentation of the INSIST (Intergenerational Succession in SMEs Transition) Project: Main characteristics of the company cases investigated (3)

	Country	Year of Est.	No.of empl.	Sector	Markets	Succession
Parodan	UK	1984	27	Engineering	National	*
Podiums	UK	1977	30	Manufacturing	Regional	*
DOMEX	Poland	1989	20	Real estate	Regional	**
Plantex	Poland	1981	81	Horticulture	National/International	*
Pillar	Poland	1980	70	Construction	Local	***
WAMECH	Poland	1989	77	Automotive	International	***
WITEK	Poland	1990	260	Retail	Regional	*
Fein winery	Hungary	1991	4	Food	National/Inter.	*
BI-KA	Hungary	1990	1030	Logistics	National/Inter.	**
Quality Meet	Hungary	1992	45	Meet processing	Local	**

\*Management transfer completed without ownership transfer

\*\*Management and ownership transfer under process

\*\*\*Management and ownership transfer completed

3: Concept of SEW: Its Narrow versus Broader Views (Miller-Le Breton-Miller, 2014:717) (1)

	Restricted SEW	Extended SEW
SEW priorities	Permanent job security and access to business resources for all current family members	Long-term well-being of motivated later generation, able and willing to nurture the firm
Core stakeholder	Immediate family	The family over time, the business and all its stakeholders
Form of governance	Family dominated leadership and governance – regardless of capability	Competent, motivated family members only, balance between family and non-family executives and directors
Strategic outcomes	Strategic conservatism, sparse investment in the business, risk aversion, family extraction of funds from business	Generous investment in product and processes, continuous reinvestment in the business and its renewal
Commercial output	Inferior growth and longevity	Superior growth and longevity
SEW output	Nepotism, entrenchment, family control of firm	Family pride in their offering(s) and relations with stakeholders and the community

#### 4: Transferring Intangible Assets in the FB

##### 4.1. Trust-based Social System in the FB: Its Strength and Weakness (1)

- 1: Trust based economic behaviour:** ‘... acting according to principle of trust does not imply that people cease to act in self-interest, rather, it means a specific, broader understanding of self-interest which includes welfare of others, and one’s own welfare in the future’ (Pyke-Sengerberger, 1992:20)
- 2: FB: high-level of social-cultural control – based on trust relations –** which bind together both family and non-family employees in a common purpose.

##### **Positive, loyalty-building role of the trust:**

*‘Founding owner has always underscored the importance of such values as honesty, reliability and respect for another people in business activities. Respecting these values helped him to gain the trust and respect of his employees.’ (Polish, WAMECH Ltd.)*

##### **Destroying trust by the ambiguity in the family and non-family members’ relations:**

*FB should avoid ambiguity between treating non-family members as if they are co-owners in times of sacrifices (expecting from them wage restraints) and treating them as dependent workers in times of prosperity (not sharing with them the benefits/profits).’ (Surdej, 2015:25)*

##### 4.2. Survivability of FB: Decisive Impacts of the Transferring Generic Human Values (2)

Generic human values key role in the survivability of FB - extracts from company case studies:

*‘... core human values are openness, learning behaviour, the need for development, respect and humility, acceptance of others, and beyond the materialistic world, how to give.’ (Hungarian, BI-KA Logistics Ltd’s owner)*

*‘Knowledge transfer is absolutely the key issue ... Antoni (founder/manager) willingly and enthusiastically keeps passing his incredible broad knowledge to his family successors, while they are keen to learn and develop it as well as they can. All family members have been taught from childhood...’ (Polish Plantex Ltd.)*

*British experience: ‘... transferring the physical entity of the business itself may be less crucial than the transfer of this core values, such as entrepreneurial spirit, or of creating opportunities in general for the next generation...’ (Devins, 2015:24)*

## 5. Opportunity vs. Necessity Entrepreneurs and their Impacts on Risk Taking Attitudes (1)

Risk taking and loss adverse attitudes have different meaning in **short and long-term perspective:**

-Loss/risk averse attitude of FB **in the short run** result in growth and **innovation-resistant behaviour.**

-In a **long-term perspective**, 'patient capitalist' attitude should be interpreted as a **support of the well prepared**, evidence-based and tested **exploitation of the opportunities** via growth and/or innovation.

This attitude of FB shaped by the SEW priorities of various types of entrepreneurs and generations. In this relation, it is worth to make distinction between the following two broad categories of entrepreneurs:

- (1) **Opportunity**
- (2) **Necessity entrepreneurs**

## 5. Opportunity vs. Necessity Entrepreneurs and their Impacts on Risk Taking Attitudes (2)

1. **Opportunity entrepreneurs:** '... main motif is the desire for 'independence' and desire to work for themselves'. (Mascherini-Bisello, 2015:13)
2. **Necessity entrepreneurs:** '... are pushed into entrepreneurship because they have no other employment options.' (Mascherini-Bisello, 2015:13)

*Necessity Entrepreneurs in the INSIST Project Countries* (Op.cit.14)

Project countries	35 – 64 year old entrepreneurs	18-34 year old entrepreneurs
Hungary	37 %	23 %
Poland	38 %	42 %
U.K.	21 %	14 %
EU-28 average	28 %	17 %



### 5. Opportunity vs. Necessity Entrepreneurs and their Impacts on Risk Taking Attitudes (3)

Various generations of the 'necessity entrepreneurs' in CEE countries:

**1: First generation** of the 'necessity entrepreneurs' of the early 1990's: was the outcome of the mass privatisation:

*'My old workplace in the co-operative's slaughter house and meat processing plant, closed down...My wife and I had a little money saved and we started our micro-enterprise in 1992.'* (Szentesi, 2015:5)

**2: Second generation** of the 'necessity entrepreneurs': an elder son of the second generation Polish entrepreneur became dissatisfied with the large international company's employment practice and left it for the FB of his parents and became a potential successor to: *'...the older son was a bit disappointed with the work at the large global corporation and that was the main reason to change his mind (i.e. to leave the international firm and work at FB in the future). He gained significant business experience by working for the corporation and obtained an MBA management degree.'* (Gorowski, 2015:5)

### 5. Opportunity vs. Necessity Entrepreneurs and their Impacts on Risk Taking Attitudes (4)

**1. Risk averse or strategic conservatism** characterised the 'necessity entrepreneurs':

*'... the company has no plans for future growth ... they do not plan to open new shops in another town. They would not have enough time to check to operation of the new shop(s) and they do not want to employ another senior staff member.'* (Szentesi, 2015:4)

**1. Growth strategy** found among the 'opportunity entrepreneurs':

*'... Fine wines could be found in the famous restaurants across Europe, like the three Michelin star restaurant Fat Duck in London. The international market presence serves us a benchmark of quality. Direct orders are built on personal recommendations therefore reputation and quality has a high importance.'* (Gubányi, 2015:4)

### Concluding Remarks

- 1: Comparing the 2014 and 2012 Global Family Business Survey (GFBS), in relations with the future challenges for the FB, the highest increase took place in the cases of 'company succession planning' and 'need for new technology. According to the GFBS-2014, more than one third of FB firms indicated that **'succession/business planning' is one of the most important internal challenges in the next five year.**
- 2: Annually, almost **half a million FB facing this challenges** employ almost 2 million people. An estimated 150 000 FB are forced to close each year with the loss of some 600 000 jobs. (Niebler, 2015:13)
- 3: The experiences of the INISIST project countries shed light on the **significant role and impact of the SEW** in the complex and dynamic process of the **business transfer.**
- 4: **Trust-based social relations** are playing key role in strengthening **unique social capital in the FB**, which may counterbalance its weakness in human and financial capital producing the same or better performance in comparison to the other type of business. (Makó-Csizmadia-Heidrich, 2016.)



# **The impact of environmental regulations on the business model of a maritime supply company**

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## **An Estonian case study**

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*Keywords: SECA Regulations, Business Model, Entrepreneurship, Clean Shipping, Strategic Management*

### **Abstract**

The International Maritime Organization (IMO) and the European Parliament (EP) in 2005 and 2012 established Sulphur Emission Control Areas (SECA) in Northern Europe where ships from 2015 must use fuel with a low sulphur content not exceeding 0.1% and 0.35% in non SECA. This has spurred active discussions that the regulation has created some economic disadvantages to maritime stakeholders who must comply with strict regulations competitors in other parts of the world are not subjected to.

This work investigates the impact of environmental regulations on the business model of maritime supply company. Based on a case study of Viru Keemia Grupp, a producer of shale oil which has a sulphur content that exceeds 0.1% and is currently faced with the challenge of a stricter regulation which imposes a lower sulphur content fuel from 3.50% to 0.50% by 2020 in non SECA, it further suggests strategic entrepreneurial compliance options available for VKG.

### **1. Introduction**

The sulphur emissions (SO<sub>x</sub>) regulation - "Regulations for the Prevention of Air Pollution from Ships" was imposed during the sixth Annex of the MARPOL (International Convention for the Prevention of Pollution from Ships) Convention of the International Maritime Organization (IMO). It was first adopted in annex VI of MARPOL, 35, in 1997 through the creation of the sulphur Emission Control Areas (SECA)s, limiting Sulphur emissions in these areas to be no more than 1.5% (15,000 parts per million (ppm)). This regulation also applies to other airborne emissions like NO<sub>x</sub>, ODS and VOC. This law became effective in 2005 but was further amended in 2008 to introduce more stringent rules, thus from 1 January 2015, sulphur emissions from ships in the SECAs cannot be more than 0.1% (1,000 ppm) (IMO, 2014).

On 1st January 2012, MARPOL annex VI also enforced a new global SO<sub>x</sub> cap for marine bunker fuels from 4.5 % (45,000 ppm) to 3.5% (35,000 ppm), for all ships that operate in non-SECAs (IMO 2015). The version of this directive also imposes all passenger ships in EU non-SECA waters to have a maximum 1.5% sulphur

content till 2020. At the MEPC 70th session held in London in October 2016, the SOx for bunker fuel was lowered yet again to 0.5 % (5,000 ppm) taking effect from 2020 (IMO, 2016). Meaning that, irrespective of the outcome of the IMO review in 2018, a ship does not have to operate in SECA before it pays attention to the sulphur content of the fuel it uses. In order to increase life expectancy and protect the environment by reducing acid rain and particulate matter which are dangerous to human health, the EU shipping regulations have also included waters and ports in the EU (Directive 1999/32/EC amended in Directive 2012/33/EU) which puts EU-sulphur limits to be the same as SECA's. This also includes any vessel at the quays in EU ports whether it falls in SECA or non-SECA.

Since the introduction of Sulphur Emission Control Area (SECA), significant changes have been seen with some vessel that operates in the Baltic Sea who now use fuel that is low in sulphur content (Bergqvist, Turesson & Weddmark, 2015). Despite the seemingly good changes witnessed, there have been discussions on how the sulphur regulation somewhat seems to have created some economic disadvantages to maritime stakeholders who must comply with strict regulation which competitors in other parts of the world are not subjected to (Notteboom, 2010). Another flank of the argument is the possibility that these regulations will weaken the competitiveness of European maritime transport especially in the modal shift of cargo flows from marine transport to inland transport routes (Wiśnicki, 2014; OECD/ITF, 2016). Already, the implementation has been speculated to cost the maritime sector between €2.6 billion and €11 billion by 2020 (AirClim, 2011). Although a disclaimer by Airclim (2011) cautioned that these costs are mostly likely to be overestimated because technology innovations to improve ship fuel efficiency as well as the downward fluctuations of fuel cost were likely not put into consideration in this estimation.

Affected companies usually respond to regulations and regulation accumulation by changing their strategies for the innovation process. Some of their responses are embedded in activities such as research and development, expansion, equipment upgrade and processes. This has triggered the discussions on the impact of the sulphur regulations on business models of maritime supply companies, especially maritime fuel producers who in recent times have been plagued with fuel downward price fluctuations alongside the usual sector challenge of speculations and economic forecasts, conflicts in different parts of the world, production estimates from the oil producing countries, stock levels, seasonality, weather and accidents (Nugraha, 2009). Fuel producers now have to deal with producing Marine gas oil (MGO) and Marine distillate oil (MDO) all of which are distillate oils and expensive to refine (Notteboom, 2010).

This study explores the economic impact associated with the sulphur regulation and by extension SECA regulation on enterprises using the case of Viru Keemia Grupp AS (VKG), one of the largest Estonian companies and a producer of shale oil which has a sulphur content that exceeds both the SECA and the global sulphur emission limit. Until 2015, VKG was able to produce shale oil as bunker fuel without restraints. Due to the strict MARPOL regulation, the company is presently faced with the challenge of producing 0.8% sulphur content fuel and a future stricter sulphur reduction of 0.5%. In order to meet the demand of the new regulations and to persist in a highly competitive market, going forward, VKG must make tough and strategic business decisions which are linked to high investments and serious financial risks in the maritime fuel market since successful value propositions are said to be embedded in great business models (Osterwalder & Pigneur, 2009).

The objective of this study is in two folds. First, it investigates the impact of sulphur regulations on the business processes of a maritime stakeholder using VKG a maritime fuel supplier as a case. By using the elements of the business model, it probes VKG business activities before and after the sulphur emission regulations by focusing on these research questions: What are the economic implications of the SECA regulation on the business model of the maritime company? Secondly, in the light of Panagakos (2014) summation that new regulations should encourage entrepreneurial innovation for business growth, this work will further seek to explore the possible strategic entrepreneurial compliance options for VKG.

This paper is organised as follows: Section II discussed the Sulphur regulations and the activities of the maritime sector stakeholders in their bid to comply with the environmental stipulations. Section III provides a theoretical analysis of the impact of accumulated regulations on business activities of enterprises using the Endogenous growth theory and the method used for the work. Section IV highlights VKG business processes,

its challenges, how it is coping with the sulphur and other environmental regulations and possible options for its continued success. Section V concludes.

## 2. Sulphur regulations compliance options

Regulations that are environmental induced usually spark a lot of interest. One of the significant benefits of environmental improvements regulations such as the sulphur (SO<sub>x</sub>) regulation is the reduction of the acidification damage to ecosystems, which is expected to reduce respiratory and cardiovascular diseases and increase life expectancy (AirClim, 2011). Some studies reported that international shipping produced about 80 times more SO<sub>x</sub> emissions than aviation in 2000 (OECD/ITF 2016). Sulphur dioxide (SO<sub>2</sub>) one of the compound states of SO<sub>x</sub> is described as a colourless toxic gas formed by burning sulphur in air through different process like manufacturing, shipping, aviation or volcano process. As a reactive gas, SO<sub>2</sub> reacts with other compounds to form secondary particles that have a bad consequence for the health of the inhalers (Duke Energy, 2016).

In its efforts to reduce the compliance costs, the European Commission has put forward a set of measures and has expressed its support for the promotion of innovations for new abatement technologies (IMO, 2013). Maritime stakeholders like ship operators and ports have also been forced to look for innovative ways to adhere to the stipulation of emission reductions from ships and at the same time stay afloat profit wise (Wiśnicki, 2014). On another hand, ship equipment vendors are venturing into ways of increasing their capital base and gain new business opportunities from it (EfficienSea2, 2016). Principally, two paths exist for shipping industry to comply: one is fuel switch to low sulphur fuels, including LNG and other alternative fuels, or second, to install exhaust gas cleaning devices, i.e. scrubbers in ships (OECD/ITF 2016).

Seemingly the easiest solution to the Sulphur Regulation will be to completely change the use of fuel to low sulphur fuel. However, according to OECD/ITF (2016), approximately 80% of the total bunker fuel is heavy fuel oil (HFO) with sulphur content that is higher than it is allowed in SECAs. One of the option to comply with the sulphur regulation will be for ships to travel with more expensive and cleaner low sulphur fuel (marine diesel oil (MDO) - a distillate oil, or marine gas oil (MGO) - a higher grade distillate oil that can be treated to reach a maximum sulphur content of 0.1% for short sea shipping in SECAs. However, ships that sail on other waters other than SECAs have the option to use higher sulphur content fuel rather than the 0.1% sulphur fuels mandatory for SECA whenever they are out of SECA (IMO, 2015). The use of the low sulphur content fuel does not require any major investments in remodelling ships, except minor adjustment of tanks and engines. And large ships could choose a hybrid solution that will allow them to switch between high- and low-sulphur fuels whenever they are within a SECA (Bergqvist, *et. al.*, 2015).

Liquefied natural gas (LNG) is another type of low sulphur content fuel that has arguably been widely accepted as a promising energy source for shipping in order to solve the sulphur content dilemma. The LNG is less costly when compared to distillate oil and heavy fuel oil, however, the costs of distributing LNG to ports and ships is very high and depends on the distance of the port from the LNG import terminals which is the method of distribution of LNG volumes (Brynolf et al., 2014).

The second abatement option is the use of the scrubber. This is a flue gas desulfurization (FGD) technology, which removes, or "scrubs," SO<sub>2</sub> emissions from the exhaust gas. Traditionally, the principle behind the scrubber is the reaction of slake lime- Ca(OH)<sub>2</sub> (a white caustic alkaline substance consisting of calcium oxide). When SO<sub>2</sub> combines with limestone and water with the production of heat the primary by-product is calcium sulphate (CaSO<sub>4</sub>, CaSO<sub>3</sub>) commonly known as synthetic gypsum - a recyclable product used in the manufacturing of wallboard and cement, and as a soil amendment in agricultural and construction applications (Duke Energy 2016; EfficienSea2, 2016).

A Ship Scrubber is a cleaning system that removes sulphur from the exhaust of ships that use heavy fuel oil (HFO). Through some technical consideration and upgrades, there are currently two major types of scrubbers: the dry and the wet scrubbers (OECD/ITF 2016). The initial investment costs of scrubbers range from EUR 2 to 8 million for a ship. The cost depends on certain features such as the ship type, scrubber type and new build/retrofit. Also, apart from the initial investment, operating the scrubbers increases the rate at which the

engine consume fuel and is estimated to increase between 1-3% (EMSA, 2010). The scrubber needs space for installation together with extra space for equipment for wash water, piping systems and monitoring on the ship making it possible to use the scrubbers only in large vessels (Bergqvist, *et. al.*, 2015).

### 3. Endogenous growth theory and the ripple effects of accumulated regulations

Endogenous growth theory builds on the premise that economic growth of a country is primarily dependent on decisions made by actors in the economy—firms and individuals—rather than on external factors (Barro, 1991). Because productivity growth plays an important role in any economy, any distortions that adversely affect entrepreneurial activities have great significances for the growth of any economy (Solow, 1994). The innovation that stems from these activities is the key driving factor for economic growth and social wealth. Innovative products and services emerge more often as a result of a cross-sectorial combination of technologies, design and business models (Olaniyi and Prause, 2016).

Furthermore, regulations are said to have cumulative effects. Supporting this theory, Jaffe, Peterson & Stavins (1995) said that regulatory decisions are too time-consuming and are often characterised by litigation and other legal power struggles that lasts for decades of reforms with more policies added to the existing ones leading to what they called transition costs. Regulatory interventions impact investment choices which ultimately have a great effect on the economy because the build-up of regulations over time often lead to duplicative, conflicting, and even contradictory rules, and the multiplicity of regulatory constraints complicates and distorts the decision-making processes of companies or stakeholders operating in such economy (Martin and Sunley, 1998). Affected companies usually respond to individual regulations and the accumulation by changing their strategies for innovation process which are embedded in activities such as research and development, expansion, equipment upgrade and processes. Governmental intervention through regulations often leads to disruptions of investment choices (Repetto, 1990). A lot of the costs embedded in regulations are indirect such as costs of new and changed personnel, materials purchased, legal costs, paperwork and the like. A single investment choice made a year has the ability to affect the proceedings of the coming years either. Wrong investment decision can cause an adverse setback, so also can indecision. Regulation imposes large direct and indirect cost on the stakeholders or more so at the society at large and it is crucial to balance the costs-benefits of such regulations by identifying and implementing flexible and cost-effective environmental policy instruments, whether it is conventional or the newer kind of market-based interventions because, if businesses are constantly subjected to avoidable expenses and investment it could lead to societal waste (Rebelo, 1991). Jaffe *et al.*, (1995) pointed out that innovation will always divert resources into R&D and that environmental regulations especially could impact productivity significantly when you consider the costs associated with reduced investments.

A major inference from endogenous growth theory is that the impact of government intervention on economic growth is not simply the sum of direct and indirect costs associated with each regulation. OECD (2005), explained that even though enterprises are constantly subjected to series of requirements and obligations through regulations, the regulations should not be seen in a negative light as these obligations are necessary legal impositions needed in order to regulate the manner in which businesses are being conducted putting the society at large in considerations. Regulations may not bring financial gains sometimes and to everybody, but they create a stability which invariably is connected to wider macroeconomic benefits such as GDP increases, competitiveness and productivity effect and other unquantifiable benefits, such as protection of fundamental rights, social cohesion, international and national stability the economy status of any nation (Rendal, 2013). It is important, therefore, that while the benefits of introduced regulations are being analysed, along with it, the economic impact, compliance costs as well as the administrative burden of such additional rules should also be measured. Earlier in 2016, before the new sulphur global cap was confirmed, OECD/ITF studies had shown that, if the 0.5% global sulphur cap was considered, the cost impact of the regulations will be substantial up to 7.5% increase in agricultural goods, 3.5% in manufactured goods and 16.4% for industrial raw materials. And because maritime transport costs make up a substantial share of the value of traded goods, this may trickle down to and translate to increase in the costs of traded goods. When regulations are constantly monitored lights are shed to places and areas that need adjustment or further governmental intervention and incentives (OECD, 2005).

## 4. Methodology and case study

The scope of this study is to explore the activities of a maritime fuel company in Estonia, in the Baltic region of Europe with the aim of studying the how its business activities were affected as a result of the Sulphur emission regulation and by extension the SECA regulations. VKG was chosen as a single study unit since a case study is one which investigates an individual, community or group to answer a specific question by seeking evidence that lies in the case setting (Gillham, 2000). The empiric activities are based on expert interviews, observations and case study methods which have been executed in the frame of the “EnviSuM” project during 2016.

Viru Keemia Grupp AS (VKG) is the largest oil shale producing company in Estonia. It is situated in Ida Viru County, a 148,00 populated area of Estonia. Estonia is a small country located in Eastern border of European Union (EU) close to the Baltic Sea with the population of 1.3 million. It used to be part of the Soviet Union up until 1991. Estonia is the least energy importation dependent country in Europe due to shale oil produced electricity (Eurostat 2016). Estonia predominantly uses 78.3% of solid fuels to produce energy - mainly oil shale. Oil shale covers about 65% of the country's needs for primary energy which has guaranteed the energy independence of Estonia. While the EU imports 53.4% of its total consumed energy as a whole, Estonia relied on only 11.9 imports for its energy requirements (Eurostat, 2016).

Oil shale industry contributes about 4-5% to Estonia GDP and about EUR 300M to the state budget (including employment taxes, environmental taxes) (Eesti põlevkivitööstuse aastaraamat, 2014). As a producer of shale oil VKG can be said to be one of the companies that have a significant impact on Estonia economy. In 2015, VKG's contribution to the state budget of Estonia was up to €35 Million and Company's total turnover was €167 million. From the turnover, € 87 million was contribution from shale oil alone (Table 1). VKG solely started as a shale oil producer but over the years have expanded and diversified its value chain to about 10 enterprises: oil, heat and power generation, heat distribution, electricity distribution, power system construction, oil shale mining, cinder blocks production, metal structures, pipelines and pressure equipment production, logistics, assemble and repair companies. As of 2015, VKG has employed over 2100 employees.

**Table 1: Business analysis of VKG from 2006-2015**

Year	Turnover million (€)	Shale oil contribution million (€)	Investment million (€)	Percentage of investment to turnover (%)	Profit Million (€)	Number of employees
2015	166.8	87	59	19.5	-31.9	2101
2014	195.2	128	98	50.2	19.8	2206
2013	220.4	146	90.9	41.2	26.2	2013
2012	215.8	148	65.9	30.5	26.2	2000
2011	183.6	124	51	27.7	37.4	1610
2010	125.5	83	34.4	27.4	19.2	1406
2009	107.5	59	39.9	37.1	9.2	1312
2008	131.5	78	77.3	58.7	14.7	1381
2007	114.2	62	49.5	43.3	18.8	1369
2006	97.1	55	29.0	29.8	19.1	1374

Source: VKG 2015 Financial statement (2015 Year book)

### Oil shale and Shale oil - Oil shale production

Oil shale is a sedimentary rock which in its mineral state contains a solid, combustible organic matter commonly called "kerogen" (Siirde, et al., 2013). As a solid material, it undergoes thermal treatment to produce shale oil and other products (coke and phenols). In VKG, the by-product waste gas formed in shale oil

production is used as a fuel for heat and power co generation. The produced shale oil is useful as a quality-improving supplement for HFO or diesel supplement in industrial boilers and furnaces. Oil shale (raw material) in its solid state is extracted from underground mine of VKG Ojamaa mining site. Over 3.4 million tonnes of commercial oil shale of both fine and coarse grade is produced annually from Ojamaa mining activities.

After mining, oil shale is transported to Kohtla-Järve for processing in approximately 52 minutes with a 12.5 km conveyor (a piece of mechanical handling equipment that transport heavy and bulky materials from one end of location to another at production sites). VKG uses two types of technology to produce shale oil: The **Kiviter technology** (a gaseous heat carrier) and the **Petroter technology** (a solid heat carrier method). Thus shale oil is produced from a low-calorific (8-8,5 MJ/kg) and fine-grain (0-25mm) oil shale (Petroter technology) or from oil shale with higher calorific value (10-13 MJ/kg) and larger fraction (25-125 mm) (Kiviter technology). Figure 3 shows an integrated production diagram for a typical production of shale oil in VKG. The Kiviter technology plant is a historical heritage on the VKG oil Processing site while the first Petroter plant was commissioned only in 2009.

In the thermal treatment, about 50-57% of oil shale energy is converted into liquid product (shale oil) energy while about 15-17% of oil shale energy is converted to gaseous by-product (waste gas) energy. The heat recovery process in Petroter technology adds another 7-8% to the energy yield and the production of the solid by-products (mainly coke products) adds about 4 % energy yield. The gaseous by-product is used as fuel in the combined heat and power (CHP) plant. In order to increase its energy production efficiency, a €20 million investment was made in an 18km Kohtla-Järve – Ahtme district heat pipeline to supply district heat (DH) to the districts of Ahtme and Jõhvi.

Other by-products of the process are phenolic water, flue gas and ash or semi-coke from thermal processing. Phenolic water is further used in phenolic extraction for fine chemicals production. Air (CO<sub>2</sub>) and water emissions are released during shale oil production. There is also the residual solid waste (semi-coke and ash) from the processing. Oil shale ash and semi-coke wastes are reused up to 1 million tonnes per year and most of the solid waste from a longer oil shale processing are used to landfill. For the wastewater management, VKG uses the separate industrial/municipal sewerage - a rainwater collection system and 2 separate industrial wastewater pre-treatment plants on the site. Due to its proximity to residential houses, the company has invested considerably in the elimination of unpleasant odour. The storage tanks are equipped in such a way that loadings are performed with closed breathing system and from 2016, all the flue gas from CHP plant undergoes desulphurization.

The majority of VKG shale oil customers are some of the largest oil traders in the world. VKG Transport, a VKG subsidiary is responsible for its logistics and uses freight on board (FOB) - Sillamäe delivery for most of its distribution activities. The distribution process starts from the production site through the rail which transports the Shale oil directly to the Sillamäe port where tankers can pick it up for delivery to Rotterdam. Currently, there are marginal sales of VKG products to refineries, however, the majority of the liquid product mass is not sold to refineries but blended directly into product bunker fuel instead.

## 6. Results and Discussion

The sulphur content of shale oil is around 0.8%, this is higher than the 2020 global sulphur limit, more so the SECA limit. Although VKG sells its fuel directly to oil traders and not to the end-users, considering the sulphur content of 0.8% w/w as average in shale oil products, might give a negligible possibility that the product is being used in SECA bunker fuel blend. Apart from its high sulphur content fuel by the IMO SECA sulphur regulation standard, shale oil has a viscosity-density relationship preferable for specific purposes: especially for improving HFO flow properties and pour point. This is one of the key selling points of shale oil. The density and viscosity are both within the range of ISO8217 residual marine fuel specification. Depending on the fraction, the largest portion of blended oil products has a density between 0.99 -1.02 kg/L and a kinematic viscosity between 20 -105 cSt. In the context of ISO 8217:2012 residual marine fuels characteristics, majority of shale oil products marketed fall into the marine oil density RMK and the viscosity RMD low range. This fact, however, does not separate VKG from the realities of the evolution in bunkering fuel and the regulations that surround it.

VKG as an oil production company is subjected to diverse environmental laws and regulations and has a centralised environmental department (ED) that provides services to all subsidiaries in VKG group. This department is responsible for the preparation of applications for environmental permits, environmental reporting including reporting of resource consumption and pollution for determination of environmental taxes, and managing environmental impact assessment procedures if designated. VKG ED is also responsible for European Union (EU) Emission Trading System (ETS) reporting, registration and applications of VKG group subsidiaries. It monitors the best available technology (BREF) documents, EU environmental legislations, Estonian and other governments draft legislation information system. In order to get information about new initiatives, it keeps a direct and close contact with the Ministry of Environment. Because of its industrious promotion of environmental awareness activities, VKG has been consistently awarded the title “The Responsible Estonian Business” from 2010 to 2015.

VKG response to the SECA regulation was to come ahead with the refinery project (a project that was in the pipe) along with process innovation and the elongation of its product portfolio, especially by-products. Before the SECA regulations, VKG had started a feasibility study on building its own refinery and bunker fuel market change research, a project that cost VKG about €5.5 million. Business wise, running a refinery would have meant a product innovation that will yield Euro V Diesel (a majority of the production) and 0,1% Sulphur marine fuel oil and stabilised naphtha outputs. However, the outcome of the research could not dispel the uncertainties that surrounded the 2015 sulphur regulations and the uncertainties that surround the market reaction to the sulphur regulations. For instance, the impact price spread between the HFO and the MGO will have impact on the decisions of some of the sectors in maritime. A higher price spread means ship operators will invest more in the scrubber technology that will enable them to use the high sulphur content fuel while a low spread price would remove the financial restriction to buying the expensive and 0,1% sulphur fuel increasing the demand for MGO. Also the possibilities of additional related regulations from MARPOL that could negate some of the efforts or milestones made in the first regulation compliance.

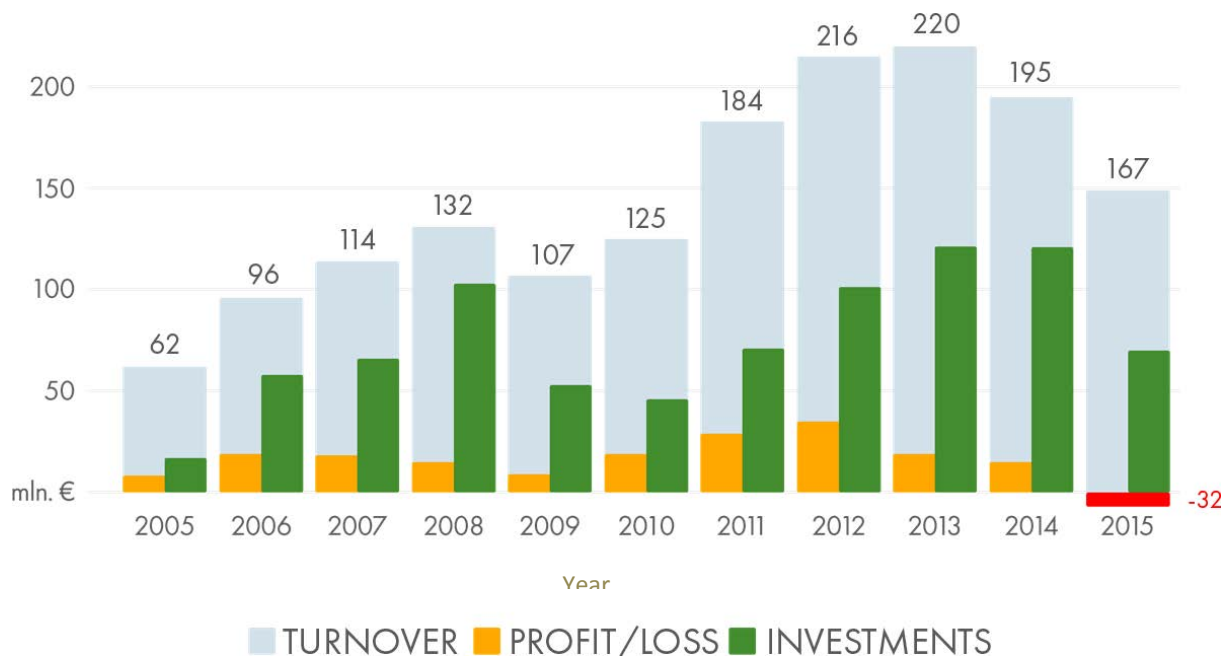
Furthermore, the feasibility studies also showed that at the Front-End Engineering Design (FEED) stage, the cost of the refinery for the raw material processing capacity of 133% VKG shale oil production at 14 000 barrels per day and 750 000 tons per year, was estimated to be a staggering sum of 400 Million EUR coupled with the 5% depreciation of 20 Million EUR annually. This confirms how risky taking on a project of that magnitude would be making the management of the company to putting the refinery project on a hold. The risk is further magnified because VKG have had to constantly struggle with uncompetitive and high fixed costs of its fuel production when compared with that of crude oil and because of the downward fluctuation of the fuel price. Because oil shale is not a common product found in regular refineries, its refining process and activities are quite limited. This attributes also makes it difficult to use standard technology used in the refining process. Even though VKG has access to a resource based operating mining group, the oil shale resource allocation is smaller than its processing capacity making VKG to only use only 70% of its shale oil production capacity (520,000ton/year).

A look at the breakdown trend of VKG 10 years' financial activities in figure 1 and table 1 shows the sizeable contribution of shale oil to the annual turnovers, although 2015 shows a decrease in shale oil contribution. Also for the first time in 10 years, VKG recorded a loss in 2015. One logical and obvious explanation to this is that oil price has fallen drastically, a bitter pill any operating oil company is forced to swallow. A further look also shows the company's 2015 investment was low as a percentage of the annual turnover (19.5%) when compared to previous years.

The harsh reality is that VKG will continuously be threatened with unending legislations, regulations, environmental lawsuits laws that will keep the company perpetually on its toes. It will also continue to face the challenge of available open markets for its products and the uncertainties that surround fuel prices. VKG products major competitors which are mainly refinery products will in the near future be an increased competition to another fuel source like LNG, renewable fuels (II generation biofuels), and methanol.



**Figure 2: Financial statement of VKG Year 2002-2015**



Source: VKG AS 2015 Financial statements

### Strategic entrepreneurial compliance options for VKG

Due to the new global sulphur emission cap, VKG has found its self in a position where it must make the assessment on the impact of sulphur regulations on the marketability of their oil products post 2020 and going forward on the most feasible alternative for conformity with the regulations business wise. Thus, VKG is faced with a blend of 5 strategies:

1) **Upward vertical integration:** Blending VKG shale oil with the 0.1% MGO or other low-sulphur content fuel which will basically be an upward vertical integration in its supply chain process. In this case, VKG will sell directly to its suppliers and will solely be in charge of how these products are supplied.

2) **Products Upgrade:** Building a new refinery which could results in a change of marketable products portfolio for VKG such as V Diesel, 0,1% Sulphur marine fuel oil and stabilised naphtha. Refining shale oil will also yield commercially valuable products that can be used as the substitutions for petroleum derivatives with only minor modifications and adjustments of the operating conditions (Akash, 2003). The refinery would seem like a good investment decision for VKG due to the increased process capacity - an improvement to the present capacity by mile together and according to the preliminary report, would produce an output of stabilized gasoline fraction of 61, 000 tons per/year; Euro V diesel 349 000 ton/year; SECA fuel oil 303 000/year. Additionally, there would have been 7300-7500 tonne/year elementary sulphur produced. However, the costs involved would have been higher than the stated capital expenditure (CAPEX) of 400million Euro since additional investments in operational cost (OPEX) are estimated to be between 30-50 million EUR/year.

3) **Hydrodesulphurization:** The treatment (partial hydrogenation) of product oil for sulphur removal (desulphurisation) is a chemical reaction between molecular hydrogen (H<sub>2</sub>) and another compound or element in this case - sulphur, with the help of a catalyst (Kabe, Ishihara and Qian, 2000). Heavier distillates are usually broken down through this process. While this process will solve the sulphur content challenge of shale oil, hydro-desulphurization might cost VKG between €100 - 150million Euro capital investment. This option is in

direct competition with VKG keeping the status quo of selling its products to the bunker fuel traders. Before taking this step VKG must be able to answer the question about the future price spread between the HFO and MGO in order to assess the return of this type of investment. Even experts are finding it difficult to speculate fuel prices, for example, Notteboom et al., 2010; COMPASS, 2010 & Hämäläinen et al. (2016), discussed in their studies several failed attempt by market expert to forecast fuel prices. Consequently, the uncertainties surrounding the fuel prices will make it risky for VKG management to make any calculated investment decision.

4) **Product Discount:** VKG can continue marketing of its existing 0,8% w/w sulphur content product but with a discount to traders if the future spread between less 0,5% Sulphur fuel oil and less 1% Sulphur fuel oil. In the first place, because shale oil is sold to traders there is a high possibility that its oil is still used in SECA bunker fuel blend. So with a proper incentives and trade terms, VKG will likely keep the current or most of the current customers.

5) **Process innovation:** Process innovation, an implementation of a significantly improved production method (Utterback, 1994) will increase and improve VKG efficiency (energy efficiency, a mass yield of products and labour productivity) as a key factor for sustainability post-2020 global sulphur cap. VKG can also make use of the Industry 4.0 automation and data exchange in manufacturing technologies to improve its business and process efficiency, pay better attention to the potential of its other products and convert their opportunities to maximum profits.

## 7. Implications

Currently, VKG is still conferring and weighing its options on how to go forward in the face of the 0.5% sulphur content fuel production, but it does not have the luxury of time before 2020 when the regulation will take effect. Apart from the investment that would be made in the refinery and bunker fuel market change research, VKG has been deliberating on what course of investment actions to take next due to the results of the research. Having been already adversely affected by the downward fuel price fluctuations, VKG must proceed strategically and cautiously towards what investment decision to make. Strategically because, while VKG may still be able to sell its fuel directly to bunker traders, there will be continued interest in improving air quality along with renewal concern about air pollution from shipping activities and at any time, follow up regulations might come up to interrupt the distribution channels. A stance of indecision will likely prevent a wrong choice of investments, on the other hand, delayed investment could also be just as risky emphasising Rebelo (1991), conclusions on the adverse effect of investment indecision. The constant loss of opportunities is counterproductive for any company in any given business environment. VKG also need to proceed cautiously because nobody is sure about the fuel market nor the success of the available abatement technologies for sulphur emissions. For the sulphur regulations to be effective, there is a need for availability of low sulphur fuel (Hämäläinen *et al.*, 2016) which in a way could be disadvantageous for VKG since the economic feasibility of shale oil is highly dependent on the markets of conventional crude oil. A high supply of MGO connotes a decline in the demand in HFO.

As Rebelo (1991) has explained, regulations do not have the same economic impact on large companies as they do for smaller companies. By a company's size, they are on different scales and can be quite substantial. The smaller companies could sometimes lack the capacity to handle the needed compliance changes that come with regulatory decisions. The shipping industry incurs such a significant cost hence for sulphur regulation to be rational, there must be an allowance for a level playing among related stakeholders. However, the importance of the company to the economy development of Estonia cannot be downplayed. In the past 10 years, the company has invested close to € 900 million and is responsible for over 2,100 jobs, of which, 600 was created within 2011 and 2014 in Estonia. VKG is the largest shale oil producer in Estonia and oil shale covers about 65% of the country's needs for primary energy which has made Estonia energy independent cutting almost to zero the importation of energy to Estonia. The oil-shale industry alone contributes approximately between 4-5% (about €300million) to the national GDP. In Ida-Viru County the industry is responsible for over 6,600 direct and about 13,400 indirect employees which are about 20% of the total regional workforce (Eesti põlevkivitööstuse aastaraamat, 2014).

## 8. Concluding Comments

Clean shipping as a vision was set to make maritime transport greener, and is presently being achieved through new technologies and changed behaviour on board across all stakeholders in maritime in a concerted and integrated efforts of multiple measures. The underlining fact is that compliance with emission regulations will be related to significant investment decisions for the maritime stakeholders and large uncertainties will always encompass each regulation.

The VKG case has confirmed that not all regulations are created equal in terms of their costs or their benefits. For example, market-based or economic-incentive regulations, such as those based on tradeable permits are likely going to be more cost-effective because they provide incentives for companies to adopt process that will comply with the regulation, unlike regulations that require technological adoption or an establishment of conventional performance standards like the Sulphur emissions regulations. Stimulating innovation in the maritime sector for a cleaner environment is crucial and technology development may be able to show the way out of some persistent environmental problems but, a technical solution to a problem should not set the foundation for the creation of others. VKG as a company and the oil shale industry are important actors in the growth and prosperity of Estonia, any massive distortion to this industry will definitely have a negative consequence on the national economy.

This study contributes to ongoing discussions on the impact of regulation on business performance and to EU regulation objective that seeks to “*demonstrate clear added value... full benefits at minimum cost .... with simple, clear, stable and predictable regulatory framework for businesses, workers and citizens*” (EU, 2012) by identifying the economic implications of the MARPOL sulphur emission regulation to the business model of a maritime fuel supply company. It further discussed possible strategic compliance options available from the opportunities that are both inherent and external to the case company. This type of contribution will improve the innovation capacity of related maritime companies and the integration of new knowledge for the maritime sector.

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## **Strengthening SMEs Impact and Sustainability with the Support of Personal Knowledge Management Systems and Concepts**

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*Keywords: Personal Knowledge Management (PKM); Knowledge Management (KM); Stage-Growth-Models; Entrepreneurship; SME Growth Barriers.*

### **Abstract:**

Personal Knowledge Management (PKM) has been envisaged as a decentralizing revolution and as the most important educational concern. Its root objective aims for highly knowledgeable individuals acting competently in their daily lives, as part of the workforce, and as public citizens. However, such a promising state of KM has not emerged yet.

Over the past four years, the ongoing development of a PKM concept and prototype-system has been accompanied by over thirty multi-disciplinary peer-reviewed publications. To verify the undertaking, dedicated articles have applied accepted general design science research guidelines aimed at creating innovative IT artefacts (that extend human and social capabilities and meet desired outcomes), at validating design processes (as evidence of their relevance, utility, rigor, resonance, and publishability), and at ensuring theory effectiveness (a matter of purposeful utility, content, communication, and presentation).

Based on the formation of individuals' autonomous PKM capacities and personal devices nourished by networked creative conversations, the novel PKM approach - on the one hand - aims at advancing lifelong PKM support and academic and professional growth benefiting individuals as contributors and beneficiaries of institutional and societal performance. On the other hand, the scope of anticipated outcomes also offers appealing opportunities for further stakeholders engaged in the context of curation, education, research, development, and business. In the latter context, prior papers have looked at the impact for large enterprises in regard to Organizational Knowledge Management (OKM) system generations, the potential of a fruitful OKM-PKM-Co-evolution, and the promises for strengthening organizational capabilities of innovativeness and leadership.

Entrepreneurs, of course, are facing their own set of particular concerns. The focus of this paper, hence, shifts to the collaborative and growth-related challenges of small and medium sized enterprises (SMEs). It pinpoints the entrepreneurial barriers of organizational development and how the PKM concept and its technological and educational devices are able – as any SME moves through its dynamic stages of growth, predicaments, or decline – to guide and rectify the associated tasks and problems of effectively performing under growing pressures and communicating with rising numbers of internal and external stakeholders based on Garnsey's resource-based approach of New Firm Growth, Greiner's evolution-revolution-based Stage-Growth-Model, and Levie's and Lichtenstein's notion of Dynamic States.

### **1. Introducing Personal Knowledge Management and its Objectives**

Personal Knowledge Management (PKM) has been envisaged as a trigger of a decentralizing Knowledge Management (KM) revolution and as the most important educational concern (Levy, 2011). Its root objectives aim for highly knowledgeable individuals acting competently and effectively in their daily lives, as part of the workforce, and as public citizens (Wiig, 2011). Unfortunately, such a promising state of KM has not emerged yet, neither has the awareness of its necessity and potentials.



Over the past four years, the ongoing development of a PKM concept and prototype-system supporting these objectives has been accompanied by over thirty multi-disciplinary peer-reviewed papers focusing on the realities of education and work and the challenges encountered, on the opportunities for change and the functionalities to be offered, and on the benefits, impacts, and disruptions anticipated. This undertaking has been facilitated by recent advances in development, database, and hosting platforms; they provided a viable opportunity for advancing an earlier tool solely used for the author's personal career support as a management consultant, scholar, professor, and academic manager and converting it into a cloud-based application aiming to serve a wider audience across technological environments.

The novel PKM approach is based on the formation of individuals' autonomous PKM capacities and personal devices nourished by networked creative conversations, a concept which is closing in on Vannevar Bush's (1945) still unfulfilled vision of the Memex<sup>8</sup>. On the one hand, it aims at advancing lifelong PKM support and academic and professional growth benefiting individuals as contributors and beneficiaries of collaborative and societal performance. On the other hand, its scope of anticipated outcomes affords appealing opportunities for further stakeholders engaged in the context of curation (Schmitt, 2015e; 2015i), education (Schmitt and Butchart, 2014; Schmitt, 2016f), research (Schmitt, 2015g; 2015h), profession (Schmitt, 2015f; 2016d), and development (Schmitt, 2014k, 2016h).

## 2. Positioning PKM as a Transdisciplinary Design Science Research Project

The PKMS concept is firmly rooted in design science research (DSR). For validation, a dedicated paper (Schmitt, 2016j) applies accepted general design science research guidelines aimed at creating innovative IT artefacts (that extend human and social capabilities and meet desired outcomes) and at justifying design processes (as evidence of their relevance, utility, rigor, resonance, and publishability). DSR also incorporates the concept of Theory Effectiveness which characterizes a theory "that is incrementally and iteratively designed in order to be purposeful – both in terms of its utility (which is largely a matter of content) but also in its communication (which is largely a question of presentation) to an [academic and professional] audience" (O'Raghallaigh, Sammon, and Murphy, 2011).

For further verification, an earlier article employs the systems thinking techniques of the trans-discipline of Informing Science (IS) to align and validate the central PKMS models and methodologies (Schmitt, 2015d), while a follow-up paper-under-review focuses on the technological impact of the PKM System (PKMS) by concentrating on its capabilities accounted for in the form of affordances to be conferred to PKMS users in relation to six digital ecosystems (Schmitt, 2017a). In addition, the PKM concept and system has been positively assessed in regard to its potential as a General-Purpose Technology (Schmitt, 2015h) and Disruptive Innovation (2016g, 2017b).

In acknowledging the trans-disciplinarity of the PKM notion, the publications have been disseminated to and received feedback from a wide range of disciplines via journal and conference submissions covering Knowledge Management and Informing Science, Technologies and Innovation, Social Sciences and Management, Human Resource Development and Organizational Change, Higher Education and Educational Technologies, Sustainable Development, Creativity, Cybernetics, Systems Thinking, and Future Foresight. With easy and mostly free access to the prior publications and their literature citations assured (see URLs in reference section and [www.researchgate.net/profile/Ulrich\\_Schmitt2/contributions](http://www.researchgate.net/profile/Ulrich_Schmitt2/contributions)), this paper – rather than replicating available content – centres on the theme of SMEs and the impact and sustainability of new ventures

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<sup>8</sup> Vannevar Bush (then President Truman's Director of Scientific Research) imagined the 'Memex', a hypothetical sort of mechanized private file/desk/library-device. It is supposed to act as an enlarged intimate supplement to one's memory, and enables an individual to store, recall, study, and share the "inherited knowledge of the ages". It facilitates the addition of personal records, communications, annotations, contributions as well as non-fading trails of one's individual interest through the maze of materials available - all easily accessible and sharable with the Memexes of acquaintances (Bush, 1945). Davies acknowledges that "PKM is a real and pressing problem", but also concludes - sixty-six years later - in 'Still building the Memex': "Yet it does not appear that Vannevar Bush's dream has yet been fully realized on a wide scale" (Davies, 2011).

(as supported by the novel features of the PKM approach) in the global context, citing and/or briefly recapitulating previously published arguments and conclusions when necessary.

To provide structure in this endeavour, the following sections follow Garnsey's resource-based approach of New Firm Growth (1998) and also pay attention to Greiner's Organizational Stages of Growth and Crises (1998). Being aware of the critique levelled at Stage-Growth-Theories, the paper will also engage with Levie's and Lichtenstein's notion of Dynamic States (2009).

### **3. Positioning PKM in the Realm of Entrepreneurial and SME Undertakings**

Entrepreneurs must access, mobilize, deploy, and generate resources to match them to market opportunities in order to create value. For a firm to take form and generate revenue and growth, a sequence of problems require solutions which, in turn, trigger new challenges. The cumulative process of the interactions involved allows for accumulating a unique set of knowledge and its evolution (Garnsey, 1998). The exposition of Garnsey's Growth Model provides a suitable vehicle to detail some of the particular challenges which can be eased or solved by the affordances conferred via the novel PKM approach; the subsections below follow the sequence of the model's phases and start off each by reflecting on relevant elements of Garnsey's phase descriptions.

#### **a. Resource Access**

This early preparatory prospective phase is formative, determined by the entrepreneurs' experience, personality, perceptions, including their ability to shape initial conditions and to provide essential assets and impetus. It is "dominated by search activities, and initial problems centre around the perception of opportunities and resourcing prospects", including the build-up of project and sector specific contacts and knowledge (Garnsey, 1998, p.531).

Historically, the constraint in accessing information and knowledge has always been the scarcity of sources and content available, but this pattern has changed due to rapidly advancing Information and Communication Technologies (ICT) resulting in a never before experienced ever-increasing abundance of digital content, records, and documents (Short, Bohn, and Baru, 2011; Hilbert, 2011, 2014) confronting our finite scarce human cognitive capabilities. Already 45 years ago, Simon pointed out that the "wealth of information creates a poverty of attention". Thus, "it is not enough to know how much it costs to produce and transmit information; we must also know how much it costs, in terms of scarce attention, to receive it. [...] In a knowledge-rich world, progress does not lie in the direction of reading information faster, writing it faster, and storing more of it. Progress lies in the direction of extracting and exploiting the patterns of the world – its redundancy – so that far less information needs to be read, written, or stored" (Simon, 1971).

A prior paper (Schmitt, 2016j) argues that this abundance does not only comprise novel knowledge, but also rising shares of duplicated original content (redundancies), partial (fragmentations) or erroneous (inconsistencies) replications or deletions, non-disclosure or subsequent erasure of sources (untraceabilities), unsuitable alterations (corruptions) or lack of curation and maintenance (decay) which are not filtered out by search engines and thus, pointlessly divert our attention from dealing with more pertinent issues<sup>9</sup>. When faced with a comparable problem of compromised integrity and unmaintainable redundancy, earlier flat file databases were replaced with the normalized table structures of the relational database design approach.

As a remedy, the PKMS abandons the document-centric approach of current KM systems and, instead, substitutes it with the capturing and re-purposing of basic information structures (memes or ideas) and their relationships (Schmitt, 2014d, 2016a) resulting in "digitally embedding and reusing parts of digital documents via structural references" (Signer, 2010) and in preventing the unnecessary replication of identical content

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<sup>9</sup> A more detailed case has been made for the unsustainability of this practice based on the notions of Complexity Theory, Popper's Three Worlds, Digital Ecosystems, and a UN-Scenario of Knowledge Mass Production over Time (Schmitt, 2016j).

lumped together in a multitude of redundant cluttered digital knowledge containers (e.g. papers, reports, web sites), cumbersome to trace but effective in bloating knowledge repositories (Schmitt, 2015d).

The impact of the PKM at this stage is the focussing of attention (further strengthened by affordances to be discussed below) and the more effective use of time and communication among the collaborating entrepreneurs and firm founders. As a result, the first crisis stipulated by Greiner (1998) in his Organizational Stage-Growth-Model might well be pushed forward in time. This first crisis occurs when a growing headcount of employees (lacking the intense dedication to the product and firm compared to the founders) can no longer be managed in the informal ways of the firm's earlier days resulting in the need "to locate and install a strong business manager who is acceptable to the founders and who can pull the organization together" (Greiner, 1998, p.6).

## **b. Resource Mobilization**

"There is iteration between preparatory prospecting and actual mobilization of resources. It is only when resources come to be assembled and deployed that resource access is fully tested. If expected resources are not forthcoming, new methods of obtaining requirements must be found, or the direction of the undertaking must shift. [...] As the group learns to save time and avoid early mistakes, routines and procedures form through trial and error and a division of labour emerges with specialist roles", resulting in firm-specific practices and know-how which "represent the experience and collective competence of its members, past and present" (Garney, 1998, pp.534-536).

Thus, firms are advancing repositories of ideas and knowledge (with PKMS driving the process) aiming to support their innovativeness. Usher presents the emergence of the related novelty "as an accumulation of many individual items over a relatively long period of time. The magnitude of the individual item is small, but through [processes of] 'Cumulative Synthesis' the product becomes important<sup>10</sup>" (Usher, 1954, p.61). These processes form a genetic sequence covering (1) the perception of a problem or opportunity as an incomplete or unsatisfactory pattern (2) which prompts the setting of an appropriate stage to assemble all the data essential to a solution (3) in order to facilitate acts of insight (4) followed by critical revision and full mastery of the new pattern (5) as one of the prerequisites for a successful innovation (Usher, 1954, p.65). Usher's (1954, 2013) 'Cumulative Synthesis' convincingly couples the activities of researchers and entrepreneurs and also reflects the chronology of the PKMS design science research project (Schmitt, 2016j).

The PKM concept and system fully supports the concept of Cumulative Synthesis by affording the creation of knowledge assets and other archetypal reconstructions thereof. In order to do so, any captured basic information structure (meme or idea) is allowed to be modified in eight predefined ways, representing the combination of (non-)change of its codification, context, or container/asset (Schmitt, 2015d). The PKMS user interface is controlling and guiding this process resulting in:

- The capturing and amendment of relevant PKM-entities and their associated Content, for example, persons, teams, communities, organizations, domains, sectors, regions, articles, books, chapters, websites, events, systems, evidence, ideas, personal records.
- The capturing of the respective relationships between these PKM-Entities, for example, professional experience, research activity, education, outcomes, achievements, formal or informal relations, roles, references, annotations, or ideas/people contributing to a paper/book.
- The curation required to cater for entities' and relationships' changes over time, respectively the durations which determine their legality, authority, validity, actuality or state-of-the-art, for example, office holders, occupancies, contractual responsibilities, expiration dates, expertise attributed to or powers vested in someone.

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<sup>10</sup> Of course, not every individual item captured might be of immediate utility, but, what might be considered to be irrelevant or misguided at a given time may turn out to be valuable later, and vice versa (Garud, Gehman, Kumaraswamy, and Tuertscher, 2016).

The PKMS, thus, facilitates the capturing of non-fading trails of our individual interest through the maze of materials and memes available all to be easily accessible and shareable with the PKMSs of acquaintances. Termed by Bush as ‘Associative Indexing’, the traceability of knowledge significantly improves (Schmitt, 2015i) or as Bush puts it: “the inheritance from the master becomes, not only his additions to the world’s record, but for his disciples the entire scaffolding by which they were erected” (Bush, 1945).

The impact of the PKM at this stage is the widening of individuals’ abilities to track and trace content on the basis of the preserved paths and trails, the improved effectiveness and efficiency which comes with the sharing of content and relationships, and the role of the PKMS as a ‘set stage’ for furthering ‘acts of insights’ through recombining ideas across knowledge domains and functional specializations.

The second crisis stipulated by Greiner (1998, p.6) refers to the need for more autonomy and delegation, based on the assumption that a period of sustained growth under directive leadership tends to result in a cumbersome and centralized hierarchy likely to cripple the initiative of disenchanting lower-level employees. Again, this crisis might well be pushed forward in time or even avoided due to the ‘involving’ nature and ‘motivating’ features of a PKMS.

PKMSs facilitate establishing à-jour, well-maintained personal knowledge bases, and are designed to take on the role of the quartermaster and broker for sizeable portions of one’s intellectual, social, and emotional capital. As such, the PKM System is meant to support autonomy by providing continuous life-cycle support from trainee, student, novice, or mentee, to professional, expert, coach, or leader. Moreover, knowledge workers are meant to take an enriched version of their personal KMS with them when they move from one project or responsibility to another, living fully up to today’s notion that knowledge and skills are portable and mobile.

### **c. Resource Deployment and/or Generation**

The effort of accessing and mobilizing resources anew “entails transactions which are themselves costly of resources. This is a major reason for establishing a firm with a continuous resource conversion process that can be self-sustaining and allow the build-up of competence. Unlike a series of projects organized afresh each time, a firm can embed a learning process in its recording and problem-solving routines.” Much necessary learning now concerns how to maintain key relationships with distributors and customers and how to undertake and conduct the respective interactions to develop these relations effectively. Each firm also faces its unique problems and its “growth is limited by the rate at which new members can be assimilated, acquire experience in the firm and learn to solve problems together effectively” (Garnsey, 1998, pp.536-537).

“The overall performance and viability of societies and enterprises result from innumerable small actions by individuals. Small personal ‘nano actions’ combine with larger departmental actions that combine to create consolidated enterprise actions that result in the performance of the whole organization. [...] For better performance, people must [hence] be provided with resources and opportunities to do their best” (Wiig, 2011, p.235; Schmitt, 2013f, 2014c). To support the collaborative efforts for combining and consolidating these ‘nano-actions’, Nonaka’s and Takeuchi’s (1995) SECI Model and concept of ‘Ba’ have become one of the most widely cited KM theories.

The PKMS approach is fully supportive of Wiig’s aims and closely aligned to the SECI Model and ‘Ba’ concept (Schmitt, 2016b). However, “while the SECI Model promotes individual and collective real-world learning processes in the anti-clockwise manner depicted (inner loop in figure 1), the PKMS’s meme-based workflows (outer loop) are following the reverse ICES-order depicted with small outer-inner-links indicating the PKMS’s support of Organizational KM Systems<sup>11</sup>” (Schmitt, 2016g, 2017b).

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<sup>11</sup> (I) Facts and ideas (memes) succeed in competing for an individual’s limited attention span to be understood, memorized, and, potentially, captured and securely stored in his/her PKMS device (sensemaking/internalizing). (C) Captured memes can be related to other stored memes to form symbiotic relationships to mutually support each other’s fitness and to replicate together as knowledge assets or documents to be voluntarily shared in a World Heritage of Memes Repository or WHOMER (authorship/combining). (E)

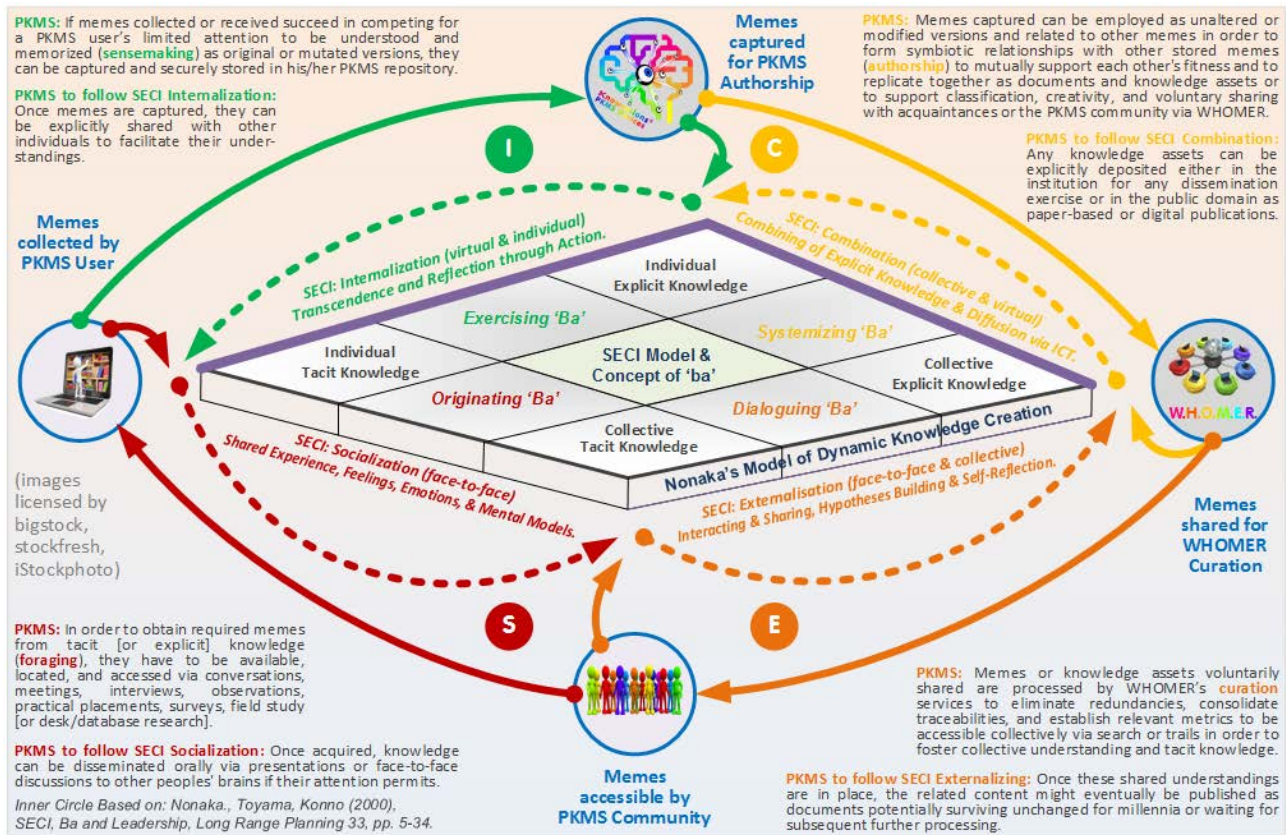


Figure 1: Nonaka's SECI Model and 'Ba' versus the PKMS's ICES Approach (Schmitt, 2017b).

The third crisis stipulated by Greiner refers to the need for regaining control in expanding decentralized organizational structures by applying appropriate coordination techniques and by introducing formalized systems. It is based on the assumption that operating managers in highly diversified sectors (endowed with greater authority and substantial incentives) "prefer to run their own shows without coordinating plans, money, technology, and personnel with the rest of the organization" (Greiner, 1998, p.7). Once again, such a crisis might well be pushed forward in time.

A PKMS merges distinctive knowledge objects/assets of diverse disciplines or sectors into a single unified knowledge repository. For example: Aiming to contribute to the educational development of KM, all PKMS publications and their references already form part of the prototype's knowledge repository. Their meme-based representations are built upon – as Bush (1945) put it – "an extensive mesh of associative multidisciplinary trails [and] alternative pathways" which can be handily tracked and further explored by a PKMS user community to become subsequently part of their own contributions to PKMS repositories. This mesh facilitates associative indexing which will also conveniently accommodate the establishment and navigation of PKMS e-learning modules planned following the face-to-face course design. Moreover, the integration of the over two hundred KM tools and ideas into the PKMS concept allows for KM education in a

WHOMER services the shared memes to eliminate redundancies, consolidate traceabilities, and establish associative indexing (Bush, 1945) and relevant metrics to support and ease the collective access and understanding of the PKMS user community (curation/externalizing). (S) Information sources afford the acquisition of Memes via communication, field and desk research, or access to WHOMER (foraging/socializing) (Schmitt, 2016g, 2017b). WHOMER services are further detailed below.

transparent and coherent manner, including the rationale for how and why some of the original methods had to be adjusted, ex-tended, re-purposed, or merged.

Accordingly, an organization (including one matching Greiner's attributes approaching the third crisis point) is able to use the content of its PKMS knowledge repository in similar fashions in order to induct or educate its staff and managers, disseminate policies and standards, or to support best practices by informing about procedures or providing templates.

#### **d. The Role of Absorptive Capacity for Growth Reinforcement or Reversal**

"The firm is inevitably operating within a structure of interdependence with outside agents on whom it relies for resources and revenue. Internal pressures are reinforced by external pressures as funders attempt to realize their investment and insist that managers aim for growth. Customers whose demand provided for initial growth may be pressing for more products or demanding further services faster than these can be made available under current arrangements. Distributors may threaten to turn to competitor products unless their demands are met. Pressures of this kind may prevent stability from being an option. Key relations of interdependence, initially a source of support, may now narrow options, preventing the pursuit of a strategy of steady-paced growth conducive to resource synchronization. [...] If limits on the capacity of internal decision-makers to assimilate knowledge, plan, coordinate and supervise are a central constraint on growth, they are also a major obstacle to recovery from growth reversal, since the same people have to be both planning for the future and remedying current crises" (Garnsey, 1998, pp.539, 543).

The initial concept<sup>12</sup> of 'Absorptive Capacity (ACap)' has been further expanded and redefined as "a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability" by focussing more strongly on organizational change and firms' paths of evolution and development. Additionally, a differentiation between potential and realized absorptive capacities has been introduced; while the former "comprises knowledge acquisition and assimilation capabilities", the latter "centres on knowledge transformation and exploitation". In their 'ACap Model', the 'Knowledge Sources and Complementary Experiences available' gain relevance from a range of internal or external activation triggers in order to be assimilated in the 'Potential ACap', which requires 'Social Integration Mechanisms' to be transformed into the 'Realized ACap' in order to apply 'Regimes of Appropriabilities' (defined as a firm's ability to protect the advantages of (and benefit from) new products or processes) to realize 'Competitive Advantages' (Zahra and George, 2002, pp.185-186,188, 192).

In order to address the challenges (exemplified by the accounts of Garnsey, Zahra and George), organizations increasingly employ "formal systems for achieving greater coordination" with "top-level executives taking responsibility for the initiation and administration of these new systems". However, over time, "the many systems and programs introduced begin to exceed their usefulness", and a lack of confidence gradually builds between the firm's internal stakeholders amongst growing critique of the "bureaucratic system that has evolved" where "procedures take precedence over problem solving". This fourth 'red-tape' crisis implies "the organization has become too large and complex to be managed through formal programs and rigid systems" and needs to change with an emphasis on "strong interpersonal collaboration" (Greiner, 1998, p.7).

Prior articles have strongly argued that the introduction of PKMS (although marking a departure from current heavyweight, prohibitive, centralized, top-down, institutional developments towards grass roots, bottom-up, lightweight, affordable, and personal applications based on 'six vital PKM provisions'<sup>13</sup>) is not meant to be at

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<sup>12</sup> Absorptive Capacity has been originally defined as the "ability to recognize the value of new information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal, 1990).

<sup>13</sup> Several barriers preventing the introduction of user-friendly personal KM solutions have been detected and have led to a plea for 'Six Vital PKM Provisions': (1) Digital personal and personalized knowledge is always in the possession and at the personal disposal of its owner or eligible co-worker, residing in personal hardware and/or personalized cloud-databases. (2) Contents are kept in a standardized, consistent, transparent, flexible, and secure for-mat for easy retrieval, expansion, sharing, pooling, re-use and authoring, or migration. (3) Information and functionalities can continually be used without disruption independent of changing one's social, educational, professional, or technological environment. (4) Collaboration capabilities have to be mutually beneficial to facilitate



the expense of Organizational KM (OKM) Systems, but rather as the means to foster a fruitful co-evolution. They also provide evidence to this claim in regard to PKM's and OKM's common ground and objectives, to the multitude of shared methodologies and practices, to the anticipated features of the 'Next KM System Generations', and to the complementary PKM positioning within Earl's seven Schools of KM (Schmitt, 2015f, 2016d).

As exemplified by Greiner, Garnsey, Zahra and George, entrepreneurial and organizational life is a struggle between the need to fully capitalize on existing strengths and competencies (exploitation) and the need to recognize and seize new opportunities (exploration). The challenges and benefits in successfully navigating both endeavours to become – what has been termed - an ambidextrous individual or ambidextrous organization have also been detailed (Schmitt, 2016d, 2017a).

A co-evolutionary PKM-OKM approach would be able to strengthen the absorptive capacity, ambidexterity, and resulting dynamic capability of organizations considerably, not at the expense of disinterested employees but as a means to motivate them by serving their self-interests. In an increasingly mobile and cooperative world, KM systems ought to be more “care and share” oriented to mutually benefit stakeholders (Schmitt 2012) and to ‘humanize’ formal system for higher acceptance.

#### **e. Development Paths and Growth Accumulation**

“It is the early growth processes that are universal, not their phase manifestations. Opportunities must be identified and input resources accessed and mobilized in order to generate further resources if a firm is to become a sustained system of activity through market exchange. Growth may become self-reinforcing if sufficient impetus is achieved, but consequent synchronization problems can bring about reversals. The relatively few firms that achieve sustained growth use their problem-solving capacity, or competence, to achieve leverage in accessing further resources and markets. Initial conditions and resource endowments incline the system in a certain direction, but the actual path taken is unpredictable because it is subject to contingent occurrences and singular initiatives” (Garnsey, 1998, p.547).

Greiner's ‘post-formal’ phase “emphasizes spontaneity in management action through teams and skilful confrontation of interpersonal differences. Social control and self-discipline replace formal control” favouring “a more flexible and behavioural approach to management”. Predicting the next imminent crisis, he suggests a potential lack of growth-stimulating internal solutions or new products, which might initiate a next phase “in which growth depends on the design of extra-organizational solutions, such as creating a holding company or a network organization composed of alliances and cross-ownership” (Greiner, 1998, pp.7, 9). The world-wide-web, social networking sites, and the forthcoming internet-of-things all exemplify that Greiner's prediction has not been far-fetched.

In the author's view, however, today's most threatening looming crisis facing knowledge workers<sup>14</sup>, organizations, and society alike is the ever-increasing information abundance and resulting attention poverty

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consolidated team and enterprise actions that convert individual into organizational performances. (5) The PKM system designs and complex operations are based on a concept, functionalities, and interventions which are clearly understood and are painlessly applied in practice. (6) Accessibility to Shared Repositories is secured via a World Heritage Site of Memes maintained and curated by a Charitable Non-Profit Organization (Schmitt, 2014f, 2015i).

<sup>14</sup> The term ‘Knowledge Worker’ - as used throughout the PKMS concept - does not only apply to the narrowly defined socio-economic categories of the developed world, as in, for example, Florida's Creative Class (Florida, 2012). “Knowledge Worker attitudes and ambitions also do have a role to play in the emerging knowledge societies of developing countries” as well as for “the countless unemployed graduates seeking to devise a personal career script that can bring fulfillment and meaning in the developed world affected by economic turbulences” (Gratton, 2011; Schmitt, 2014k). Appropriately, Gurteen (2006) places - rather than an individual's type of work - the virtue of responsibility at the center of his reflections: “Knowledge workers are those people who have taken responsibility for their work lives. They continually strive to understand the world about them and modify their work practices and behaviors to better meet their personal and organizational objectives. No one tells them what to do. They do not take ‘no’ for an answer. They are self-motivated [...] Knowledge workers see the benefits of working differently for themselves. They are not ‘wage slaves’ - they take responsibility for their work and drive improvement.”



alluded to (Schmitt, 2014b, p.20). This challenge has just acquired a new quality with all the issues surrounding the notion of 'Post-Truth' (just named 2016 word of the year by Oxford Dictionaries) defined as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief" (Washington Post, 2016). As Weinberger (2012, p.12) noted: As the traditional physical filters and authorities lose their grip, "we can now see every idiotic idea put forward seriously and every serious idea treated idiotically".

Consequently, the PKM Concept and System integrate additional centralized services which have already been referenced in figure 1 and footnote 4 as WHOMER (World Heritage of Memes Repository or also OHOMER for their access-restricted organizational subsets). Their responsibility is to facilitate 'Digital Scholarship' and 'Creative Conversations', to carry out curation tasks with the aim of maintaining the integrity of the meme-and-cloud-based PKMS repositories, and to eliminate entropies in the system (for example: identical memes shared by different users with the PKMS community are merged and their relationships consolidated; memes which have been updated are marked to indicate their more actual successor). More details and visualizations have been provided in prior papers (Schmitt, 2015e, 2015i).

The PKM concept makes also use of an Extended Ignorance Matrix in order to make PKM processes of learning and forgetting more transparent (Schmitt, 2013e, 2015d) It differentiates according to unknown or known Knowers/Knowns/Unknowns as well as known former or formerly known Knowers/Knowns/Unknowns. The unknown Unknowns come in categories of potentially false 'knowns', denials and taboos, unexplicable, embedded in artefacts, explicable, codified, knowledgeable, and unknowledgeable. Each category requires different methods or strategies to turn them into personal or organizational Knowns, but also bear the risks that errors, denials, taboos, wrong assumptions, and outdated or obsolete knowledge is believed to be actual and true. In light of the earlier 'post-truth' discussion, these categories are not only fitting the educational purpose but might also be useful for tagging some of the memes captured in the WHOMER repository.

The clear aim of the WHOMER and OHOMER repositories is provide the PKMS community with non-redundant multi-and-trans-disciplinary memes and knowledge assets which can be trusted and can be traced and accessed through the captured and shared path trajectories just like components, ingredients, or batches in modern manufacturing enterprise resource systems. These time-and-attention-saving PKM features give a new meaning to the notion of 'Standing on the Shoulders of Giants' and 'Digital Scholarship and Research' as well as the increasing demand for Adaptive and Generative Learning<sup>15</sup>.

"Two recent events are poised to generate further momentum. Firstly, the changes of the US and European Systems of National Accounts (as part of a worldwide revision) now allows for the capitalization of research and development expenditure. Secondly, the envisaged ISO 9001:2015 Standard makes explicit references to the important role of KM as part of companies' Quality Management Systems" (Schmitt, 2016d).

#### 4. Dynamic States

In what they titled 'A Final Assessment of Stages Theory', Levie and Lichtenstein (2009) pursued the most comprehensive review publicized and analysed 104 stages of business growth models published in scholarly works between 1962 and 2006. They are commonly based on the assumptions of distinctively different stages in a pre-determined and thus predictable order with all organizations progressing from primitive to more mature states. However, little agreement exists concerning the number of stages (between 3 to 11), their drivers, sequence, transitions, and remedies. Among the four models which have been cited as a foundation

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<sup>15</sup> "Adaptive learning is about coping with changes in the environment or adjusting existing practices, policies, products, or services; generative learning is about creating new approaches that are disruptive in terms of innovative change [and] involves producing new meaning, insights, perspectives, and knowledge from processes of relating new information and facts to prior knowledge and experience" (Yorks and Nicolaides, 2013, p.4).

within the sample, Greiner (1998) takes a strong lead being cited by 21 later models (Levie et al., 2009, pp.4, 5, 9-11).

Although “the prescriptive nature and evolution-revolution dichotomy of Greiner’s model gives it plausibility and appeal”, later empirical studies concluded that “businesses tend to operate in some definable state for some period of time” and undergo transformations under crisis, but not necessarily in any particular sequence as suggested by the stage theories (Levie et al., 2009, pp.13, 16-19, 22).

As a result, the authors propose a ‘Dynamic States of Entrepreneurship’ rooted in complexity science and non-linear dynamics and based on the empirically viable proposition that businesses develop through a specific number of stages which represent an immanent program of development. In line with Garnsey (section 3.0), the authors acknowledge that rapid growth or imminent decline requires strengthening a company’s ‘fitness’ by learning and altering their resource set and development path in order to adapt to their changed environment. Successfully addressing this ‘Opportunity Tension’ paves the way to value creation based on the perception of an untapped market potential and the commitment to act on it. The greater the latter - as empirical evidence shows - the more likely a successful start-up venture emerges. They define a ‘Dynamic State’ as “a network of beliefs, relationships, systems and structures that convert ‘Opportunity Tension’ into tangible value for an organization’s customers/clients, generating new resources which maintain that dynamic state” (Levie et al., 2009, pp.23-24, 26-27).

As there are limitless internal organizational and external environmental states, their combinatorial matrix<sup>16</sup> hosts infinite potential ‘Dynamic States’ ready to emerge at any point in any sequence. The timing crises and transitions, thus, depend on the pace of external dynamics and/or on the organization’s internal capacity to change. Any emerged ‘Dynamic State’ “is viable as long as its business model continues to create value that sustains the existence of the organization”, but also tends (especially in bureaucratic and mature organizations) to “retain its internal structure even in the face of rapid external change”. Hence, flexible SMEs and ambidextrous businesses can have a considerable competitive edge. (Levie et al., 2009, pp.27, 30-31).

## 5. Conclusions and the Road ahead

After a series of prior publications, the author has shifted his PKM-focus in this paper to the collaborative and growth-related challenges of entrepreneurs and SMEs. The aim has been to look at the barriers of organizational development and how the PKM concept and its technological and educational devices are able – as any SME moves through its dynamic stages of growth or decline – to guide and rectify the associated tasks and problems of effectively performing under growing pressures and communicating with rising numbers of internal and external stakeholders.

Although Stage-Growth-Models received justified criticism as exemplified by Levie and Lichtenstein, the proximity of their ‘Dynamic States’ with Garnsey’s resource-based approach and their common strong emphasis on organizational learning supports the paper’s arrangement. While the order (3.1 to 3.5) might resemble only one of the many sequences under the ‘Dynamic State’ rationale, each of the five Garnsey/Greiner scenarios put forward is a legitimate member of infinite ‘Dynamic States’ matrix and, thus, can be considered as an archetype sharing subsets of its attributes, challenges, and PKM-related remedies with many other ‘Dynamic States’ (figure 2).

As a result, this paper added a further perspective to the authors’ view, that the KM transdiscipline is currently ill-equipped to tackle the developmental challenge of human attention depletion which is impairing the personal, institutional, and societal fabrics of our emerging Knowledge Economies.

Unfortunately, the field of KM today also provides little by way of a coherent understanding of its principles and little in supporting the critical and important class of 21<sup>st</sup> century Knowledge Workers. In a near future when half of the current employment volumes will vanish due to the computerization of non-routine tasks (Frey, and Osborne, 2013), heightened social tensions are imminent, furthered by the expanding opportunity

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<sup>16</sup> From the complexity point of view, the matrix represents a rugged ‘fitness’ landscape with maxima and minima.

divides in the access of digital content, e-learning, e-skills, knowledge, innovation, enveloped within the context of poverty or wealth.

To further widen its appeal, the PKM Concept's innovative features and educational philosophies are currently aligned to an established Learning Management System. Further publications and posters are also under review or planned addressing a PKMS Sustainability Vision, demonstrations and tutorials/workshops, and how the PKMS concept compares to, can make use of and add to semantic web technologies. After completing the test phase of the prototype, its transformation into a viable PKMS device application and a cloud-based WHOMER server based on a rapid development platform and a noSQL-database is estimated to take 12 months.

This paper has also encouraged the author, to offer project workshops over extended periods of time to entrepreneurial minded students or teams of start-ups in incubators to familiarize them with the PKM approach, ensuring that the institution selected continues with this endeavour in the future with each engaging team being able to build upon the captured knowledge of prior accomplishments and that workshop participants' continued PKMS access and support is assured.

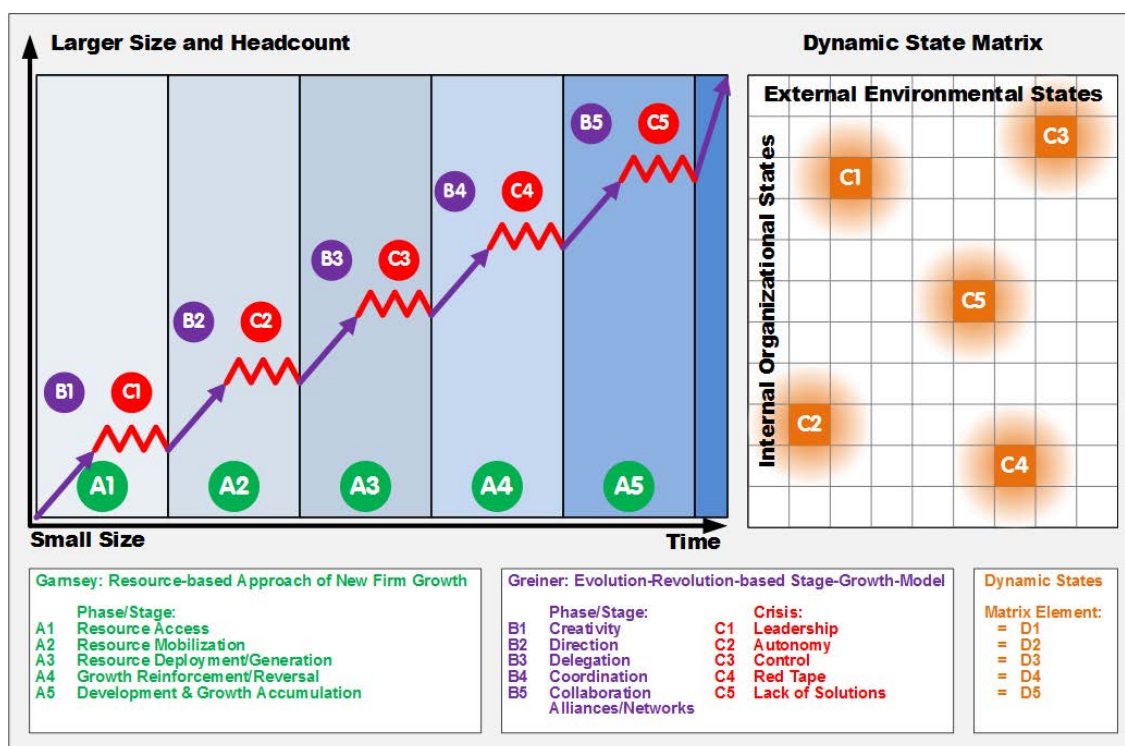


Figure 2: Garnsey's/Greiner's 'Stage-Growth-Models' vs. Levie's/Lichtenstein's 'Dynamic States'

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### Strengthening SMEs Impact and Sustainability with the Support of Personal Knowledge Management (PKM) Systems & Concepts

15<sup>th</sup> International Entrepreneurship Forum (IEF)  
Conference, Venice, Italy, 14-16 December, 2016

by Prof. Ulrich Schmitt  
University of Stellenbosch, Business School



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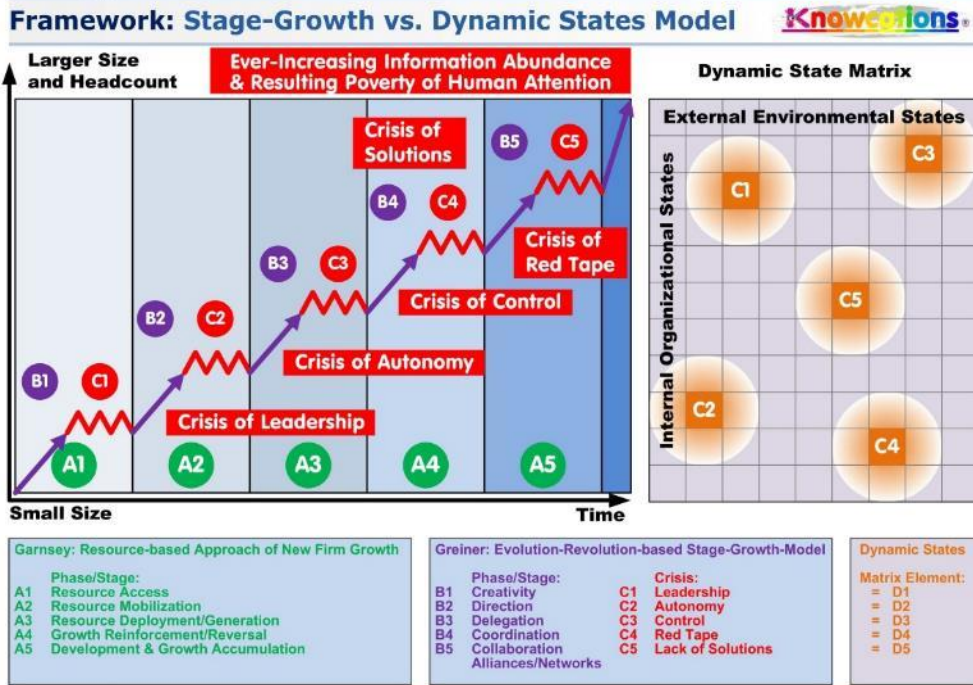
\_Schmitt 201612k IEF Venice v01 - IEF-Questions - 2016-07

#### IEF's Conference Chair's Five Presentation Questions



- a) Main theoretical issues covered and conceptual framework  
**Collaborative and Growth-related Challenges of Entrepreneurs and SMEs**  
⇒ **Stage-Growth Model (Garnsey, Greiner) and Dynamic States**
- b) Methods for their research/or concepts referred to for theoretical papers  
**Design Science Research Project, Wicked Problem, Concept and Prototype**  
⇒ **Integration of over 200 hundred renowned KM Methods and Practices**
- c) Key findings  
**Performing under Growing Pressures and Stakeholder Communications**  
⇒ **Support by Novel Personal Knowledge Management (PKM) Concept**
- d) Implications of the findings for policy and practice  
**Exemplifies Case for Levy's KM Revolution and Next Generation KMS**  
⇒ **Demonstrated SECI-ICES Synergies for fruitful PKM-OKM-Co-evolution**
- e) How or what future research on the topics could cover.  
⇒ **Completion of Development, Testing, Rollout, I-Space Deployment**  
⇒ **Meta-Perspective: PKMS as Complexity & Entropy-reducing Devices**





### Methodology: PKM as Design Science Research (DSR)

- **Aim: Creating Innovative IT Artefacts for Relevant Business Problems** (that extend human and social capabilities and meet desired outcomes)
- Application of **Rigorous Methods** in their Construction and Evaluation
- Search for Effective Design based on **Decomposing Complex Problems**
- **Effective Representation** to ensure Implementation and Application
- **Quality and Efficacy** validated by well-executed Evaluation Methods
- **Knowledge Contributions** to Artefact, Construction and/or Evaluation
- **Concept of Theory Effectiveness** to ensure Purposeful Design in terms of its utility (matter of content) and its communication (largely question of presentation to an academic and professional audience)




- ⇨ **Over Forty Publications in Multidisciplinary Journals & Conferences covering DSR, Curation, Education, Research, Development, Business**


Sources: Hevner, A., March, S., Park, J., & Ram, S. (2004). Design science research in information systems. MIS Quarterly, 28(1), 75-105. O'Riaghain, P., Sammon, D., & Murphy, C. (2011a). The design of effective theory. Systems, Signs & Actions, 5(1), 117-132.

## Key Findings: PKM System & Provisions benefit SMEs

**Real-World Ideosphere**









**Virtual Ideosphere**



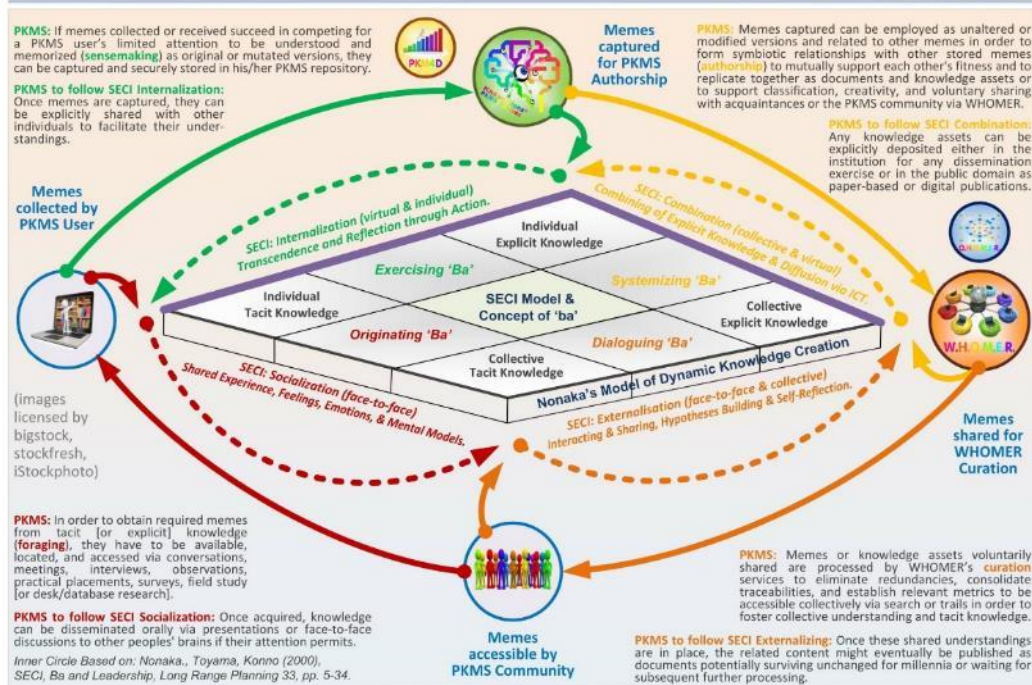
**World Heritage of Memes Repository (W.H.O.M.E.R.), Metrics & Reputation Systems**

**Provisions for supporting Personal Autonomy**

-  Digital Personal Knowledge (Extelligence) is always in Possession and at the **Personal Disposal** of its Owner or eligible Co-Worker.
-  Contents are kept in a **Consistent Format** for easy Retrieval, Expansion, Sharing, Pooling, Re-use and Authoring, or Migration.
-  Information and Functionalities can continually be used without Disruption independent of User-specific **Changing Environments**.
-  **Mutually beneficial Collaboration** Practices and Capabilities facilitate consolidated Team, Community, and Enterprise Actions that convert Individual into Organizational and Societal Performances.
-  The PKMS is based on a **Concept, Functionalities, and Interventions** which are easily understood and applied in Practice.
-  Accessibility to voluntarily shared Knowledge is secured via a **World Heritage of Memes Repository (W.H.O.M.E.R.)** maintained and curated by a non-profit Organization.

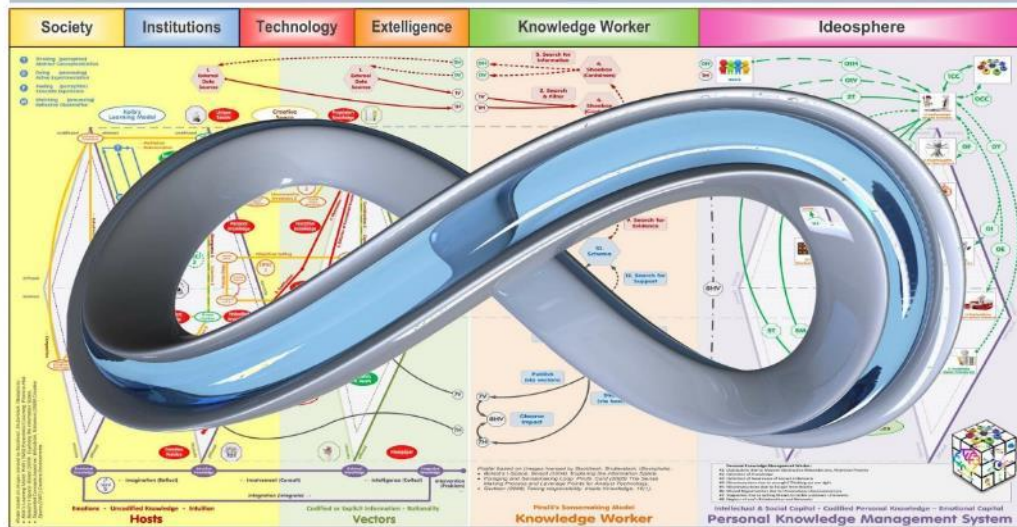
(images licensed by bigstock, stockfresh, iStockphoto)

## Implications: Fruitful Co-evolution SECI (OKM) with ICES (PKM)



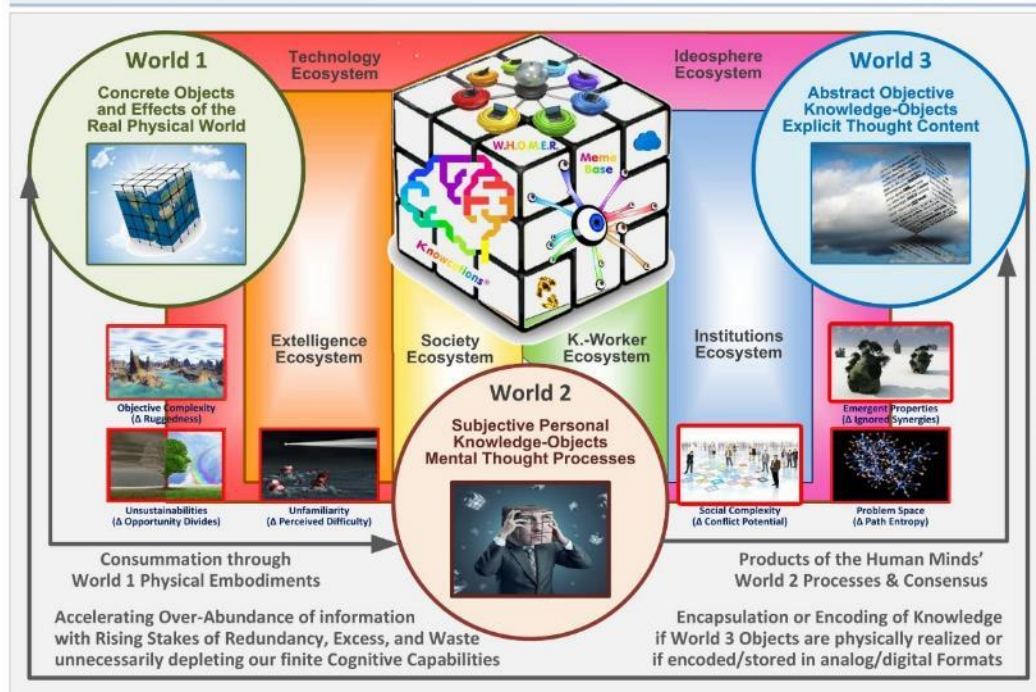


## Future: Completion, Testing, Rollout, I-Space Deployment **Knowcations**



- |  |  |  |  |
|--|--|--|--|
| <p><b>PKMS Ideosphere Model</b><br/>Notions Integrated</p> <ul style="list-style-type: none"> <li>• Boisot's I-Space Model, Knowledge Assets &amp; Social Learning Cycles</li> </ul> | <ul style="list-style-type: none"> <li>• Nonaka's SECI-Spiral, Ba, and Knowledge Assets</li> <li>• Kolb's Learning Model</li> <li>• JAIST Nanatsudaki or Seven Waterfalls Model</li> </ul> | <ul style="list-style-type: none"> <li>• Pirolli's &amp; Card's Foraging &amp; Sensemaking Loop</li> <li>• Levy's PKM Devices engaged in networked Creative Conversations</li> </ul> | <ul style="list-style-type: none"> <li>• Sandberg's and Kimura's Ideosphere Concept</li> <li>• Dawkin's Memes</li> <li>• Koch's Business Genes</li> <li>• Pinheiro's Traceability</li> </ul> |
|--|--|--|--|

## Meta-Perspective: PKMS Cube as Complexity & Entropy-reducing Devices **Knowcations**



Sources: Pepper, K. (1978); Three worlds. University of Michigan, April 7, 1978. Schmitt, U. (2016). Design science research for PKM system development - revisited. Informing Science: International Journal of an Emerging Transdiscipline, Vol.19, pp.345-379.



## Social Impact Measurements of Social Enterprises in Vietnam

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Keywords: *Social Enterprise, Social Impact Measurement, Vietnam*

### 1. Abstract

Social enterprises have made significant contributions to meet social needs and solve social issues in Vietnam. Social enterprises have been operating under a number of legal business forms such as limited company, club and association. In 2014, the revised Enterprise Law included the legal status of social enterprises, expecting further government supports followed by the growth of social enterprises in Vietnam.

It is widely known that the measurement of social impact is important for the growth of social enterprises as it helps to attract social investment funds and to track the progress of social impacts of social enterprises. However, to date, a Vietnamese version of social impact measurements does not exist in the country.

It can be argued that adopting a foreign social impact measurement is a possible way to measure the social impact of local social enterprises because the impacts of social enterprises are similar across the board.

Under the grant of British Academy, the University of Northampton's Social Impact Matrix (SIM) has been tested by a number of Vietnamese social enterprises. However, research finds that without revision of the tool, several barriers exist in application of the UK's SIM in Vietnamese social enterprises. In order to have an effective social impact measurement tool, a foreign tool should be revised to fit with the local cultural context.

### 2. Introduction

In Vietnam, there had been a number of social enterprises acting under the form of cooperatives since the country followed a planned economy before the 1980s. As the country has moved from low to middle income status in early 2010s, such models have been popular amongst funds and social investors who are required to replace the international development grants that are becoming less common. However, despite this growth there has been a comparative lack of development of robust, affordable and practically applicable social impact methodologies.

This inability to measure and demonstrate social impact can make it difficult to attract funding from international social investment funds, something that has been identified as a particular problem in Vietnam (Payne et al., 2014). In addition, social enterprises in Vietnam often suffer from a lack of recognition from the government. **Even with new legislation granting worthy Enterprises an official status, the government lacks the capacity to adequately determine which applicants deserve the status, leaving a lot of bureaucratic red tape.** Therefore, there remains a need for Vietnamese social enterprises to be assisted with the measurement of their social impact.

In the UK, the growth in the social enterprise movement and of social purpose organizations has been significant over the last thirty years. There has been a large-scale increase in the number of businesses that either define themselves as social enterprises, or that are registered as 'Community Interest Companies' (CICs).

Also, there are many different types of social impact measurement tools available for use by social ventures for assessment. These include Social Return on Investment (SROI) (Hall and Arvidson, 2013), the 'Balance

Scorecard' (Bull, 2007), 'Prove and Improve' (New Economics Foundation, 2008) and 'Outcomes Star' (London Housing Foundation and Triangle Consulting, 2006).

In order to develop a social impact measurement tool for use in Vietnam, a project funded by British Academy was established in early 2016 between the Institute for Social Innovation and Impact (ISII), University of Northampton- one of leading institutions in supporting social enterprises and social impact in the UK- and the Center for Economics Development Studies (CEDs), Vietnam National University Hanoi to transfer the University of Northampton's Social Impact Matrix (SIM) model into a suitable tool for the Vietnamese context.

Within the project framework, a key research question is addressed: what are the possible barriers to successful development and implementation of a Social Impact Matrix tool, and how can such barriers be overcome?

The paper is constructed as follows: the paper reviews the development background of social enterprises in Vietnam and SIM tool in the UK. Then, the paper briefly describes the methodology and main findings of research into Social Impact measurement in Vietnam. In the conclusion, initial recommendations to revise the SIM tool are included.

### **3. Development background of social enterprises in Vietnam**

There are some political and economic factors that influence the establishment and growth of social enterprises in Vietnam. Before 1986 the country followed a centrally planned economy. In other words, the government had planned and organized the whole economy's activities as well as provided all services to people. Cooperatives were strongly promoted by the government, and as a result, the number of cooperatives grew sharply from 45 in 1950s to nearly 74 thousand cooperatives in 1986 (Economic Committee of National Assembly and United Nations Development Program, 2010). Many were established to create jobs and improve lives for vulnerable people. Cooperatives are considered as one of the early models of Vietnamese social enterprises, playing crucial roles in the economy (BC, CIEM and CSIP, 2012, pp.10).

After 1986, the government pursued policies toward opening the economy, which created essential conditions for the emergence of social enterprises in the country. First and foremost, the private sector was allowed, and even encouraged, to develop. Tax cuts or exemptions were granted for private enterprises that provide employment and job training opportunities for people with disabilities and ethnic minorities. A number of private enterprises tackling social problems through business activities were established.

Apart from the growth of private social mission enterprises, a number of local NGOs with social missions were established to receive international development aids and grants. Since 2010, Vietnam has become middle-income country status causing the decline in international development funds, consequently Vietnamese NGOs have to transfer themselves into more market-driven businesses.

In middle and late 2000s, a number of donors and intermediary organizations namely the Center for Economic Development Studies (CEDs)/Thrive US, Center for Social Initiatives Promotion (CSIP)/British Council/Irish Aid and Center for Social Entrepreneurship Development (Spark) and started to support social initiatives with a focus on incubation and strengthening existing organizations' operations through training, mentoring, networking and research services. These organizations have various mandates to support social enterprises, which have created a new generation of social enterprises in Vietnam.

In terms of size, there were about 2,000 organizations identified as potential social enterprises and 167 organizations characterized as social enterprises (CSIP, BC and Spark, 2011). This number has been growing significantly since 2011, including new incubated social enterprises and transformed local NGOs. As of June 2014, the online database established by CSIP alone had 209 organizations listed. This implies that there has been continuous growth in this sector. In terms of legal forms, about 60% of the identified social enterprises operate as centers and companies. The rest are associations, clubs, cooperatives, funds or schools.

In 2014, the revised Enterprise Law has recognized the status of social enterprise. A social enterprise must meet two criteria, first its objectives are to solve social and environmental issues for community benefits, and second it spends at least 51% of annual surpluses to reinvest and implement registered social and

environmental goals. After two years, however there is only one company registered legally as social enterprise.

#### **4. The Social Impact Matrix**

The University of Northampton has developed the Social Impact Matrix (SIM) for measuring social and environmental impacts of social enterprises in response to a direct need in the sector. While there are many existing toolkits available for measuring impact, including Social Return on Investment (SROI) (Hall and Arvidson, 2013), the 'Balance Scorecard' (Bull, 2007), as well as 'practical toolkits' such as the 'Outcomes Star' (London Housing Foundation and Triangle Consulting, 2006), their scope is either too narrowly focused on a particular group, or focused entirely on outcomes. Such focuses make it difficult for social enterprises to use in a wide variety of sectors. The SIM has already garnered wide support, as Big Issue Invest, the Canal and River Trust and over 20 social enterprises have already adopted and successfully implemented the tool.

The SIM approach builds on the existing work and fundamental principles of the SIMPLE Methodology, McLoughlin et al. (2009). The SIMPLE approach looked at measuring outputs, outcomes, and impact, understanding that previous methods were mostly focused on outputs. Looking at outputs as a method of measuring the successes of a project is problematic. For example, looking at a project that focuses on reforestation, an output could be considered the number of trees planted within a particular area. By only looking at the number of trees planted, the evaluation does not take into consideration the important long-term effects or benefits of the intervention, outcomes. According to the SIMPLE approach, an outcome represents positive changes to participants' states of mind that will enhance their lives, their future employability and their psychological well-being (McLoughlin et al., 2009). In the case of a reforestation project, a potential outcome could be better air quality or less CO<sub>2</sub> concentration in the project area. By not considering outcomes, the total effectiveness of the project is lost. Something like impact is often more difficult to measure, as it looks at less tangible results, for example the improved health in locals living in the area, increased tourism revenue, or food security in the target area.

The SIM is revolutionary, using the SIMPLE framework but combining it with the "triple bottom line," considered the environmental, social, and economic benefits delivered by the Social Enterprise, to determine created social value. Intensive 95 sectors for measurement have been developed within the categories of Economic, Social, and Environmental. Each sector hosts a variety of outputs, in which exist multiple sub-outputs. Appendix 2 shows the current sectors available within the SIM.

An interested social enterprise will create an entirely personalized impact matrix, perfectly fit for their needs. Social enterprises map in which social, environmental, and economic sectors they work. From there, the social enterprise will choose specific outputs to measure within that sector. Once outputs have been selected, tools for measuring those outputs are used to produce data on the impacts. For example, in a social enterprise that works in employment might look at the number of jobs created as an output. For the outcomes and impacts, specific tools or formula would need to be utilized/created. Psychological scales that measured constructs such as well-being, self-efficacy or anxiety could be employed to measure outcome. Impact could be measured by adopting a formula that multiplied the number of jobs created (J) by the annual income of an individual on job-seekers allowance (B). The result of this calculation could also be added to the increase in income tax and national insurance income created by the new employment (T). This would give a calculation that would provide the fiscal savings to the state of the intervention  $[(J \times B) + T]$ .

#### **5. Methodology**

Two main phases have been conducted: interviews and pilot run. The first phase, including face-to face interview with 12 social enterprises were conducted in March 2016. All of the participant SEs are located in the Northern part of Vietnam. The selected social enterprises represent various traditional labour intensive business sectors which provide separate (i) products (handicraft, garment, herbal medicine, agricultural products, accessories, home ware) and (ii) services (massage, hair service and website design) or both (iii) (English teaching, cooking, tourism, herbal medicine and spa). Each have a social mission to support various disadvantaged people, namely handicapped people, ethnic minorities, single moms, autistic children etc. They



are also registered as various legal forms such as center, company and cooperative. Main characteristics of these social enterprises are presented in Appendix 1.

The second phase sought to test whether the SIM tool works well with Vietnamese social enterprises. Within 12 cases, two cases were selected to try the SIM matrix, providing comments and revision.

## **6. Findings: four main barriers to apply the SIM in Vietnam**

First, SEs don't yet understand the benefits of measuring their impacts. Many SEs feel that they can see the benefits of their work, so adding in Social Impact Measurement is superfluous. "Actually we do not need SIM. Because now we have certain influence. If you Google our company, you can see many video clips, newspaper (articles) about us. Our activities attract a wide range of media and press. We are on many TV channels. I believe that looking at them, people can see our impacts. Furthermore, no donor requires us to do SIM and we also don't know how to conduct SIM," said Ms. Van, the co-founder of Will to Live. Additionally, measuring impacts in formal way falls very low on the list of priorities, often due to misconceptions about the purpose of measuring their impacts. Mrs. Luyen, the founder of Donkey Bakery, shares that they don't need to measure impacts "because there are many other important problems to solve. I think that people who need to raise funds from others will need to do. But we fund ourselves, so we do not really need it. Our work is clear evidence of what we have been doing. But I'm still interested."

SEs have also shown that even if they wanted to measure their impacts, limited time, human resources, and capacity are major barriers to doing so. Issues related to time are identified as a serious challenge by most SEs in the case study. Some SEs, which are newly established, don't have enough time to measure any impact. They focus on other important aspect like production or sustainable development. Other interviewed organizations find it too time consuming to collect and calculate data related to outputs, outcomes and impact.

Many organizations note another challenge related human resources. From their point of view, SIM should be done in cases where SEs have enough resources. The average number of employees is approximately 10, so most of the interviewed SEs are able to focus only on business operation. Limited financial capacity denies them the ability to hire external professional experts to conduct SIM, so many only write annually/quarterly simple reports for themselves or donors. If they do receive support, it is often in the form of foreign volunteers who help collect data.

Finally, lack of intellectual knowledge in SIM is identified as constraint by half of interviewed SEs. The organizations have no staff with knowledge in SIM field and the founders and owners with NGO or business background to conduct SIM professionally

The second identified barrier involves challenges with language. Difficulties are bound to arise when translating between two languages, yet the challenges here pose some unique problems. The SIM was developed in the UK, where the SE sector has rapidly developed, along with an entire lexicon. The SE sector in Vietnam, though rapidly developing as well, has not yet caught up, and as such, is left without adequate terminology with which to discuss Impact Measurement. Even if terms could be directly translated, it would take some time to build the industry lexicon in Vietnamese, and for such vocabulary to enter the common vernacular of Vietnamese development. However, given the reported lack of intellectual capacity by the SEs themselves, some SEs don't understand the key terms which they are being asked to measure. Such missing concepts leave room for less precise measurement.

Thirdly, in order for the SIM to be more effectively used in Vietnam, it needs to be adapted to fit the Vietnamese context. In its current form, it does not specify metrics for Women's Empowerment, nor does it account for Ethnic Minorities. Given that Vietnam hosts 54 different ethnic groups, it is necessary to include such considerations. Additionally, the SIM itself must be approachable and user friendly in a way that does not require a third party consultant to aid in the measurement process. Vietnamese Enterprises are far more likely to continue to measure impacts if they can complete the task alone, on their time.

Finally, and perhaps one of the most important barriers to take into consideration, is simply that the SIM needs to be free to use, or available for a small fee. SEs have reported costs to be a factor in their decision to not

measure impacts. Some SEs face financial issues in applying the SIM. They prefer a free SIM tool, as there are many free resources available. “We don’t want pay fee to use SIM tool because there are many free online tools available, for example, B corporation social impact assessment”, said Mrs. Shu the founder of Sapa O’chau. Additionally, though SEs have shown that they much prefer using the tool on their own, they agree that consultancy should be available on request. Generally, they felt that they would pay a fee if the results from their independent measurements showed unfavorable results or a decline in key sectors. “We can pay from 1-3 million VND per year for SIM because we have to pay for many other software, for example accountant and customer management”, said the founders of Nam Thang Long. A few SEs stated that they would seek consultancy for problem solving.

## 7. Conclusion

As Vietnam continues to move forward economically, the necessity of Social Impact measurement is increasingly apparent. The robust, revolutionary nature of Northampton’s SI Matrix allow for a framework that is easily adaptable to the Vietnamese context, especially considering that the SIM has garnered great success among a variety of Social Enterprises in the UK. In-depth metrics in the sectors of Women’s Empowerment and Ethnic Minorities must be added to accommodate the target beneficiaries of SEs such as Craft2Inspire, Vietherb, and Sapa O’Chau. Other indicators should be revised, as seen in Appendix 3, namely indicators with industry jargon like “SEN pupils,” or “NEETs”, while others need to be removed entirely, such as Dragon Café and Food Top-ups. Essentially, the tool must be catered to a group short on time, human resources, and finances, in a way that is user-friendly and efficient. To sum up, with such changes in place, social impact measurement will successfully find its way into the Third Sector.

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## 9. Appendices

Appendix 1: List of interviewed companies

No	Company's name	Business Characteristics	Revenue (billion VND)	Number of employees
Sector (i): Products				
1	Craft to inspire (C2I)	Provides handicraft made by ethnic women in Ha Giang and Hoa Binh, the Northern provinces in Vietnam	1	8 full time 2 part time
2	Mountainous Bee	Provides honey and related product from 300 beehives and from other families around northern mountainous area	7.3	20 full time 1 part time
3	Nam Thang Long	Provides life vest pack back, generate job for vulnerable women and the elder	18.8	75 full time 22 part time
4	Tohe	Provides accessories, home ware, stationary, kid toys, fashion from the pictures of disadvantages kids	2.5	21 full time 6 part time
5	Vietherb	Provides Vietnamese herbs herbal medicine from ethnic healer and farmers mountainous provinces in the North and Central Vietnam	3.6	
Sector (ii): Services				
6	Blind Link	Provides massage service made by blind people	0.2	23 full time 6 part time
7	Thanh Nguyen hair Salon	Provides hair dressing, offer job for deaf people	0.6	6 full time 2 part time
8	Will to live	Provides website services and photo editor done by handicapped people	2	9 full time 3 part time
Sector (iii): Both Products and Services				
9	Coin for change	Generates job for single moms by making clothes fabrication, provide English teaching to cover the expense	2.5	20 full time
10	Donkey Bakery	Provides catering and bakery , generate job for handicapped people	11.2	8 full time 3 part time
11	Sapa O'chau	Provides trekking and homestays and handicraft, help ethnic people especially ethnic women and students in Sapa	14.5	49 full time
12	Sapanapro	Provides Herbal Therapy and Spa of Red Dao (an ethnic minority group) in Sapa to preserve traditional herbal formula and medicine in Vietnam and generate jobs for Red Dao households	5	102 Red Dao households

## Appendix 2- Current Available Metrics in the Northampton SIM

Economic	Social	Environmental
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<ol style="list-style-type: none"> <li>1. Access to Resources &amp; Production</li> <li>2. Apprenticeships- Profile &amp; Aspirations</li> <li>3. Bridging Social Capital</li> <li>4. Business Growth</li> <li>5. Community Space/Resource</li> <li>6. Corporate Partnerships</li> <li>7. Dragon Café</li> <li>8. Education &amp; Training</li> <li>9. Employability</li> <li>10. Employment</li> <li>11. Employment &amp; Entrepreneurship</li> <li>12. Employment &amp; Training</li> <li>13. Employment &amp; Volunteering</li> <li>14. Employment for SEN Pupils</li> <li>15. Endorsement &amp; Certification</li> <li>16. Engagement</li> <li>17. External Network &amp; Partnerships</li> <li>18. Financial Savings</li> <li>19. Food Top-Ups</li> <li>20. Food Variance &amp; Sustainability</li> <li>21. Food Vulnerability</li> <li>22. Free Tutoring</li> <li>23. Gambler Support</li> <li>24. Health &amp; Education</li> <li>25. Historic Buildings</li> <li>26. Household Income</li> <li>27. Household Issues</li> <li>28. Housing</li> <li>29. Leisure &amp; Competitive Activity</li> <li>30. Leisure &amp; Tourism</li> <li>31. Local Skills Growth</li> <li>32. NEET</li> <li>33. Occupational Therapy</li> <li>34. Organizational Support</li> <li>35. Paid tutoring</li> <li>36. Partnership Support</li> <li>37. Patient/Relative Health&amp; Retention</li> <li>38. Population Growth</li> <li>39. Poverty</li> <li>40. Pupil Learning Engagement</li> <li>41. Pupils &amp; Schools</li> <li>42. Recycled Materials</li> </ol>	<ol style="list-style-type: none"> <li>1. Care Support</li> <li>2. Charity Engagement</li> <li>3. Community Engagement</li> <li>4. Community Impact</li> <li>5. Families</li> <li>6. Gap Analysis</li> <li>7. Health</li> <li>8. Healthy Eating and Child Development</li> <li>9. HIV Treatment</li> <li>10. Home and Domestic Support</li> <li>11. Household</li> <li>12. Independent Living</li> <li>13. Parental Engagement</li> <li>14. Patient/Relative Health</li> <li>15. Performances Provided</li> <li>16. Professional Networks</li> <li>17. Public &amp; Third Sector referrals</li> <li>18. Safeguarding of Vulnerable Adults</li> <li>19. School Outreach</li> <li>20. Service Use</li> <li>21. Sexual Health Marketing</li> <li>22. Sexual Health Service Identification</li> <li>23. Social Capital</li> <li>24. Social Inclusion</li> <li>25. Social Networks</li> <li>26. State Service Relief</li> <li>27. Student Learning</li> <li>28. Teachers &amp; Teaching Assistants</li> <li>29. Well Being</li> </ol>	<ol style="list-style-type: none"> <li>1. Biodiversity</li> <li>2. CO2 Emissions</li> <li>3. Emissions</li> <li>4. Energy</li> <li>5. Environmental</li> <li>6. Flood &amp; Water</li> <li>7. Recycling</li> <li>8. Reduced Commuting</li> <li>9. Reduced Environmental Waste</li> <li>10. Renewable Energy</li> <li>11. Transport</li> <li>12. Travel Reduction</li> </ol>
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43. Reduced Youth Unemployment		
44. Retaining Young People (18-25 years of age)		
45. School career services		
46. School costs		
47. Self-employment		
48. Self-sufficiency		
49. Teaching improvements		
50. Technology		
51. Third sector partnerships		
52. Transport		
53. Volunteers		
54. Work generated		

### Appendix 3- Proposed Changes For the Vietnamese SIM

Category	Current Impact Sector	Additions/Revisions	Remove
Economic	<ol style="list-style-type: none"> <li>1. Access to Resources &amp; Production</li> <li>2. Apprenticeships- Profile &amp; Aspirations</li> <li>3. Bridging Social Capital</li> <li>4. Business Growth</li> <li>5. Community Space/Resource</li> <li>6. Corporate Partnerships</li> <li>7. Dragon Café</li> <li>8. Education &amp; Training</li> <li>9. Employability</li> <li>10. Employment</li> <li>11. Employment &amp; Entrepreneurship</li> <li>12. Employment &amp; Training</li> <li>13. Employment &amp; Volunteering</li> <li>14. Employment for SEN Pupils</li> <li>15. Endorsement &amp; Certification</li> <li>16. Engagement</li> <li>17. External Network &amp; Partnerships</li> <li>18. Financial Savings</li> <li>19. Food Top-Ups</li> <li>20. Food Variance &amp; Sustainability</li> <li>21. Food Vulnerability</li> <li>22. Free Tutoring</li> <li>23. Gambler Support</li> <li>24. Health &amp; Education</li> <li>25. Historic Buildings</li> <li>26. Household Income</li> <li>27. Household Issues</li> <li>28. Housing</li> <li>29. Leisure &amp; Competitive Activity</li> <li>30. Leisure &amp; Tourism</li> <li>31. Local Skills Growth</li> <li>32. NEET</li> <li>33. Occupational Therapy</li> </ol>	<p>Added Metrics:</p> <ol style="list-style-type: none"> <li>1. Access to Markets</li> <li>2. Access to credit</li> </ol> <p>Edit Metrics:</p> <ol style="list-style-type: none"> <li>1. SEN pupil</li> <li>2. NEET</li> </ol>	<ol style="list-style-type: none"> <li>1. Dragon Café</li> <li>2. Food Top-ups</li> </ol>

	<ul style="list-style-type: none"> <li>34. Organizational Support</li> <li>35. Paid tutoring</li> <li>36. Partnership Support</li> <li>37. Patient/Relative Health &amp; Retention</li> <li>38. Population Growth</li> <li>39. Poverty</li> <li>40. Pupil Learning Engagement</li> <li>41. Pupils &amp; Schools</li> <li>42. Recycled Materials</li> <li>43. Reduced Youth Unemployment</li> <li>44. Retaining Young People (18-25 years of age)</li> <li>45. School career services</li> <li>46. School costs</li> <li>47. Self-employment</li> <li>48. Self-sufficiency</li> <li>49. Teaching improvements</li> <li>50. Technology</li> <li>51. Third sector partnerships</li> <li>52. Transport</li> <li>53. Volunteers</li> <li>54. Work Generated</li> </ul>		
Social	<ul style="list-style-type: none"> <li>1. Care Support</li> <li>2. Charity Engagement</li> <li>3. Community Engagement</li> <li>4. Community Impact</li> <li>5. Families</li> <li>6. Gap Analysis</li> <li>7. Health</li> <li>8. Healthy Eating and Child Development</li> <li>9. HIV Treatment</li> <li>10. Home and Domestic Support</li> <li>11. Household</li> <li>12. Independent Living</li> <li>13. Parental Engagement</li> <li>14. Patient/Relative Health</li> <li>15. Performances Provided</li> <li>16. Professional Networks</li> <li>17. Public &amp; Third Sector referrals</li> <li>18. Safeguarding of Vulnerable Adults</li> <li>19. School Outreach</li> <li>20. Service Use</li> <li>21. Sexual Health Marketing</li> <li>22. Sexual Health Service Identification</li> <li>23. Social Capital</li> <li>24. Social Inclusion</li> <li>25. Social Networks</li> <li>26. State Service Relief</li> </ul>	<p>Metrics Added:</p> <p>Ethnic Minority Engagement</p> <ul style="list-style-type: none"> <li>1. # engaged</li> <li>2. Added Income</li> <li>3. Capacity building/training workshops</li> <li>4. Access to credit</li> <li>5. Ethnic employees in the value chain</li> <li>6. Ownership of productive assets</li> </ul>	None

	<ul style="list-style-type: none"> <li>27. Student Learning</li> <li>28. Teachers &amp; Teaching Assistants</li> <li>29. Well Being</li> </ul>		
Environmental	<ul style="list-style-type: none"> <li>1. Biodiversity</li> <li>2. CO2 Emissions</li> <li>3. Emissions</li> <li>4. Energy</li> <li>5. Environmental</li> <li>6. Flood &amp; Water</li> <li>7. Recycling</li> <li>8. Reduced Commuting</li> <li>9. Reduced Environmental Waste</li> <li>10. Renewable Energy</li> <li>11. Transport</li> <li>12. Travel Reduction</li> </ul>	None	None
Women's Empowerment	None	<ul style="list-style-type: none"> <li>1. # of women employed</li> <li>2. Male/female employee ratio</li> <li>3. Women in the value chain (diversity of roles)</li> <li>4. Women's ownership of productive assets</li> <li>5. Bargaining power within the household</li> <li>6. Access to credit</li> <li>7. Change in agency</li> </ul>	None



## **Symbiosis-Orientation And The Survival Of Small-Large Strategic Alliances**

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*Key Words: Symbiotic Strategy, Long-Term Growth, Resource-Constraints, Newly-Established, Entrepreneur Firms.*

### **Abstract**

This article studies the long-term performance of entrepreneur firms by paying more attention to their external environments. It argues that prior research on the long-term survival and growth of entrepreneur firms has paid insufficient attention to the effects of external environmental factors. As a result, it remains unclear why only a small percentage of newly-established entrepreneur firms can survive for more than three years (citation), and an even smaller percentage of the firms can achieve sustainable growth over a longer period of time. To address this research gap, we review the literature on symbiotic strategies in ownership, corporate-governance, marketing and new product development, based on which we highlight the importance of symoooo in the sustainable growth of the resource-constrained entrepreneur firms, and develop a conceptual model showing the relationship between symbiosis-orientation and its consequences for entrepreneur firms.

### **Introduction**

Researchers began to study the issue of symbiotic strategy several decades ago (e.g., Adler, 1966; Varadarajan & Rajaratnam, 1986). The most important characteristic of symbiotic strategy is to develop and maintain a mutual-beneficial symbiotic relationship with external parties or symbionts. Operating in this relationship, the symbionts involved have neither significant conflicting interests nor fierce competition for common resources (Li, Young, & Tang, 2010). Symbiotic strategy helps business partners or symbionts to overcome their resource-constraint more efficiently, to reduce the threat of market competition and

uncertainty, and to achieve long-term cooperation and sustainable growth. As a result, all of the partners or symbionts can perform better than those in other types of strategic alliances or in no alliances. Here the main reason is that, in other types of strategic alliance rather than a symbiotic one, partners involved may still have conflicting interests or power struggles among them, which should in turn have negative effects on their performances.

Symbiotic strategy can be especially useful for small entrepreneur firms that have resource constraints. For instance, by building a symbiotic supplier-buyer relationship with a large firm, such as the relationship with IBM built by Microsoft and Intel in their early years, small entrepreneur firms may obtain critical resources from their large partners more efficiently, increase their market shares more effectively, and secure their reasonable return and long-term development (e.g., Mitsuhashi & Greve, 2009).

In spite of the studies on symbiotic relationship, it remains unclear the effect of symbiotic trust on the relationship. As relevant research before focused on trust of one party only, the effects of mutual trusts among parties or symbionts in a symbiotic relationship have not been considered sufficiently. Many interesting questions can be raised here. For instance, in a dyadic symbiotic relationship consisted of a supplier and a buyer, what may happen if the supplier has a high level of trust in its buyers, but the buyers do not have much trust in the supplier? Should we consider their mutual or symbiotic trust? More importantly, what should be the antecedent of their symbiotic trust? In this study, we address these issues by focusing on the relationship between symbiosis-orientation and symbiotic trust.

Reviewing the current literatures of symbiotic strategy, including those related to similar topics such as relational marketing (e.g., Lavie, Kang & Rosenkopf, 2011), one can see that the issues related to symbiotic trust, as mentioned above, have not been studied sufficiently. For instance, it remains unclear the relationship between symbiosis-orientation and symbiotic trust, and it is not clear either the relationships among symbiosis-orientation, symbiotic trust and the survival of symbiotic relationship. Moreover, while prior research recognized the importance of mutual trust, it failed to consider the trust of all parties involved in a symbiotic relationship or strategic alliance. In other words, the trust tested in those studies is normally one-side trust, which may or may not match the trust of the other party involved in the symbiotic relationship. As a result, the joint effects of the trusts in all parties on the survival of symbiotic relationship remain unclear. Indeed, even among empirical studies published in top-tier journals (e.g., Morgan & Hunt, 1994), there were no empirical data showing effects of symbiotic or mutual trusts of all symbionts involved in symbiotic strategy. On the other hand, in the real world today, one can never assume the existence of this mutual or symbiotic trust in a symbiotic relationship or strategic alliance. Take a dyadic relationship of supplier-buyer symbiotic relationship as an example. A buyer may trust its supplier, but the supplier may not trust the buyer. Given different levels of trust in different parties in a given symbiotic relationship, firms' behaviors and performances in a given symbionts can be different, which in turn can affect the survival of symbiotic relationship. Academically and practically, it would be of significance to conduct a study dealing with these issues.

## **Objective**

Academically, such a study should contribute by developing and testing a new model showing the relationship among symbiosis-orientation, symbiotic trust and the survival of symbiotic relationship. The new model and new empirical evidence from testing this model should help enrich the literature of symbiotic strategy and strategic alliance.

From a practical perspective, this study should help practitioners to understand better how symbiotic relationships can be better maintained. This is especially true for small entrepreneurs that seek to establish a symbiotic relationship with a large firm. Because of their resource limitations, small entrepreneurs may have more difficulties securing the trust of large firms and build a mutual beneficial relationship. Addressing the difficulties of these small entrepreneur firms, our current research should be useful.

In the rest of this paper, we first propose a model showing the relationships among symbiosis-orientation, symbiotic trust on the survival of symbiotic relationship. After that, with multi-source data collected

from China's auto industry, we propose a theoretical model and test this model. This paper concludes with a discussion on the implications of the findings for future theoretical research and business practice.

## Literature Review

Symbiotic strategy and symbiotic relationship have been studied for decades. For example, as early as 1950, an author considered this issue and defined symbiotic relationship as "a mutual dependence between unlike organizations." (Hawley, 1950, p. 36). One example here can be the dyadic symbiotic relationship between a small auto part producer and a large car maker. With this symbiotic relationship, the parties or symbionts involved may reduce environmental uncertainties related to their critical resources and achieve better performance (see Varadarajan & Rajaratnam, 1986 for a comprehensive list of advantages resulted from symbiotic strategy).

Symbiotic strategy can be especially helpful to small entrepreneurs in an unfamiliar business environment, such as that of an overseas market. By establishing win-win symbiotic relationship with large firms, small entrepreneurs can effectively overcome their difficulties in tangible, intangible and human resources, adapt better in new institutional environments, and avoid fierce competitions with local competition in host countries. Relying on their symbiotic relationships with large multi-national enterprises (MNEs), small entrepreneurs can also enter international markets faster, and achieve first-mover advantages (e.g., Li, Young, & Tang, 2010).

According to Varadarajan and Rajaratnam (1986), the structure of symbiotic relationship can be understood by considering six dimensions: timeframe (short-, medium-, or long-term), proximity (arms-length or close working), number (one or a simultaneous multiple), level (organizational or functional), focus (product offerings of one partner or those of both symbiotic partners), and scope at the functional level (joint formulation of overall strategy or limited to specific projects or programs). While these dimensions are helpful understand the maintenance or survival of a symbiotic relationship, they may become irrelevant without symbiotic trust among parties or symbionts involved in the symbiotic relationship. As indicated above, based on more recent research on symbiotic relationship and related topics, such as relational marketing (e.g. Copulsky & Wolf, 1990; Mitchell, LeMay, Arnold, & Turner, 1992), it is arguable that symbiotic trust should play a very critical role in the maintenance or survival of symbiotic relationship. A better understanding the issues related to symbiotic trust should help us to predict and to explain the maintenance of symbiotic relationship and the success in symbiotic strategy.

As a specific type of strategic alliances, symbiotic relationship differs from other strategic alliance in the degree of competition among its symbionts for common resource (Li, Young, & Tang, 2010). In other words, the parties or symbionts normally do not compete for same resource. The resource being critical for the growth or survival of one symbiont can be the resource that the other symbiont does not need. As a result, there can be no fierce competition between these the symbionts for the same resource while both symbionts can perform better with their demands for resources satisfied (Li, Young, & Tang, 2010).

The same may not be true for other type of strategic alliances where there can still be politics and power struggles among the strategic partners for common resources that all partners want to control. One example here is the strategic alliance with the relationship of co-opetition (Lavie, 2007; Ritala et. al., 2008). While the partners in this type of alliances have cooperation among them, they also compete for some common resources that they all need, such as the same market or the same supply.

Prior research has also suggested that the trust among strategic partners, including those in symbiotic alliances, can provide a basis for expanded business relationships (Brenkert, 1998). According to the literature (Moorman, Zaltman, & Deshpande, 1992), trust can be defined as the degree to which a trust or believes in the goodwill and reliability of the trustee in a risky symbiotic exchange situation. Prior research has also shown that trust can influence positively many types of strategic alliance such as car-makers' alliances (Bensaou & Vekatraman, 1995), Keiretsu alliances (Gerlach, 1992), cross-national alliances (Madhok, 1995), and manufacturer-retailer ones (Kumar, 1996). In addition, the external validity of causal

inferences between trust and performance of strategic alliances has been supported (Saparito, Chen, & Sapienza, 2004).

Consistently, trust in each other may also have a positive effect on the maintenance and survival of symbiotic relationship (e.g., Gulati & Singh, 1998; Gulati & Westphal, 1999; Li & Rowley, 2002; Li, Young, & Tang, 2010). The main reason here is that symbiotic relationship should also be trust-based. A lack of trust among partners in a symbiotic relationship may cause a high level of uncertainty, such as that seen in possibly opportunistic behavior that may lead to one party gaining and the other losing (see Williamson, 1985 for a detailed discussion on opportunistic behavior). For example, Latham (1993) illustrates the negative effects of a lack of trust in the UK construction industry. Both relational contracting theory and transaction cost economics demonstrate that the danger of opportunistic behavior leads partners to perform in a defensive way – firms tend to pursue their own self-interest at the expense of their partners. This typical kind of defensive activity caused by an absence of trust should have a negative impact on the maintenance and survival of symbiotic relationship.

A subset of symbiotic relationships is the dyadic symbiotic relationship between a supply and a large buyer. Some authors have considered the effects of trust on the maintenance or survival of this type of small-large symbiotic relationship, such as a dyadic symbiotic relationship between a smaller seller and a larger buyer (e.g., Graebner, 2009; Kotha, Rajgopal, & Venkatachalam, 2004). It was suggested that the buyer in this symbiotic relationship should be more likely to feel that it lacks sufficient knowledge to trust the small seller, while the seller may have more trust in the buyer (Graebner, 2009). In other words, the seller and buyer in the symbiotic dyad may have asymmetric views on the trustworthiness of its counterpart or partner in the symbiotic relationship (Graebner, 2009). Given this problem, mutual or symbiotic trust may not be easy to build. Considering all these findings, we believe that the trust of the large and more powerful symbiont is more important than that of the small and less powerful one. Our reasoning reflects the suggestion of Castellucci and Ertug (2010) that the larger and higher-status firm in the dyad can actually control the survival of the symbiotic relationship by choosing whether to continue or terminate the relationship. In other words, the large symbiont should have the ability to terminate the symbiotic alliance yet faces much lower costs than does the small one. On the other hand, it is insufficient to maintain a symbiotic relationship if the trust in a symbiotic relationship is only one-side trust, such as that of a small supplier in the larger buyer.

In spite of the research of the importance of trust in a symbiotic relationship, such as that of large party in small one, it remains unclear how small firms can do anything for developing symbiotic trust or mutual trust so that they can build symbiotic relationship. In this paper, we address this issue by focusing on the effect of one variable, i.e., the small firms' symbiosis-orientation, which can arguably be seen as an antecedent of symbiotic trust.

**Symbiosis-orientation and its effect on symbiotic trust:** According to research (e.g., Joskow, 1987; Heide & Miner, 1992; Castellucci & Ertug, 2010; Li, Young & Tang, 2010), we can define symbiosis-orientation as the degree to which a business organization or firm adopts the symbiotic concept and strategic approach that color the attitudes and behavior of all its members. The concept of symbiosis-orientation itself represents a distinct element of organizational culture, and its related approach adopted by an organization should result in a mutual-beneficial strategic relationship with its key business partners. Put it differently, symbiosis-orientation reflects a firm's willingness to set its strategic objective as satisfying the need of its key partners in a given alliance while ensuring its own resources for survival and growth.

Empirical studies have shown evidence suggesting that symbiosis-orientation should contribute to the establishment of symbiotic trust (e.g., Joskow, 1987; Heide & Miner, 1992; Das & Teng, 2000). For instance, based on the perspective of transaction-cost theory, Lai and Chang (2010) studied how partners' willingness to consolidate their symbiosis can help reduce transaction costs, which can be affected by the trust in each other among the parties involved in a symbiotic relationship. Other authors have also obtained similar findings (e.g., Joskow, 1987; Heide & Miner, 1992; Larson, 1992; Levinthal & March, 1993; Castellucci & Ertug, 2010). According to all these studies, symbiosis-orientation may shape the strategies and behaviors of a given firm or business organization so that it can be more effective in establishing symbiotic trust. We therefore propose,

### Hypothesis 1 (H1)

There is a positive relationship between symbiosis-orientation and symbiotic trust in all parties in a symbiotic relationship.

**Resource-sharing and its effect on symbiotic trust:** Another significant antecedent of symbiotic trust can be the understanding of partner in a symbiotic relationship. Based on research evidence (e.g., Guo, Xiao & Tang, 2009; Martin, 2010), it is predictable that resource-sharing may have both direct and indirect effects on symbiotic trust, which in turn can influence the maintenance of symbiotic relationship. Below we provide a brief discussion on these effects.

Resource-sharing enables a given firm to provide appropriate resources, including tangible and intangible ones, to its partners or other symbionts in a symbiotic alliance, which should to increase their mutual trust (Li, Young, & Tang, 2010). For instance, in manufacturing industries, if a firm can share resources with its partners, it should be more likely to do a good job in developing mutual trust or symbiotic trust (e.g., Oliva & Kallenberg, 2003; Shankar, Berry, and Dotzel, 2010; Raja, Bourne, Goffin, Çakkol & Martinez, 2013; Jiang, Jiang, Cai & Liu, 2015). As a result, the firm should be more likely to develop and maintain symbiotic relationship.

Research has provided consistent evidence on this issue. On the one hand, resource-sharing may have a direct and positive effect on symbiotic trust. Research has shown that, if symbionts in a dyadic symbiosis can understand their demands in the market, they are more likely to improve their mutual or symbiotic trust (Inkpen & Beamish, 1997; Jiang, Jiang, Cai & Liu, 2015). Further, resource-sharing can become a continuous reciprocal process that provides further mutual benefits between the symbionts, which can continue improving symbiotic trust over a long period time (e.g., Luo, 2005; Li, Young, & Tang, 2010). Accordingly, it is predictable that resource-sharing can have a positive effect on symbiotic trust.

### Hypothesis 2 (H2)

There is a positive relationship between resource-sharing and symbiotic trust in all parties in a symbiotic relationship.

On the other hand, resource-sharing may have an indirect effect, i.e., enhancing the relationship between symbiosis-orientation and symbiotic trust. Research has suggested that partners' resource-sharing can improve the performance of network (e.g., Dyer & Nobeoka, 2000; Dyer & Hatch, 2006; Jiang, Jiang, Cai & Liu, 2015), which should have a positive effect on the relationship between symbiosis-orientation and symbiotic trust. In addition, resource-sharing can improve the recognition and credibility across the different parties (Mudambi, 2011), which also enhance the relationship between symbiosis-orientation and symbiotic trust. Accordingly, we propose,

### Hypothesis 3 (H3)

Resource-sharing moderates the relationship between symbiosis-orientation and symbiotic trust. Other conditions being equal, the higher the level of resource-sharing, the more likely a strong relationship between symbiosis-orientation and symbiotic trust.

Furthermore, it is arguable that symbiotic trust should have a positive effect on the survival of symbiotic relationship. According to prior research, as mentioned above, it is crucial to have mutual or symbiotic trust among all symbionts in a given symbiotic relationship. Only with a high level of symbiotic trust can the maintenance or survival of a symbiotic relationship become possible. Accordingly, we predict,

#### Hypothesis 4 (H4)

There is a positive relationship between mutual or symbiotic trust and the survival possibility of this symbiotic relationship.

Finally, based on Hypothesis 1 and 4, we also predict the mediating effect of symbiotic trust on the relationship between symbiosis-orientation and survival of symbiotic relationship. In other words, symbiotic trust can be considered as an important mediator through which symbiosis-orientation and resource-sharing influence the survival of symbiotic relationship. Accordingly, we propose,

#### Hypothesis 5 (H5)

Symbiotic trust has a positive mediating effect on the relationship between Symbiosis-orientation and the survival of symbiotic relationship.

[Insert Figure 1 about here]

### METHODS

#### **Setting, Sample, and Data**

To test the hypotheses proposed above, we collected data from symbiotic alliances in China's auto industry. The main reason for selecting this sample was that China has become one of the largest car markets in the world, yet little empirical research has been conducted in this Chinese industry. Moreover, in this industry, there are more small-large dyads or symbiotic alliances than many other industries. Finally, in comparison with firms in other industries, firms in this industry seemed to be more willing to cooperate with our data collection process. We first obtained approval to conduct this study from the top management of one of China's largest car producers, which has over 120,000 employees. Using a name list and relevant data from the car maker, we randomly contacted one hundred of its auto parts suppliers in 2015, 83 of which were willing to allow us to conduct an interview in their firm and to respond to our questionnaires. Among these suppliers, the largest firm had 6202 employees, while the smallest had only 212. The mean was 598 employees. The data collected from these 83 firms and from their large partner in the alliance—the car maker—therefore gave us data from 83 sets of symbiotic dyads to test our hypotheses.

To avoid common method variance, we adopted a multi-phase and multi-source approach. We first collected data from the suppliers, i.e., the small entrepreneur that provided auto parts to the car maker. Two weeks later, we collected data from the leaders of car maker who are in charge of making decisions on outsourcing. More importantly, we collected data from three sources: 1) the questionnaire data collected from each of the suppliers; 2) the questionnaire data gathered from the car maker; and 3) the panel data obtained from the car maker comprising its records and statistics on suppliers, such as the age of the firms, its size and its ownership. All these data are discussed next.

#### **Measurement**

All questionnaire items employed in this study were measured on a seven-point Likert scale in which the responses ranged from '1' (strongly disagree) to '7' (strongly agree). The questionnaire items were adapted from publications in top-tier academic journals originally produced in English. We adopted the technique of translation and back-translation to develop a Chinese version of the measurement instruments and conducted pre-tests of their reliability among a group of MBA students in China.

**Symbiosis-orientation was** measured by three items adapted from McFarland, Bloodgood and Payan (2008): 1) we expect the relationship with this company to continue for a long time; 2) renewing the relationship with this company is what we are trying for; and 3) in the next two years, we want to terminate

this relationship (reverse coded). Managers of suppliers responded to the items with an inter-rater correlation of 0.81, and the reliability alpha of this scale is 0.816.

**Symbiotic trust** was measured with data from all symbionts in a given symbiotic alliance. Specifically, this construct was measured in two steps: Firstly, we applied a three-item instrument adapted from Kale, Singh, and Perlmutter (2000) for studying trust in alliance: 1) there is a good understanding among the partners; 2) the symbiotic strategy is characterized by mutual respect among the partners; and 3) the symbiotic strategy is characterized by mutual trust among the partners. Our pre-test showed a reliability alpha of 0.905.

Secondly, after recording the scores from both parties in a dyadic symbiotic relationship, we aggregated the scores, and computed their average for each dyad. Our assumption here was that this average score reflected the mutual or symbiotic trust of parties involved in a symbiotic relationship. The scores of dyads with high symbiotic trust should be much higher than those with low symbiotic trust.

**Resource-sharing** was measured by eight items adapted from Jiang, Jiang, Cai and Liu (see Appendix A, Jiang, Jiang, Cai & Liu, 2015). These items measured how partners were sharing their tangible and intangible resource, such as equipment, patent and market knowledge. Managers in charge of outsourcing in the large firm responded to this scale with an inter-rater reliability of 0.72. Also, according to our data, this instrument has a reliability alpha of 0.982.

**Survival of symbiotic relationship** was measured by questionnaire items adapted from McFarland, Bloodgood and Payan (2008): 1) even if we could, we would not drop this supplier because we like being associated with them; 2) we want to continue as a customer of this firm, because we genuinely enjoy our relationship with them; and 3) our positive feelings toward this company are a major reason we continue to work with them. Managers of the car maker responded to this set of items. Our assumption here is that if the large and more powerful car maker in a small-large dyadic symbiotic relationship is unwilling to continue, the symbiotic alliance will be terminated. The car maker can either find another supplier or internalize the production of the auto part by itself depending on which way is likely to result in lower transaction costs. Accordingly, we had manager in charge of outsourcing in the large firm respond to this scale. Our assumption here was that, the higher the score from the car maker, the more successful the symbiotic strategy is. Our data showed that this instrument had a reliability alpha of 0.927.

## Control Variables

As noted earlier, we controlled for the effects of several variables. These variables include firm size, location proximity, tenure of the symbiotic relationship, geographical distance, joint venture, and whether the resources exchanged among the symbionts are unique and difficult to copy. Firm size was measured by the log of the total number of employees working for a given firm. Location proximity was measured by a dummy variable indicating whether the supplier was located in an inland province of China. Because most domestic car makers are located in these provinces and were coded as one (i.e., proximate), and those located elsewhere were coded as zero (i.e., not proximate). Tenure of the symbiotic relationship was measured by the number of years that a give symbiotic relationship has been maintained. Geographical distance was measured by the distance between the location of the car maker and the location of the supplier in a given dyad. Joint venture was coded by a dummy with joint ventures as one and the others as zero. And finally, whether the resources exchanged among the symbionts are unique and difficult to copy was also measured as a dummy with one as Yes and zero as No.

## Findings

### *Validation of the measurement model*

CFA was used to access the convergent and discriminant validities of the variables. First, we examined a four-factor model, which included Symbiosis-orientation, symbiotic trust, resource-sharing and survival of symbiotic relationship. The average variance extracted (AVE) for each construct exceeds the 0.5 benchmark



(AVE=0.716, 0.786, 0.873, 0.811 separately), demonstrating sufficient convergent validity. According to Table 1, the full model yielded an acceptable fit to the data ( $\chi^2 = 304.491$ ,  $df = 113$ ,  $p < .01$ ; RMSEA = 0.142, CFI = 0.923, TLI = 0.907), which suggested that these variables should be considered as separate constructs. Second, we computed six alternative three-factor models and a one-factor model (Table 1). All six of the three-factor models and the one-factor model ( $\chi^2 = 990.775$ ,  $df = 119$ ,  $p < .01$ ; RMSEA = 0.295, CFI = 0.647, TLI = 0.597) yielded a poorer fit than the original four-factor model. These results show sufficient discriminant validity of these variables.

[Insert Table 1 about Here]

### *Descriptive statistics*

Table 2 shows the descriptive statistics. Several interesting correlations can be observed among the variables, and the correlations of the main variables are in the expected directions. For instance, geographical distance has a significant negative correlation with symbiotic trust ( $\gamma = -0.283$ ,  $p < 0.01$ )

[Insert Table 2 about here]

To test the hypothesis 1-4 proposed above, we adopted the approach of hierarchical linear regression. We first entered **symbiotic trust** as a dependent variable. After that, we entered six control variables, i.e., **geographical distance between the supplier and the buyer, tenure, firm size, location proximity and the degree to which the product being supplied is unique and difficult to copy (easy to copy)** (Model 1), which were followed by our major independent variable, i.e., **Symbiosis-orientation** (Model 2). Next, we entered a **moderator, i.e., resource-sharing** (Model 3). Finally, the interaction, i.e., the **interaction between Symbiosis-orientation and resource-sharing** was entered (Model 4). In addition, we entered **survival of symbiotic relationship** as a dependent variable, and then control variables (Model 5) and symbiotic trust (Model 6).

Table 3 shows the results of the analyses. The significantly positive effect of the independent variable, i.e., Symbiosis-orientation ( $\beta = 0.212$ ,  $p \leq .01$ , Model 2), supports H1, which predicts Symbiosis-orientation may positively influence symbiotic trust. Also, according to the results of Model 6, the effects of symbiotic trust on the survival of symbiotic relationship is significant ( $\beta = 0.523$ ,  $p \leq .01$ ), which supports H4.

In addition, according to the result in Model 3, Table 3, there is a significantly positive direct effect of resource-sharing on symbiotic trust ( $\beta = 0.142$ ,  $p \leq .01$ ). This result supports H2, which predicts a significant and positive effect of resource-sharing on the survival of symbiotic trust. Moreover, as shown in Model 4 in Table 3, there is a significant interaction effect between Symbiosis-orientation and resource-sharing ( $\beta = -0.114$ ,  $p \leq .01$ ). Accordingly, the result partially supports H3, which suggests that resource-sharing should moderate the relationship between Symbiosis-orientation and symbiotic trust. Interestingly, however, the direction of this moderating effect is different from what H3 is predicting. In other words, why H3 predicts a significant and positive effect of resource-sharing on the relationship between symbiosis-orientation and symbiotic trust, our data here show a significantly negative moderating effect, which can also be observed in Figure 2. In other words, Figure 2 shows consistently a negative direction of this moderating or interactive effect (Symbiosis-orientation\*resource-sharing) on symbiotic trust graphically. When resource-sharing is low, there is a stronger positive association between Symbiosis-orientation and symbiotic trust (simple slope  $b = 0.379$ ,  $p < .01$ ) than that when resource-sharing is high (simple slope  $b = 0.151$ ,  $p < .01$ ). This result is surprising, and we will discuss this issue in next section.

[Insert Table 3 and Figure 2 about here]

H5 predicts that symbiotic trust mediates the relationship between Symbiosis-orientation and the survival of symbiotic relationship. We tested this mediating effect with two approaches. One was developed by Kenny, Kashy, and Bolger (1998) and Shrout and Bolger (2002), and the other was proposed by Preacher & Hayes (2004; 2008). The former approach suggests that, given a significant relationship between Symbiosis-orientation and symbiotic trust, and a significant relationship between symbiotic trust and the survival of symbiotic relationship, the mediating effect can be supported even if Symbiosis-orientation is not related to

the survival of symbiotic relationship (Kenny et al., 1998: 260). Accordingly, based on the results of Model 2 and Model 6, Table 3, the mediating effect of symbiotic trust exists, which supports H5.

On the other hand, according to the approach proposed by Preacher & Hayes (2008) for testing indirect effects, one can use structural equation modeling to supplement mediation test with indirect-effects tests using the bootstrapping approach (Preacher & Hayes, 2008). Adopting this approach, we obtained results that symbiotic trust had a significant indirect effect on the relationship between Symbiosis-orientation and the survival of symbiotic relationship (indirect effect= 0.304, 95% confidence intervals= [0.174, 0.471]). Furthermore, we also found that symbiotic trust had a significant indirect effect on the relationship between resource-sharing and the survival of symbiotic relationship (Indirect effect= 0.143, 95% confidence intervals= [0.056, 0.262]). The whole model (including the interaction between Symbiosis-orientation and resource-sharing) yield an acceptable fit to the data ( $\chi^2 = 16.357$ ,  $p > .05$ ; CFI = 0.939, RMSEA =0.133).

## **Discussion and Implications**

A fundamental theoretical issue that our research raised is whether symbiosis-orientation and symbiotic trust should be considered and tested in the research of symbiotic strategy. With a new theoretical model, we argue that symbiosis-orientation and symbiotic trust should have a significant and positive effect on the survival of symbiotic relationship, and our research findings support this argument. Specifically, our data support a significantly positive effect of symbiosis-orientation on symbiotic trust. Our data also support a significantly positive effect of symbiotic trust on the survival of symbiotic relationship. In addition, showing that symbiotic trust can function as a mediator, our data also support the positive effect of symbiosis-orientation on the survival of symbiotic relationship.

In addition, the results of our current study also support effects of resource-sharing. Consistent with prior research, our data show a significant moderating effect of resource-sharing on the relationship between symbiosis-orientation and symbiotic trust, which in turn influences the survival of symbiotic relationship. In other words, to implement a strategy of symbiotic strategy successful, it is important for partners or symbionts to understand each other. Among the small-large dyads tested in our current study, it is especially important for the small or less powerful partner to understand the needs and demands of its large partner and to establishing a resource-sharing relationship with large partners, which should help establish symbiotic trust in each other among the symbionts.

### ***Theoretical implications***

The findings in this study highlight the importance of considering symbiosis-orientation and symbiotic trust when studying the issues of symbiotic strategy, which should contribute to the development of theory regarding symbiotic strategy. One can infer that firms with a strong symbiosis-orientation are more likely to establish symbiotic trust, which in turn can help maintain a mutually beneficial symbiotic relationship.

In addition, this study has several other theoretical implications. First, our results show that it is necessary and useful to conduct more comprehensive investigations testing all variables or variables that may influence the performance or survival of symbiotic relationship. For instance, according to Varadarajan and Rajaratnam (1986), the structure of symbiotic relationship can be understood by several dimensions, such as timeframe (short-, medium-, or long-term) and proximity (arms-length or close working). The results from our current study show that some of these dimensions may not influence the development of symbiotic trust and the survival of symbiotic relationship. In other words, while these dimensions are helpful understand the characteristics of symbiotic relationship, they can be irrelevant to the maintenance or survival of a symbiotic relationship. For instance, although past research has suggested that increasing the tenure of an alliance (and repeated interactions) has a positive effect on its likelihood of survival, our data show that when this variable is considered together with others such as resource dependence, ownership, and location, its effect can be insignificant. In other words, this variable seems to be relatively unimportant in comparison with other variables. Second, academically, our findings suggest a need to improve the methodology employed for

studying symbiotic marketing and strategic alliance. In other words, future investigations of symbiotic marketing or similar issues need to collect data from all partners involved in the alliance and not from one party only. As the results of our study show, if a researcher collects only questionnaire data from one partner or symbiont in the alliance—the approach adopted by some researchers in the past—such data alone may not be sufficient to predict the performance of the alliance correctly, as seen in the case of trust from the supplier in this study. This is especially true when the data from this one partner are collected through a self-reporting questionnaire only.

### ***Practical implications***

The findings in this study should be useful for practitioners, especially for those leading small entrepreneur enterprises. On the one hand, firm location or geographic proximity makes no difference in the developing of symbiotic trust and the survival of symbiotic relationship. In other words, given a great improvement of highway system in China, geographic proximity is no longer a variable that can influence the development of symbiotic trust and the success of symbiotic strategy. On the other hand, the findings of this study suggest that joint venture or overseas ownership is very effective in maintaining the small-large symbioses we examine in this study. After more than thirty years of opening-up and economic reform, managerial value and other institutions, including those relating to symbiotic marketing, are moving closer to their international equivalents in which overseas ownership may not have any significant effect on the success of a symbiotic strategy. This may be true for at least some modern and capital-intensive industries such as the auto industry. Therefore, for small and medium-sized firms that seek to build relationship of symbiotic marketing with large and more powerful firms, it is important to understand what variables are really important. For the dyads studied in this paper, for example, the trust of the buyer seems to be the most important factor predicting the success of the alliance.

### **Limitations and Future Research**

The cross-sectional nature of the data in our study may restrict conclusions to those of association, not causation, such as the effects of symbiosis-orientation and symbiotic trust. The development of a time-series database and testing the effects of symbiosis-orientation in a longitudinal framework in a future study would provide more insight into probable causation. In addition to the preceding suggestions for modifying the research design, future research might also address the following issues pertaining to symbiosis-orientation.

In addition, it would be useful in the future to test the relationship of symbiosis-orientation to additional performance among partners in symbiotic relationships. For example, what is the relationship of symbiosis-orientation to firms' profitability, new product success, and sales growth? In addition to further examining the effect of the magnitude of symbiosis-orientation on business performance, future studies should also examine the effect of the proportions of the components of firms' performances.

### **Concluding Observations**

Our study is an important first step in validating the symbiosis-orientation/success of symbiotic strategy. For both academic researchers and business practitioners, especially those who are interested in symbiotic marketing, relationship marketing and other related topics issues related to strategic alliances, the implications of the study are clear. The research must be replicated in diverse environments and over time to increase confidence in the nature and power of the theory. Our current study has obtained evidence suggesting that symbiosis-orientation should help the success of symbiotic strategy. Our current study has also found interesting relationship among symbiosis-orientation, resource-sharing and symbiotic trust. All these findings are entirely consistent with the intuition and expectations of both scholars and practitioners over the past decades about the nature and effects of symbiotic strategy. The findings should encourage scholars and

practitioners to go beyond mere intuition for recommending the superiority of symbiotic strategy, and make greater efforts in the future to study and implement symbiotic strategy in business organizations.

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Table1. Results of CFA for the measures of the variables studied

Model	$\chi^2$	df	$\Delta\chi^2$	TLI	CFI	RMSEA
Four-factor model	304.491	113		0.907	0.923	0.142
Three-factor model 1 Symbiosis-orientation and Resource-sharing	549.128	116	244.637**	0.795	0.825	0.211
Three-factor model 2 Resource-sharing and symbiotic trust	554.701	116	250.210**	0.972	0.822	0.212
Three-factor model 3 Symbiotic trust and survival of symbiotic relationship	696.998	116	392.507**	0.724	0.765	0.244
Three-factor model 4 Symbiosis-orientation and symbiotic trust	428.406	116	123.915**	0.852	0.874	0.179
Three-factor model 5 Symbiosis-orientation and survival of symbiotic relationship	563.761	116	259.270**	0.788	0.819	0.214
Three-factor model 6 Resource-sharing and survival of symbiotic relationship	389.823	116	85.332**	0.870	0.889	0.168
One-factor model	990.775	119	686.284**	0.597	0.647	0.295

Note: TLI = Tucker–Lewis index; CFI = comparative fit index; and RMSEA = root mean square error of approximation.

\*p ≤ .05; \*\*p ≤ .01.

Table2. Means, Standard Deviations, and Correlations

Constructs	1	2	3	4	5	6	7	8	9	10
1.Geographical Distance	1									
2.Tenure	-.125	1								
3.Firm size	.177	.256*	1							
4.Location proximity	.554**	-.152	.133	1						
5.Joint venture	-.087	.230*	.233*	.174	1					
6.Easy to copy	-.057	-.023	-.342**	-.225*	-.385**	1				
7. Symbiosis-orientation	-.213+	-.153	-.127	-.173	-.072	.050	1			
8.Resource-sharing	-.106	.114	.153	-.094	.079	.042	-.195+	1		
9.Symbiotic trust	-.283**	-.170	-.015	-.014	-.010	-.212+	.581**	.180	1	
10.Survival of symbiotic relationship	-.126	.077	.145	-.012	.093	-.173	-.096	.708**	.536**	1
MEAN	395.43	15.72	598.060	0.260	0.150	0.710	4.680	2.443	4.036	3.47
S.D.	0	0	0	0	0	0	0	0	0	0
	379.04	8.092	1054.065	0.443	0.364	0.454	0.557	1.152	0.435	0.66
	6									5

Note: + p ≤ .1; \*p ≤ .05; \*\*p ≤ .01.

	Symbiotic Trust				Survival of symbiotic relationship	
	M1	M2	M3	M4	M5	M6
Intercept	4.191**	4.165**	4.199**	4.182**	3.509**	3.323**
<i>Control variables</i>						
Geographical Distance	-.160**	-.121*	-.104*	-.095*	-.085	.108
Tenure	-.073	-.039	-.042	-.030	.038	.126 <sup>+</sup>
Firm size	-.002	.009	-.016	.000	.059	.061
Location proximity	.126	.173	.184 <sup>+</sup>	.249*	.081	-.071
Joint venture	-.053	-.107	-.122	-.146	-.064	.001
Easy to copy	-.275*	-.240*	-.291*	-.300**	-.136	.195
<i>Independent Variable</i>						
Symbiosis-orientation(SO)		.212**	.226**	.265**		
<i>Mediator</i>						
Symbiotic trust						.523**
<i>Moderator</i>						
Resource-sharing (RS)			.142**	.148**		
<i>Interaction</i>						
SO*RS				-.114**		
R <sup>2</sup>	0.217	0.422	0.54	0.589	0.033	0.463
Δ R <sup>2</sup>		0.205**	0.118**	0.049**		0.430**

Table3. Results of Hierarchical Linear Modeling

Note: + p ≤ .1; \*p ≤ .05; \*\*p ≤ .01

Figure1. Conceptual model

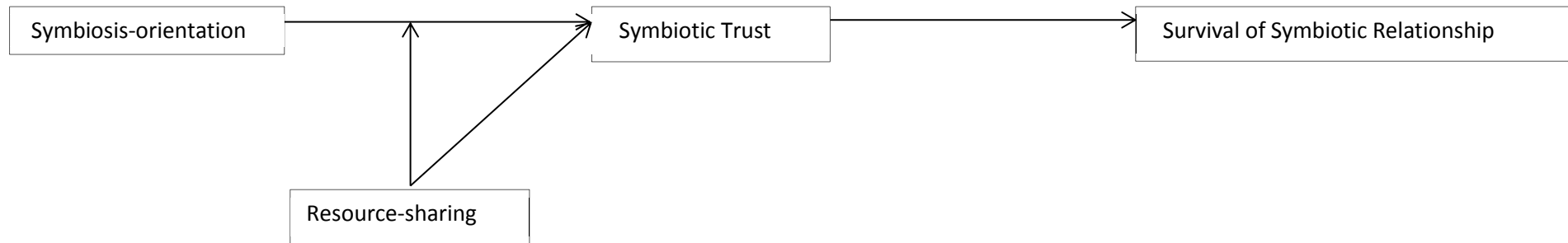
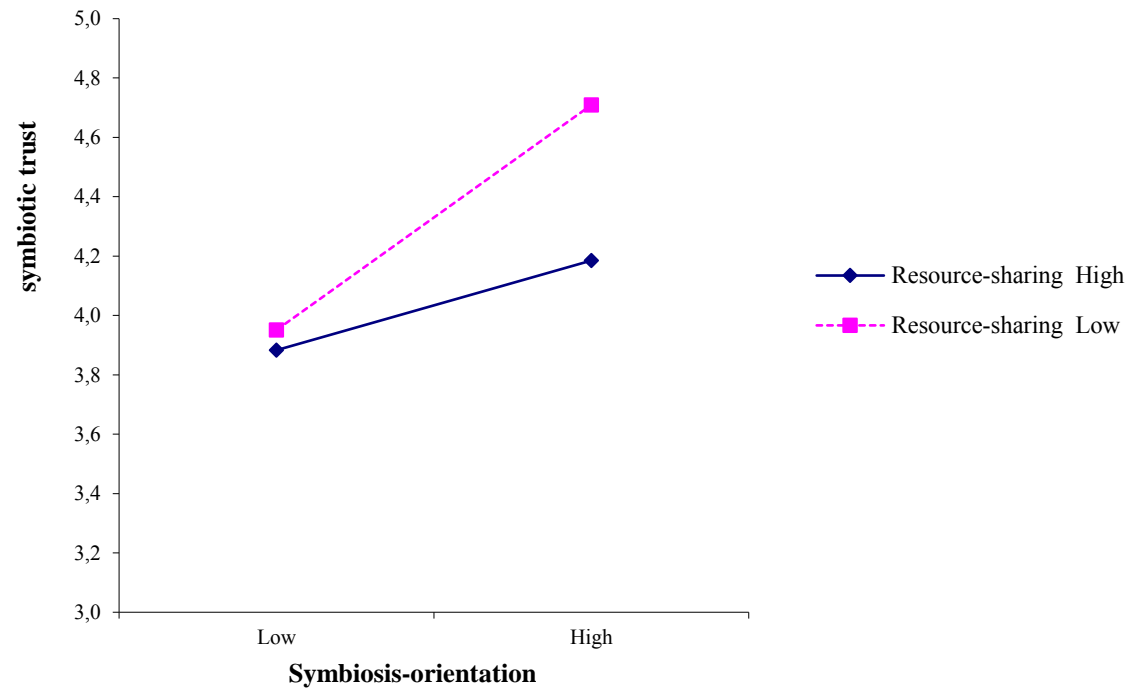


Figure2. Moderating effect of Resource-sharing

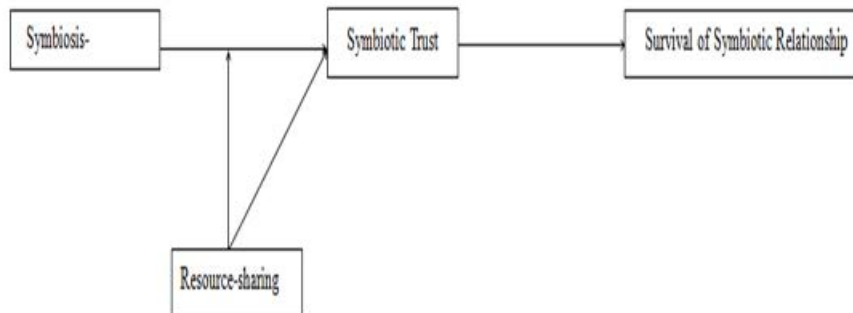


THE LONG-TERM SURVIVAL AND GROWTH OF  
RESOURCE-CONSTRAINED ENTREPRENEURS,  
A PERSPECTIVE OF BUSINESS SYMBOISIS

Celine Wanxing JIANG  
Hong Kong Baptist University

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Conceptual model



# Method

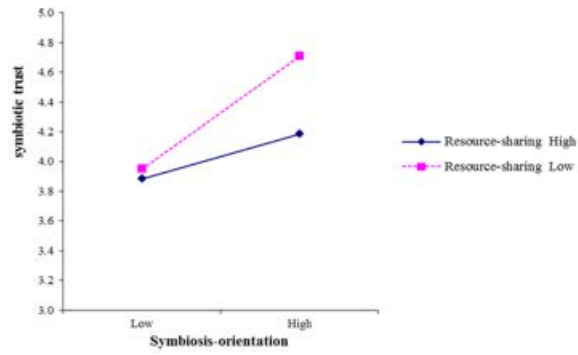
- Bootstrapping (Preacher & Hayes, 2008) for testing moderated mediation model

## Key findings (1)

	Symbiotic Trust				Survival of symbiotic relationship	
	M1	M2	M3	M4	M5	M6
Intercept	4.191**	4.165**	4.199**	4.182**	3.509**	3.323**
<i>Control variables</i>						
Geographical Distance	-.160**	-.121*	-.104*	-.095*	-.085	.108
Tenure	-.073	-.039	-.042	-.030	.038	.126
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Δ R <sup>2</sup>		0.205**	0.118**	0.049**		0.430**

Note: + p < .1; \*p < .05; \*\*p < .01.

## Key findings (2)



## **Sub-theme 2:** **Innovation and Internationalisation**



## **Entrepreneurs' behavioural skills for internationalization**

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*Keywords: Behavioural Competencies, Human Capital, Internationalisation, Emotional And Social Competencies, Export Intensity, Entrepreneurship*

### **Abstract**

Internationalization is an essential strategic choice for firm growth, a multidimensional process by which small and medium size firms can broaden their customer base, attain larger production volumes and leverage resources in different markets. Usually for SME's it is a challenging process in which a wide range of decisions have to be taken. The entrepreneur, as decision-maker, is considered a principal force in the development, implementation, sustenance, and success of a firm's international strategies and the central factor explaining a firm's international behavior.

Literature on the characteristics of entrepreneurs as successful drivers of internationalization focused mainly on tangible aspects of human capital such as their previous experiences abroad, which could generate better knowledge of foreign markets and their educational level.

However, no attention has been paid on those intangible aspects of human capital, namely behavioural competencies, which have been recognized by literature as key predictors of personal and professional success, and may have an impact on the entrepreneur's ability to find and take advantage of international opportunities. Previous studies highlighted that risk taking and initiative are two important characteristics that help the entrepreneur undertake internationalization processes, but did not investigate other types of behavioural skills. Our study wants to address this gap by investigating what behavioural elements which characterize entrepreneurs positively impact on the firm's internalization. To do so, we carried out a study on a sample of 39 innovative Italian companies which belong to different sectors and show different levels of internationalization.

The aim of this paper is to add to the previous literature on entrepreneurship and internationalization by identifying new antecedents of the firm's level of internationalization adopting an individual level perspective, and to understand what are the behavioural competencies that have a positive impact on the successful implementation of internationalization processes and could be developed by entrepreneurs in order to strengthen their ability to expand their business beyond the national borders.

## Introduction

Internationalization is an essential strategic choice for firm growth and is considered to be a key driver of firm performance (Denicolai et al., 2015). In the last decades, two main factors have favored the internationalization processes of small and medium businesses, namely globalization, which has accelerated greatly in recent years, and the development of information and communications technologies, (Knight and Kim, 2009). Internationalization plays a vital role in today's competitive business environment and represents a way through which SMEs can pursue new opportunities, broadening their customer base, attaining larger production volumes and leveraging resources in different markets (Lu and Beamish, 2001; Ruzier et al., 2007; Skrt and Antoncic, 2004). Nevertheless, as the profile of SMEs differ greatly from the one of traditional multinational companies in terms of financial and tangible resources (Craig and Douglas, 1996), it is clear that the formers have to face very different challenges and employ different types of resources to expand abroad.

Previous research has pointed out that, in SMEs, the central factor which explains a firm's international behaviour is the entrepreneur (Andersson, 2000). Indeed, the SMEs' internationalization process centers around one key decision-maker (Ruzier et al., 2007), who becomes the principal force behind the initiation, development, sustenance, and success of the process (e.g., Carpenter and Fredrickson 2001; Zucchella et al., Ruzier et al., 2007). In this case individual-related characteristics strongly influence the decision process (Herrmann and Datta 2005; Bloodgood et al. 1996), indeed previous studies underlined the crucial importance of the entrepreneur's human capital, knowledge, experience, skills, competence and network of relationships in explaining the export performance (Makovec Brencic, 2001; Ruzzier et al., 2006; Lloyd-Reason and Mughan, 20002), and the lack of competencies of the entrepreneur as one of the main causes of internationalization failure (Udomkit and Scheirer, 2015). According to past research the degree of export aggressiveness can be ascribed to entrepreneurial characteristics, because they directly influence the willingness and behavior of the decision maker (da Rocha, et al., 1990; Leonidou et al., 1998). Literature on small firms internationalization investigated different aspects of the entrepreneurs' human capital, focusing on their educational level (Wiersema and Bantel, 1992), international experience (Matusinaite and Sekliuckiene, 2015), attitudes (Bijmolt and Zwart, 1994; Ogbuehi and Longfellow, 1994), international orientation (Dichtl et al, 1990), International business skills, and demographic characteristics (Manolova et al., 2002). However, little attention has been paid on those intangible aspects of human capital, namely behavioural or Emotional and Social competencies (ESCs), which have been recognized in the literature as key predictors of personal and professional success (Covey, 1996; Goleman, 1998; Sigmar et al., 2012), and may have an impact on the entrepreneur's ability to find and take advantage of international opportunities. Previous studies highlighted some characteristics which are considered important in helping the entrepreneur undertake internationalization processes, such as risk taking and initiative (Matusinaite and Sekliuckiene, 2015). However attention was not paid on other types of behavioural skills, related to the ability of constructing and managing relationships, of using information and analysis methods to interpret situations, to explore and interpret the competitive environment. This research wants to address this gap by analyzing what are the behavioural competencies which characterize entrepreneurs who best perform the internationalization process.

We conducted our study on a sample of entrepreneurs who operate in the Veneto region, one of the most productive and export-oriented region of Italy (ISTAT, 2016). In order to investigate behavioural competencies that distinguish entrepreneurs with a high propensity toward internationalization, we develop a competency model (Spencer and Spencer, 1993). First, we considered the export performance as criterion sampling, and we classified entrepreneurs into two groups (bestvs poor performers) according to their level of export performance. Then, data on ESCs were collected through semi-structured interviews using the behavioural event interviewing (BEI) technique (Boyatzis, 1998; McClelland, 1998). Entrepreneurs were asked to relive and describe recent episodes in which they felt effective. The overarching goal of BEI is to elicit narrations that illustrate the interviewee's specific thoughts and actions in particular events, in order to identify the specific ESCs activated. Finally, we analysed the composition of the competency portfolio of the entrepreneurs to identify the distinctive competencies that differentiate the outstanding from the poor performers.

The contribution of this paper is twofold. First, it adds to the previous literature on entrepreneurship and internationalization by identifying new antecedents of the firm's level of internationalization adopting an

individual level prospective. Second, it sheds light on the behavioural competencies that have a positive impact on the successful implementation of internationalization processes.

The paper is structured as follows. In the next section we build on international entrepreneurship and behavioural competencies literature in presenting the theoretical background of the study. In the following session is dedicated to the method session in which we present the sample and the methodology used in the empirical analysis. Finally, after the description of the main results, conclusion and implications are drawn discussing how entrepreneurs can develop ESCs in order to strengthen their ability to expand their business beyond the national borders.

## Theoretical background

Literature on internalization of SME's recognized, differently from research on multinational companies which adopt a more organizational level prospective, the need of a much more individual focus on the entrepreneur and his/her qualities and behavior. Besides the relevance of technical knowledge and prior international experience, little attention has been paid on the investigation of those "softer elements" of human capital, namely behavioural competencies, which are assuming an increasing importance in favouring business success (Camuffo et al., 2012; Humphrey, 2013), and may have an impact also in the successful implementation of internationalization processes. Adopting a competency-based perspective (Boyatzis, 1982; McClelland, 1973; Spencer and Spencer, 1993), a behavioural competency can be defined as an underlying characteristic of the person that leads to or causes effective or superior performance (Boyatzis, 1982). The most recent advancement in the competency-based perspective defines three main clusters of behavioural competencies, that are emotional, social, and cognitive (Boyatzis, 2009). Previous studies on international entrepreneurship started to investigate some individual behavioural characteristics.

One of the most discussed characteristics which seems necessary for international expansion is a risk-taking behavior (Pérez-Luño et al., 2011, Covin and Wales, 2012). According to Singh (1986) people that have the role of decision makers and are directly involved in daily management tend to have greater confidence in taking risks. Risk-taking is defined as the entrepreneur's ability to tolerate risks in his/her decision making (Li et al., 2015) and it comprehends a high tolerance for ambiguity and willingness to decide (Baum and Wally, 2003). Many factors can contribute to define an internationalization process as risky, for example consider the difficulty of creating trust-building mechanism in cross-cultural encounters because of possible cultural misunderstandings (Jaehne et al., 2009). Cultural distance, by creating possible lack of understanding regarding cultural norms and values, creates difficulties and lead to higher risk in managerial decision-making ([Slangen and van Tulder, 2009](#)). Kraus and colleagues (2015) add the risk created by economic distance, lower economic and political development in the foreign target country which have an association with greater perceived risk in internationalization decisions. Therefore the entrepreneurs' ability to deal with uncertainty seems determinant in internationalization processes. Li et al. (2015) for example studied and demonstrated that individual level risk-taking propensity has a positive impact on the internationalization speed of small young firms. According to Fan and Phan (2007) this may be because the ability to try, despite the uncertain outcome, allows entrepreneurs to respond quickly to opportunities and threats in foreign markets .

A second entrepreneurial characteristic regarded as one of the most important factors in effective internationalization, is initiative (Matusinaite and Sekliuckiene, 2015). Having initiative means being able to take action, to understand a situation in advance and act accordingly. The ability to perceive the dynamics and evolution of the international environment can be determinant to see and exploit opportunities. Rauch et al. (2009) define proactiveness as the ability to predict future market changes, while Covin and Lumpkin (2011) consider it as an essential quality for entrepreneurs who want to expand their business abroad, adding to the definition of taking initiatives the concept of perseverance in ensuring these initiatives are implemented. Proactiveness, together with an innovative and risk-taking behavior have been used in defining international entrepreneurship (McDougall and Oviatt, 2000), and refer to the behavioural elements that describe an internationally oriented entrepreneur (Freeman and Cavusgil (2007). According to Knight (2001) the three-dimensional international entrepreneurial orientation is the major factor of success which determines the international performance of the firm (Wach, 2015). However

some authors see international entrepreneurial orientation as a construct which is not distinct from simple entrepreneurial orientation, and therefore classify “international” only as one of the contexts in which the latter is performed (Covin and Miller, 2014).

Another element which, especially among small and medium-sized firms, is considered an important source for facilitating the internationalization process is the creation of relationship links. Previous studies highlighted the significant role of entrepreneurs’ personal networks (Lehto, 2015; Knotinen Ojala, 2011; McDougall et al., 1994) in initiating an internationalization process (Coviello, 2006; Crick and Spence, 2005; Ghauri, Lutz, and Testom, 2003). Ties determine the possibility to gain resources and information which can be useful in the recognition of opportunities (Kontinen and Ojala, 2011; Baron 2006), and in small and medium entrepreneurial activities the entrepreneurs becomes the key driver of network creation and management. Networking is the ability to build and maintain informal relationships (Boyatzis, 2009) which can be used to get information about new opportunities and characteristics of the foreign market. It has been shown that they are crucial especially for international new ventures as they allow to obtain resources (Coviello and Cox, 2006) and knowledge of international markets (Bell et al., 2003). As for competencies which regard the management of the self, previous studies ([Dichtl et al., 1990](#)) underline that international activities are better performed if the entrepreneur has adaptability, which is if he/she is able to adapt to a rapidly changing environment and is able to adapt his/her behavior to the situation. This competence show its relevance especially in presence of highly culturally distant environments in which a flexible mind allows entrepreneurs to deal effectively with different or uncommon circumstances.

Beside the aforementioned competencies, the literature on international entrepreneurship does not investigate other dimensions of behavioural competencies that could influence the entrepreneur’s ability to enter foreign markets and to enlarge his/her international activities. Literature on cross cultural competencies adds to this by identifying skills that characterize people who manage cross cultural activities, even if it does not focus specifically on entrepreneurs. In their review, Yamazi and Kayes (2004) include Listening and Observation as a way to explore the cultural environment. Dyer and colleagues (2008) describe this phenomenon in terms of explorative behavior of entrepreneurs, which comprehends the ability to observe, ask questions and experiment in order to be informed, observe the world, and try in first person how things work. Often being able to recognize opportunities requires active research and alertness (Baron, 2006). According to Barreto (1989) entrepreneurs are alert to profitable possibilities, “they are “alert” to the possibilities of combining resources from different national markets” (McDougal et al., 1994) and they search for information and opportunities in an automatic manner (Baron, 2006).

In cross cultural studies also social management skills are included (Yamazi and Kayes, 2004), such as accomplishing tasks related to the organizational goals and coordinate and create cohesion in the group. However, other types of competencies must be explored. For instance, Service orientation may enable entrepreneurs reflect on and understand the customer’s needs, therefore facilitating the discovery of new opportunities. Conflict management is often seen as a critical skill for the management of cross-cultural relationships (Bird et al., 2010), indeed cultural differences may lead to misunderstandings and conflict that must be controlled and manage by the entrepreneur in order to maintain good and useful relationships. Moreover, an international activity adds complexity in the organization and may lead to stress and communication difficulties. Managing these aspects requires the adoption of resonant leadership behaviours and the ability to organize, inspire and motivate employees.

Among the self-management skills, just self-control in managing stress is included in cross cultural studies (Yamazi and Kayes, 2004). Other behavioural competencies, such as Change Catalyst, may have a big role in the internationalization performance. Being a change catalyst means being able to understand when a change is needed and being able to remove the barriers for its implementation. International activities may be fast changing realities in which the capacity of rapidly identify the change is important, as well as the ability of sharing and creating commitment toward the change. Also optimism, in the sense of having the belief that the final result will be a favorable outcome, demonstrated a positive link with opportunity recognition (Baron, 2006). Finally, especially for SMEs, expanding the business abroad is a challenge. Entrepreneurs who undertake international activities have to manage this challenge, being focused on the achievement of their objectives and using their achievement orientation in persisting and improving their performance.

Some previous studies underlined also the importance of focusing on the analysis of the distinctive cognitive competencies that allow entrepreneurs being effective in the internationalization process ([Nummela et al. \(2004\)](#)). Baron (2006) highlights that opportunity recognition is strictly related to the ability of “connecting the dots” between environmental changes and needs, namely pattern recognition. It is defined as the process through which a person “perceive complex and seemingly unrelated events as constituting identifiable patterns” (Baron 2006, p. 106). It involves the identification of patterns among trends, changes and events which seem not correlated. This is one of the efforts we often undertake in order to understand the world around us, and it is considered as one of the main facilitators of entrepreneurs’ opportunity identification. Entrepreneurs acting in an international environment may need also a superior ability in analyzing situations, conducting an accurate examination, as well as conceiving causes and effects of events with a system thinking approach.

Despite the insights provided by the aforementioned studies, the literature that investigates explicitly the impact of entrepreneurs’ behavioural competencies on internationalization are still scarce and fragmented. The aim of our paper is to bridge different streams of literature, entrepreneurship, international entrepreneurship and competency research, advancing the existing understanding of this relationship by examining what are the behavioural competencies that characterize entrepreneurs able to achieve above average internationalization performance.

## **Method**

### *Sample*

This study was carried out on a sample of 31 companies operating in the Veneto region in the northern Italy. These companies are high performers in their sector. Indeed their financial results in terms of Return On Asset (ROA) during the period of the economic crisis (2008-2012) over-performed the average results of their corresponding industry. We also controlled the results of the last five years which showed a growing performance in terms of EBITDA, which increased especially in the companies belonging to technical sectors, specific niches and Italian products of excellence. These companies have on average 115 employees; eleven firms of the sample have less than 50 employees, fourteen from 50 to 149, five from 150 to 249, and one more than 250 employees. The majority of the companies belong to the manufacturing sector (29 companies), seven to the wholesale and retail trade, two firms to the information and communication sector and one operates in transporting and storage (NACE classification). Among the manufacturing sector, 28% of companies produce machinery and equipment, the others fabricate metal products (10%), food products (10%), chemical products (10%), other manufacturing (10%), wearing apparels (7%) and non-metallic mineral products (7%). The sample includes also firms belonging to the following industries: repair and installation of machinery and equipment (3%), manufacture of beverages (3%), basic metals (3%), rubber and plastic products (3%) and paper products (3%).

### *Data collection*

Grounding on the ESC competency-based methodology, we considered past performance, which depends on the actual possession of a set of competencies, as a valid predictor of the outcomes that individuals may obtain (Spencer and Spencer, 1993). According to past studies, we considered performance as a criterion for sampling (Spencer and Spencer, 1993). As stated by Mollick (2012), in contexts of high rates of entrepreneurship, which is mostly the case in SMEs, the people who actually make up the firm may account for much of the differences in performance among companies. Therefore we inferred the performance level of the individual entrepreneurs from the global internationalization performance of the firms each of them manage.

Data on internationalization performance were obtained through the completion of a questionnaire on internationalization activities. The we divided the sample of entrepreneurs into two sub-samples: one sub-sample of entrepreneurs who belong to organizations which are high performing in internationalization (‘best performers’) and one sub-sample of entrepreneurs who belong to the poor internationalization performing firms (‘poor performers’).



Between July 2014 and March 2015 data collection on entrepreneurial competencies was made through interviews administered to 31 entrepreneurs.

The interviews were conducted by a trained interviewer who used a semi-structured framework based on the Behavioural Events Interview technique (Boyatzis, 1998; McClelland, 1998). This technique is a development of the Critical Incident Interview technique (Flanagan, 1954) which is focused on gathering information on recent and specific events and has been widely used to obtain rich and detailed information on the context, behaviours and strategies adopted by the interviewee, and to structure qualitative data (Chell, 2004; Campion et al., 2011). Moreover, it has shown a higher predictive validity than respondent measures (Boyatzis, 2009; Ryan et al., 2009) because it is not affected by possible biases and unreliable responses associated with self-assessment (Dunning, Heath, and Suls, 2004). In our research the interviews were based on the collection of a series of recent concrete events drawn from personal working experiences in which the interviewee performed effectively. Each respondent was asked to recall from four to five critical situations describing the context, the people involved, what he/she thought, felt, said and actually did, the problems encountered, the solutions and outcomes (Dainty et al., 2005). The interview on behavioural episodes, deepening thoughts, reactions, decisions and actions of the respondent, made it possible to disclose the behaviours and skills expressed by the interviewee.

### *Coding of behavioural competencies*

We codify the behavioural competencies manifested by the interviewed entrepreneurs using a comprehensive competency codebook, based on existing competency dictionaries which focused on the competencies needed to obtain effective results in leadership roles (Boyatzis, 1982; Spencer and Spencer, 1993), integrating streams of research related to exploration (Dyer, Gregersen and Christensen, 2008) and entrepreneurship (such as Morris and Franklin, 2011; Puccio, et al., 2011).

From the competency codebooks present in the literature (Boyatzis, 1982; Boyatzis et al., 2000), we considered ten emotional competencies (e.g., Emotional Self-Awareness, Achievement Orientation), ten social competencies (e.g., Empathy, Persuasiveness) and four cognitive competencies (Systems Thinking, Pattern Recognition, Use of Concepts, Quantitative Analysis). For the purposes of our analysis, we added to these codebooks other competencies recently defined in the literature: “Engaging Others” to the social competencies (Gerli and Bonesso, 2011), “Visionary Thinking”, “Strategic Thinking” “Associational Thinking” (Puccio et al., 2011; Dyer et al., 2008), “Questioning”, “Observing” and “Experimenting” to the cognitive competencies (Dyer et al., 2008). The final competency model is composed by 36 competencies grouped into six clusters and represents a thorough classification of the competencies adopted by innovative entrepreneurs. The six clusters are defined as follows.

- **Awareness.** Competencies that allow to understand themselves, other people and the organizational relationships.
- **Action.** Competencies that allow to realize ideas, plans and solutions, working methodically and with initiative.
- **Social.** Competencies that allow to interact positively with other people and help to work with others effectively.
- **Cognitive.** Competencies that allow to use the information and analysis effectively to interpret phenomena or situations.
- **Exploratory.** Competencies related to the activation of processes of innovation generation.
- **Strategic.** Competencies related to strategic thinking and interpretation of the competitive environment.

The full description of the model is presented in the Appendix.

The competency model was used to conduct thematic analysis on all interviews. The coding activity was performed by two coders independently, then the two coders discussed and agreed on possible differences.

## Measures

*Behavioural competencies.* In order to measure the level of possession and use of behavioural competencies, all interviews were coded for frequency of occurrence (Boyatzis, 1998). Thus, a competency was scored every time it emerged at least one time in one episode, and the frequency of occurrence was calculated considering the number of times it occurred in all episodes. The frequency of occurrence was also calculated for the six clusters of competencies. The variety of competencies, which refers to the number of different competencies belonging to the same cluster expressed by an interviewee was also calculated.

*Internationalization.* To measure the degree on internationalization we adopted the international export intensity, calculating foreign sales as to a percentage of total sales (Shih, 2010), which is the most common measure for internationalization level (Knight and Kim, 2009; Denicolai et al, 2015; Shoham, 1998). Due to free exchange conditions that characterize the EU area and the less prominent cultural differences among countries of the EU zone, we took into account only the percentage of foreign extra-EU sales over sales. In order to distinguish between best and poor performers we classified all companies according to this measure and considered as best the ones which had a level of internationalization higher than the average.

In order to identify the set of behavioural competencies that characterize the best performers in international activities, we performed a Mann-Whitney U test (one-tailed) on the frequency of occurrence of each competency of the model.

## Results

During the interviews we collected a total number of 155 episodes of effectiveness, the average percentage of extra-EU sales was 29,25%. Twelve companies were classified as best (above-average), and nineteen companies were classified as poor (under-average).

First we analyzed the most used competencies by the two groups according to their frequency of adoption. The most frequently manifested competency in the best performer group is Change Agent (57,5) (Table1), which is the ability to understand the need for change, and implement it by sharing it with people and removing barriers. Change Agent was followed by Strategic Thinking (57,4) and Diagnostic Thinking (48,2). These two competencies refer to the ability to understand the competitive environment and the ability to analyze problems in a very deep and detailed way, understanding their nature and characteristics. Moreover the entrepreneurs belonging to the best group used Observing among the most frequent competencies to explore the world around them (38,2), and were focused on the efficiency of their activities by adopting Efficiency Orientation (34,7) very often. Strategic Thinking and Diagnostic Thinking are present also between the most frequent used competencies in the group of poor performers as respectively the first (57,4) and the second (47,1) most used competencies. They are followed by Self-awareness (42,1), Observation (39,1) and Achievement orientation (38,7). In both groups the capacity of understanding the strategic and competitive environment and to understand the nature of problems is relevant. Moreover, both groups use mainly the same way to explore the environment (Observing). However it is important to underline the absence in the poor performing group of behaviours aimed at recognizing and supporting the need for a change, and that in the poor group the focus is on the achievement of the objective, while in the best group understanding the efficiency of an action or situation has much more importance.

Initiative, which was frequently highlighted as one of the main factors of international entrepreneurship (McDougall and Oviatt, 2000) demonstrated a quite often behavioural adoption. In both groups Initiative is among the ten most adopted competencies, it has a frequency of 31,4 in the best group (7<sup>th</sup> place) and 29,6 in the poor performers group (10<sup>th</sup> place). Also in the case of Risk-taking the best group scored higher in its adoption: 21,5 for the group of best performers, while 13,9 for the other group, even if Risk-taking resulted not to be so much frequently put into practice by entrepreneurs. It reached respectively the 15<sup>th</sup> place in the best performers group and the 20<sup>th</sup> in the poor performers group. Networking demonstrated



even a less frequent adoption: 10,6 for the entrepreneurs who internationalized above average, and 12,1 for the ones under average.

This can be a result coherent with the idea proposed by Covin and Miller (2014) according to which the characteristics attributed to the international entrepreneurial orientation may classify simple entrepreneurial orientation, not distinguishing the entrepreneurs who internationalize more.

Second, we compared the two groups using a Mann-Whitney U test on all competencies that compose the model. Results show that three competencies characterize the group of bests with a significantly higher frequency of occurrence with respect to the poor group. Among the Action cluster, the competency Change Catalyst demonstrated to be significantly higher in the best group (p-value 0,048). The second competency which distinguish above-average internationalization entrepreneurs refers to the Social cluster: Team working results to be distinctive for the best group (p-value 0,078). Third, Organizational learning orientation, defined as the ability to develop the knowledge base of the company through learning processes, was found significant (p-value 0,071).

## Discussion and conclusions

Our paper contributes to the entrepreneurial literature which claims that “despite the growing salience of international SMEs, there has been little research to investigate the intangible resources that these firms employ in order to expand abroad” (Knight and Kim, 2009: 255). Specifically, our research advances the understanding on the characteristics of entrepreneur’s human capital that impact on firm international performance. Starting from the assumption that entrepreneurs, especially in SMEs, make decisions that have an impact on the whole organization and on its results, we developed a competency model aimed at identifying the distinctive behavioural competencies that characterize the entrepreneurs who achieve superior international performance in terms of export intensity. Differently from prior studies that analysed the skills necessary for international entrepreneurs, such as tolerance to ambiguity, proactivity and networking, our study demonstrated that these skills can be considered threshold competencies and only three competencies seem to allow entrepreneurs to achieve higher performance in foreign markets. Our results showed that one emotional competency “Change Catalysis”, a social competency “Teamwork” and one strategic competency “Organizational Learning Orientation” distinguished the best from the poor performers.

“Change Catalyst” competency is the ability to recognize when a change is necessary, defending the need to change even when facing obstacles, and leading personally the change. As maintained by Knight and Kim (2009: 257), “fundamental changes in business philosophy and orientation are required to succeed in an international, as opposed to a domestic, marketplace”. Shifting the firm orientation from the domestic market towards the foreign one requires the implementation of relevant changes in terms of new structure, behaviours and cultural approaches, such as the establishment of an international sales department, the development of a network of foreign sales agents or the redesign of the supply and production network in different countries. Entrepreneurs require to support their collaborators and employees to become aware of the changes necessary to compete in the international market, by anticipating the possible resistance to change and removing the barriers that the internationalization process implies.

“Teamwork” is the capacity to be respectful, collaborative and helpful to the group. Individuals who show this competence induce others to engage actively and enthusiastically in the common cause, reinforcing the team spirit and encouraging the participation of all. In order to succeed in their internationalization endeavours, entrepreneurs need to rely on a sales workforce prepared to sell in specific foreign markets and committed to the firm internationalization goals. As observed by Lehto (2015), it is crucial for entrepreneurs to understand how to develop and adapt their future offering to target market needs and different contexts. The development and valuation of offerings and the establishment of long term relationship with foreign customers can be attained only if the entrepreneurs engage the sales force toward the international growth.

Finally, “Organizational Learning Orientation” is the ability to develop the knowledge base of the company through learning processes. Internationalization requires the acquisition of new knowledge, resources and

processes which are specific to the geographical area that the firm aims to serve. As argued by Kungwansupaphan and Siengthai (2014:569) entrepreneurs “use and combine a needed set of resources across national borders to internationalize a firm”. Therefore, the ability of entrepreneurs to define appropriate organization structure and systems, suitable for facilitating knowledge sharing and continuous learning, represents a critical factor for coping with the uncertain and fast-changing nature of a foreign market environment. Thus, entrepreneurs through this competency favour the development of organizational knowledge necessary to operate successfully in the foreign markets.

Theoretically the paper contributes to the competency-based and entrepreneurship literature. First, we add to research that highlighted the relevance of the human capital of entrepreneurs in explaining performance differences between firms (Crossland and Hambrick, 2001; Gimeno et. al., 1997; Sadler-Smith et al., 2003). According to Denicolai et al. (2015: 394), “In SMEs, decision-making power is generally in the hands of one or very few persons. Hence, these decisions are strongly influenced by individual-related characteristics, particularly when the small firm is investigated”. Considering the entrepreneurs as drivers of internationalization, our research suggests that Emotional and Social Competencies should be taken into account in theoretical models that explain company internationalization in addition to other personal characteristics already examined in the literature such as level of education and prior experience. Second, it enriches the competency-based literature identifying those distinctive competencies that enable entrepreneurs to achieve superior international performance, highlighting the role of “Change Catalyst”, “Teamwork” and “Organizational Learning Orientation” as relevant competencies to expand the business into foreign markets.

Our findings also offer relevant managerial implications. The identification of distinctive competencies that differentiate outstanding from poor performers is salient for the implementation of training programs in the international management and entrepreneurial education. These programs can be designed in order to allow participants to become aware of the relevance of these behavioural competencies for internationalization purposes and to support them in practice the new behaviours. As demonstrated by empirical research, participants’ emotional and social competencies can be significantly improved through the adoption of dedicated experiential learning methods (Boyatzis, 2006; Boyatzis and Saatcioglu, 2008).

Our study presents a number of limitations that should be addressed in future research. For example, the exploratory nature of this study reduces the generalizability of our findings, which are derived from a small sample of entrepreneurs who operate in the same geographical areas. Future research would benefit from extending this study by investigating a larger sample of entrepreneurs in different geographical contexts, in order to consider cultural and institutional factors that can facilitate or hamper the entrepreneurs’ international orientation. Moreover, we considered as indicator of international performance the export intensity to discriminate entrepreneurs between best and poor. Further measures of international performance could be considered such as the export diversity of scope, in terms of the number of markets and the types of countries a firm may select. As highlighted by prior research (Denicolai, 2015: 399) “Studying the type of markets is relevant since the more different the countries into which the firm is expanding, the more entrepreneurial the nature of international expansion”. Therefore, the international entrepreneurial profile may vary according to number of geographical regions served. Finally, in our sample we analysed long-established companies which initially operated primarily in the national market and progressively undertook the internationalization process. Future research should also consider born-global entrepreneurs and investigate if different behavioural competencies are needed to succeed abroad.

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## Tables

Table1: Frequency of adoption of competencies in the best performers and poor performers groups

Poor Performers Group		Best Performers Group	
<b>Strategic Thinking</b>	57,4	<b>Change Agent</b>	57,5
<b>Diagnostic Thinking</b>	47,1	<b>Strategic Thinking</b>	57,4
<b>Self-awareness</b>	42,1	<b>Diagnostic Thinking</b>	48,2
<b>Observation</b>	39,1	<b>Observation</b>	38,2
<b>Achievement Orientation</b>	38,8	<b>Efficiency Orientation</b>	34,7
<b>Opportunity Recognition</b>	36,6	<b>Achievement Orientation</b>	31,8
<b>Change Agent</b>	35,3	<b>Initiative</b>	31,4
<b>Empathy</b>	33,8	<b>Organizational Learning Orientation</b>	31,0
<b>Efficiency Orientation</b>	32,3	<b>Opportunity Recognition</b>	30,3
<b>Initiative</b>	29,6	<b>Visioning</b>	28,9
<b>Experimenting</b>	28,0	<b>Self-awareness</b>	28,5
<b>Risk management</b>	25,7	<b>Risk management</b>	24,6
<b>Service Management</b>	22,3	<b>Developing Others</b>	24,0
<b>Influence</b>	21,9	<b>Service Orientation</b>	23,6
<b>Organizational Awareness</b>	21,7	<b>Risk Taking</b>	21,5
<b>Organizational Learning Orientation</b>	18,7	<b>Influence</b>	21,1
<b>Visioning</b>	17,8	<b>Organizational Awareness</b>	20,3
<b>Inspirational Leadership</b>	16,8	<b>Empathy</b>	19,7
<b>Developing Others</b>	15,2	<b>Team Work</b>	18,6
<b>Risk Taking</b>	13,9	<b>Engaging Others</b>	18,5
<b>Questioning</b>	12,3	<b>Experimenting</b>	18,3
<b>Attention to details</b>	12,1	<b>Inspirational Leadership</b>	16,8
<b>Networking</b>	12,1	<b>Questioning</b>	14,6
<b>Pattern Recognition</b>	11,8	<b>Networking</b>	10,6
<b>Systems Thinking</b>	10,9	<b>Associative Thinking</b>	10,0
<b>Engaging Others</b>	10,7	<b>Attention to details</b>	6,1
<b>Associative Thinking</b>	8,2	<b>Pattern Recognition</b>	5,4
<b>Analogical Thinking</b>	6,6	<b>Adaptability</b>	4,9
<b>Conflict Management</b>	6,2	<b>Positive Orientation</b>	3,3
<b>Lateral Thinking</b>	5,6	<b>Planning</b>	3,3
<b>Adaptability</b>	4,5	<b>Systems Thinking</b>	2,1
<b>Positive Orientation</b>	4,2	<b>Lateral Thinking</b>	1,7
<b>Team work</b>	4,2	<b>Self-control</b>	0,0
<b>Planning</b>	1,1	<b>Conflict Management</b>	0,0
<b>Self-control</b>	0,0	<b>Analogical Thinking</b>	0,0
<b>Quantitative Analysis</b>	0,0	<b>Quantitative Analysis</b>	0,0

Appendix

CLUSTER	COMPETENCY	DESCRIPTION	QUOTES
1. AWARENESS	Emotional awareness	The ability to know your inner moods, your resources, insights and skills.	<i>I am a person with many ideas. I like thinking since I was a child. I think continuously when I go back home, when I have a shower..”</i>
	Empathy	The ability to understand people, to listen carefully, interpret and respond to the wishes of others.	<i>When I met them I immediately understood that I was dealing with dynamic people”</i>
	Organizational awareness	The ability to understand the relationships and the culture of an organization.	<i>We are flexible, we are used to deal with the complexity. For sure we are a firm that carries out many things at the same time””</i>
2. ACTION	Efficiency orientation	The ability to perceive the relationship between input and output and includes attention to increase efficiency.	<i>“This year we are improving the plant with new technologies that should halve the welding time”.</i>
	Achievement orientation	The capacity to measure up to the standard of excellence, not discouraged by the obstacles to achieve a goal.	<i>“I believe that this is a challenge and we can ever improve. We have not reached our limit yet, we can do even better.”</i>
	Positive orientation	The ability to see opportunities rather than threats, trusting that the future will be better than in the past.	<i>“I think it’s a matter of mindset, you have to provide the example. People influence each other and I try to give them the courage and to simplify the problems”.</i>
	Initiative	The ability to take action to achieve a result even if it is not required or imposed by the situation.	<i>“In this specific case I provided the sketches, I had the idea where intervene and implement the changes.”</i>
	Change catalyst	The capacity to recognize the need for change, removing barriers and finding solutions.	<i>“I promoted this transformation, I strongly believed that this was our way. I made them understood the relevance of the change and I spread enthusiasm toward it”.</i>
	Planning	The ability to identify and organize the future, organize the activities	<i>“A friend of mine suggested to convert the problem into a new business. I started to</i>



		necessary to achieve a goal.	<i>define all the actions necessary to develop the after-sales service".</i>
	<b>Adaptability</b>	The capacity to adapt to changing circumstances or to change your behaviour.	<i>"Instead of throw away all the machineries we modified them complementing with new ones. In this way we made the plant"</i>
	<b>Self-control</b>	The capacity to retain control of your emotions in stressful or emotional situations.	<i>"I tried to reassure them because I saw they were panicking. You need calm when you face a problem even though it is not easy".</i>
	<b>Attention to details</b>	The ability to search for order and predictability by reducing uncertainty.	<i>"I perceive the difference between a work made by an architect or a professional designer and a work made by an engineer".</i>
	<b>Risk taking</b>	The attitude to take a risk or to carry out an activity with uncertain outcome.	<i>"I took the risk because this person was really important for the company and if she left I would be in trouble. However, I told to myself " sink or swim"</i>
	<b>Risk management</b>	The ability to control uncertain activities and contain losses and / or negative impacts.	<i>"In every moment we can be subject to the client's audit. I thought that we did not execute this specific activity very well. Therefore, I decided to hire a person that followed this activity in detail".</i>
<b>3. SOCIAL</b>	<b>Influence</b>	The capacity to convince one or more people of the value of your point of view.	<i>"I always search the consensus on my proposals through an indirect approach. I usually say to the key distributors of our products "Look at this video" or "Look at this thing". In this way she falls in love with the idea and she becomes the evangelist of this idea within the firm".</i>
	<b>Conflict management</b>	The ability to stimulate groups or individuals to solve their conflicts.	<i>"With this person I had always a difficult relationship, thus I decided to get it out of the open and tell her my doubts".</i>
	<b>Team work</b>	The ability to stimulate the members of a group to work together effectively.	<i>"When I perceive some interesting aspects I discuss with them in order to receive a feedback and</i>

		<i>to understand their ideas about what I saw”.</i>
	<b>Developing others</b> The capacity to stimulate someone to develop his/her skills or improve his/her performance.	<i>“I spur my collaborators to attend courses and workshops, I engage them in the problems. I disseminated a lot this type of culture”.</i>
	<b>Networking</b> The ability to build and use relationships, including personal ones, in achieving objectives.	<i>“I needed to hire a designer and I relied on my contacts, other entrepreneurs, asking them if they knew designers who worked nearby”</i>
	<b>Inspirational leadership</b> The ability to take the lead of a group or inspire and drag others.	<i>“When you have the passion for your work and you strongly believe in an idea, this idea spreads rapidly to others. I always try to involve my collaborators in my moods and feelings, to energize others, to let them understand the beauty of the project”.</i>
	<b>Service orientation</b> The capacity to focus your efforts in the research and meeting of the needs of others.	<i>“It is crucial to understand if customers appreciate your products. Ten years ago the needs were completely different, the client asked for a powerful machine and the energy saving was irrelevant. Conversely, nowadays, the client is more sensitive on energy consumption”.</i>
	<b>Engaging others</b> The capacity to engage individuals to achieve the identified objectives.	<i>“I said “Come to work with us half a day and then we can define a plan”. He went and managed the laboratory together with the geologist. Then I introduced him in other sectors in which he could spend his competence”.</i>
<b>4. COGNITIVE</b>	<b>Systems thinking</b> The ability to give orders to a number of causal events and to interpret a situation from a systems perspective.	<i>“One of my merit was to modelling the problem: I tried to understand if the problem. Every problem can be decompose in sub-problems”</i>

	<b>Diagnostic thinking</b>	The capacity to conduct an accurate examination of the situation, describing the nature of the problem.	<i>Through an in-depth analysis of the problem I tried to find a way to avoid that the problem will appear again. I implemented a Japanese technique that lets impossible to face again this situation."</i>
	<b>Pattern recognition</b>	The ability to recognize an underlying structure in a complex set of not organized information.	<i>"As I did for the products, we did the same for the production: I created a pilot manufacturing line through which we started experimenting, and assessing if it could work or not".</i>
	<b>Analogical thinking</b>	The capacity to access a known domain of knowledge to solve a problem.	<i>"This is an evaluation test that it is usually carried out when you build a chemical plant. Thus, I adopted the same concept in our context with some adaptations".</i>
	<b>Associative thinking</b>	The capacity to create logical connections between issues, disciplines and ideas which are seemingly unrelated.	<i>"The idea was to develop a metallic gift bag. At that time we did not have the machine to metallize the bag so we bought the product from those companies that produced bags for Easter eggs. We adopted the concept and we started the production."</i>
	<b>Lateral thinking</b>	The ability to try new ways of looking at problems, adopting different perspectives.	<i>"I realized that the oven can be conceived as a modular system. Before it was never seen in this perspective, it was always conceived as a whole system".</i>
	<b>Quantitative analysis</b>	The ability to use quantitative methods for diagnosis and operation in various fields.	<i>n.a. from the interview administrated</i>
<b>5. EXPLORATORY</b>	<b>Questioning</b>	The ability to formulate questions to understand the nature of the problems and change the status quo.	<i>"I asked to myself if there were actually other manufacturing models".</i>
	<b>Observing</b>	The capacity to observe the world around you with the aim of finding new ideas.	<i>"I realized that there is an increasing attention toward ecology. I read in a magazine that deals with motors that all the technologies of the future</i>

			<i>will be incorporated in hybrid machines”.</i>
	<b>Experimenting</b>	The capacity to explore the world and experience new things constantly.	<i>“I created a firm environment that was favourable for mistakes. One of my merit is to spur my collaborators saying “Try, does not matter if you make a mistake”.</i>
<b>6. STRATEGIC</b>	<b>Visionary thinking</b>	The capacity to create and decline a vivid image of what you want to create or of the organizational vision.	<i>“My idea was to create in our region something that was not present, namely a multifunctional laboratory”.</i>
	<b>Strategic thinking</b>	The ability to understand the strategic and competitive environment of the company.	<i>“I knew that some of our competitors were studying the same solutions and I decided to speed up.”</i>
	<b>Organizational learning orientation</b>	The ability to develop the knowledge base of the company through learning processes.	<i>“After this project the firm become something different. Before the firm produced only specific types of tubes. The knowledge acquired let the company increase the variety of its offerings”.</i>
	<b>Opportunity recognition</b>	The capacity to perceive the opportunities emerging from the environment.	<i>“We are thinking to a different proposal for the market, namely frozen food that are difficult to cook and people do not know how to prepare anymore.”</i>

## **Exploration or Exploitation of Opportunities? Looking at International Entrepreneurial Marketing as a Process**

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### **Abstract**

Entrepreneurship has been often conceptualized as a process of exploration and exploitation of opportunities. The topic has been widely studied in the past, however, previous research has ignored the role of both, exploration and exploitation of opportunities, in entrepreneurial marketing processes. SMEs often face liabilities of newness and smallness, especially when going abroad. This restricts their access to resources or capabilities, making their marketing activities especially difficult. Traditional marketing theory is based on a predictive approach and offers little explanatory power in these cases.

The present work aims at addressing this gap by answering at the following research question: How should small firms explore and exploit their opportunities through international entrepreneurial marketing? The analysis is developed using three case studies from the international SME's in the food and beverage industry. This industry is ideal for the study of international entrepreneurial marketing because as a traditional industry, it is usually characterized by low-tech based innovation processes, usually incremental or focused in the marketing area. Single and multiple-case study analysis were developed.

The paper proposes two main models. The first one is at the individual level and shows the process of identification of opportunities through the exploration and exploitation of opportunities. The second model, explains at the individual and at firm level the process of exploration and exploitation of opportunities through international entrepreneurial marketing. Results show that international entrepreneurial marketing firms should be able to explore and exploit their opportunities at the same time. Additionally, this firms follow a bottom-up approach and are guided by a teleology view. The role of entrepreneurial marketing is highlighted, as this is the way in which these firms collect information from the market.

### **Introduction**

Entrepreneurship has been described as a process of exploration and exploitation of profitable opportunities (Choi et al., 2008), which are associated to the existence of competitive market imperfections with the potential to generate economic wealth (Alvarez et al., 2013). The understanding and analysis of the elements that promote opportunity exploration and exploitation are a key issue in entrepreneurship research, as they might provide important insights on the why, when and the how entrepreneurial opportunities develop (Shane and Venkataraman, 2000).

The concepts of exploration and exploitation involve complex processes (Gupta et al., 2006), which have gained the attention of several scholars. A considerable amount of literature has studied the identification and creation of the opportunities in entrepreneurship (Alvarez et al., 2013; Corbett, 2007). Fewer have focused on the exploitation process (Choi and Shepherd, 2004; Zahra et al., 2005). But significant attention has been given to the interaction between the explorative and exploitative processes, reaching a variety of conclusions that range from a complete incompatibility of the concepts (March, 1991) to considering them as simultaneously achievable (Baum et al., 2000; Benner and Tushman, 2003; Katila and Ahuja, 2002).

However, there are no studies on the exploration and exploitation of entrepreneurial opportunities in small and medium firms (SMEs) through international entrepreneurial marketing (IEM). This is an important

topic because SMEs often face liabilities of newness (Stinchcombe, 1965) and smallness (Freeman et al., 1983), especially when going abroad. Such constraints restrict their access to certain resources or capabilities, making their marketing activities especially difficult, generating limited market power and a small customer base (Carson, 1985). SMEs are challenged to gain customers at early stages of their development. To achieve it, these companies must devote marketing resources to building an identity, but the process is lengthy and costly (Gruber, 2004). In this sense, the traditional marketing theory based on a predictive (Read et al., 2009) and a top down approach (Sarasvathy and Dew, 2005; Stokes, 2000) offers little explanatory power (Kraus et al., 2010).

IEM as an alternative and novel approaches is likely to be especially important for these firms, as it focuses on the proactive identification and exploitation of opportunities across borders by developing specific firm' competences and a continued customer interaction to address latent needs and create value (Duus, 1997; Kraus et al., 2010; Morris et al., 2002; Mort et al., 2012). There is a greater reliance on market understanding embedded in opportunity creation, which provides firms with a potential tool for understanding how to compete with limited resources against incumbents (Hallbäck and Gabrielsson, 2013). An example can be seen in the case of Dell, a company that back in 1984, with only \$1,000 (DELL, 2014) revolutionized the computer market by offering personalized business computers directly to customers, cutting the middle men and by this, decreasing the price. Dell did not invent the computer, but it changed the rules of a market dominated mainly by large firms. The founder, Michael Dell, saw an opportunity and exploited it by providing personalized computers through a different distribution channel, keeping a close interaction with his customers. As a result, the firm experimented an explosive growth and three years later began to expand globally. Today is one of the main players in the international market.

The success of firms like Dell highlights the importance of studying how to achieve such results, in order to implement those learnings in future enterprises looking to grow and internationalize. However, although evidence and previous research have shown that the pursuit of marketing strategies by entrepreneurial firms can bring superior performance (especially in heterogeneous environments) (Dess et al., 1997; Knight, 2000; Knight and Cavusgil, 2004), the analysis of the IEM as a way of exploring and/or exploiting entrepreneurial opportunities has fallen short.

This is a pity, as firms could benefit from understanding how opportunities can be exploited through IEM, especially in low technology industries, in which differentiation through innovation is limited and takes time. The current complex and changing environment does not always allow firms to continuously develop new product/process innovations to keep up their competitive advantage. An IEM approach, well executed, could be a way of exploring and/or exploiting opportunities to develop competitive advantages across borders while the product/process innovation comes along.

Through multiple case studies, the present work aims answering how should SME's explore and exploit their opportunities through international entrepreneurial marketing? The article starts by presenting the current literature on exploration and exploitation of opportunities and IEM. Then, three longitudinal case studies from the food and beverage industry are presented. Results show the key role of marketing for the international entrepreneurial firm, as it helps the company to understand and develop their offer through a process of exploration and exploitation of opportunities. It also provides the firm with a way of dealing with uncertainty. At the individual level, exploration and exploitation of opportunities are enacted through a continuous and cycling process between both. At the firm level, exploitation precedes exploration. The evidence also shows that both, exploration and exploitation, are necessary for the firm to develop. Discussion and final comments are presented at the end

## **Literature review**

### Exploration and exploitation of opportunities

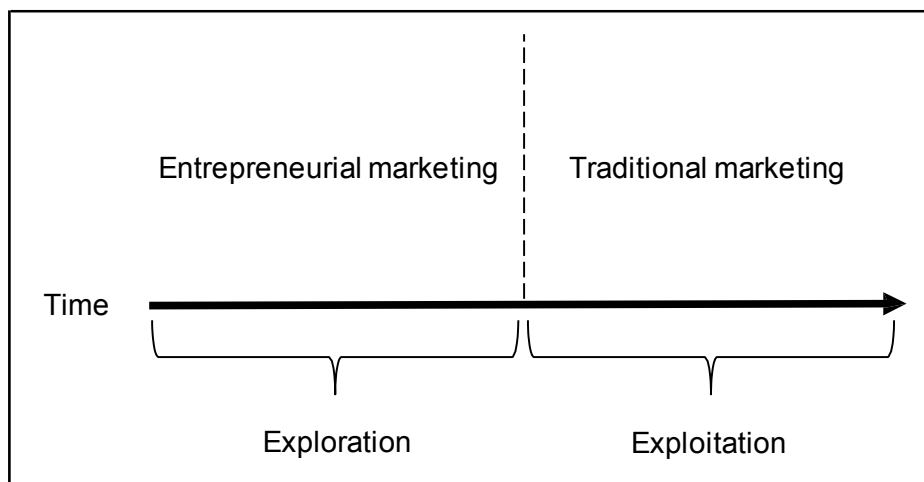
March (1991) defines exploration as a term related to search, risk taking, experimentation, flexibility, discovery and innovation; while exploitation is described through choice, efficiency, production, implementation and execution. Recent works have raised the issue that both, exploration and

exploitation, are related to learning and innovation, but of different types (Baum et al., 2000; Gupta et al., 2006; He and Wong, 2004). Exploration refers to learning obtained through processes related to variation, planned experimentation, and play, in which innovations involve a change to a different direction. Exploitation, on the other hand, refers to learning obtained through local search, experiential refinement, and the reuse of existing routines, where innovations involve improvements in existing components or based on the existing technological trajectory (Baum et al., 2000; Benner and Tushman, 2002).

Exploration and exploitation of an opportunity are frequently seen as mutually exclusive within a single domain because of their self-reinforcing nature, their need of different mindsets and their competition for the same resources. (March, 1991). Alternatively, recent research has considered exploration and exploitation as simultaneously achievable (Baum et al., 2000), either through ambidexterity (Benner and Tushman, 2003) or through a punctuated equilibrium (Burgelman, 2002).

A punctuated equilibrium, refers to a temporal rather than an organizational differentiation; it suggests cycling through periods of exploration and exploitation instead of the simultaneous pursuit of both (Burgelman, 2002; Gupta et al., 2006). This view matches Kotler's (2002) perception of marketing stages, in which entrepreneurial marketing is seen as the initial stage characterized by the central presence of the entrepreneur, a personal contact with the customer and a marketing focus mainly on product quality, function, distribution and price (Carson and Cromie, 1990). However, as time passes and the entrepreneur accumulates experience and the marketing practices of the firm evolve to a more traditional approach (Carson, 1985). In this sense, entrepreneurial marketing becomes the explorative stage of the firm, that after gives room to a more planned approach, the traditional marketing, that exploits the previously acquired knowledge. *Figure 1* presents in a graphic way the punctuated equilibrium adjusted to Kotler's (2002) view.

Figure 1: Exploration and exploitation of opportunities through punctuated equilibrium



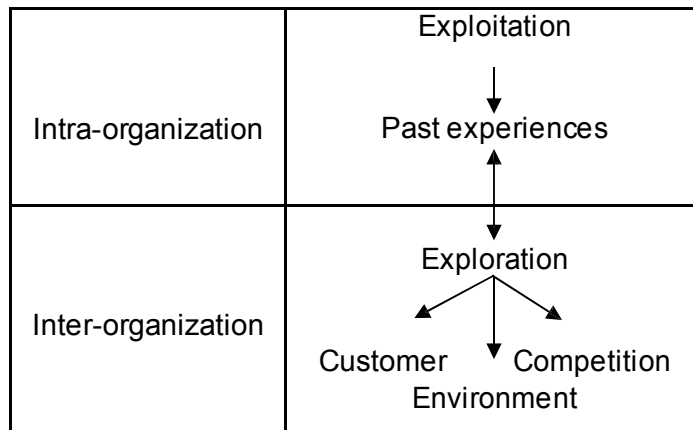
Ambidexterity, on the other hand, is the synchronous pursuit of both exploration and exploitation (Gupta et al., 2006). It refers to "...the ability to both use and refine existing knowledge (exploitation) while also creating new knowledge to overcome knowledge deficiencies or absences identified within the execution of the work (exploration)" (Turner et al., 2013, p. 320). This can be achieved through a multilevel perspective, in which, at the intra-organizational level the firm is biased towards its past experiences (exploitation), while at the inter-organizational level the company uses an explorative approach to reduce its own uncertainty. In this sense, the exploration process can be enhanced, because as the firm exchanges information with the international markets and its competitors, it faces insufficient information to learn from its own experience. International markets may be different and adaptation might be needed. So, the firm collects information from other market participants' experience, learning from them as well (Baum et al., 2000; Haunschild & Miner, 1997). To reduce the uncertainty, the company can draw



information not only from competitors in the international markets but also from the customers and suppliers.

Unlike the punctuated equilibrium, there is no framework in international entrepreneurial marketing that could be used to explain the interaction between exploration and exploitation according to the ambidexterity view. So, the *Figure 2* introduces a graphical interpretation of ambidexterity, according to the author.

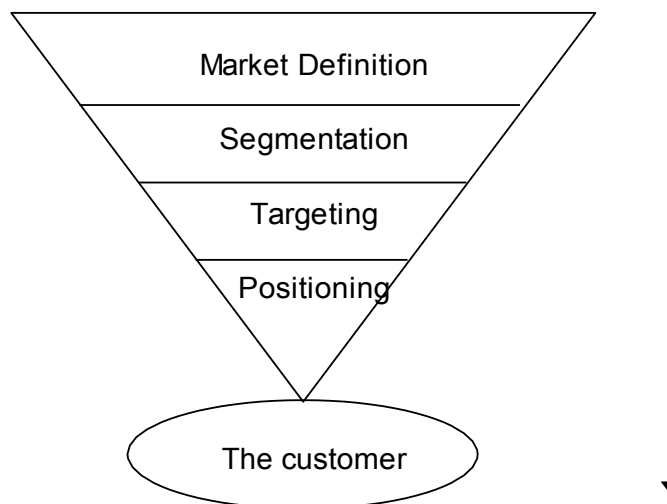
Figure 2. Exploration and exploitation of opportunities through ambidexterity



International entrepreneurial marketing

Traditionally, marketing has been taught in schools as sequential and predictive based on market research and competitive analysis, which leads to the development and execution of marketing strategies to achieve the highest possible returns and market share (Read et al., 2009; Sarasvathy and Dew, 2005). The process follows a top-down approach. It starts by the identification and segmentation of potential customers, followed by targeting and positioning (Webster, 1992) (See Figure 3). In this sense, marketing is particularly useful in stable environments in which the future is casted as a continuation of the past (Morris et al., 2002).

Figure 3: Classic Causation Model from Traditional Marketing Textbooks (Top-down approach)



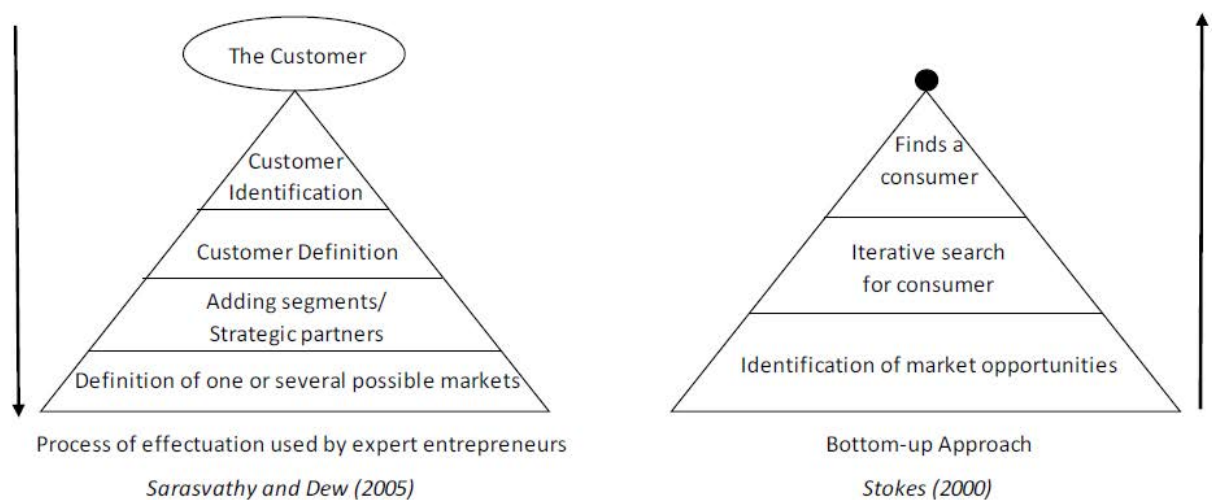
Source: Sarasvathy and Dew (2005)

A different view emerges, which combines the marketing processes with the new economic landscape characterized by changing and dynamic contexts, which are highly internationalized and fragmented,

with strong competitive pressures and an increasing diversity in consumer tastes and habits (Hezar et al., 2006; Read et al., 2009). Such volatile business settings generate uncertainty, which is exacerbated in the international markets due to heterogeneous cultures, institutional and competitive environments across countries (Chen et al., 2016). This limits the firms' ability to plan, requiring them to use flexible and creative strategies (Grant, 2003), that traditional marketing approaches cannot offer (Kraus et al., 2010).

IEM becomes a highly beneficial alternative for SMEs in dealing with uncertain environments and markets (Gilmore, 2011; Jones and Rowley, 2011). Firms practice and create change by introducing 'new combinations' (Entrialgo et al., 2000; Mintzberg, 1973) that allows them to exploit the new opportunities resulting from the external uncertainty (Ireland et al., 2003). IEM has been described following an effectuation logic (Hills and Hultman, 2011; Sarasvathy, 2001) or a bottom-up approach (Stokes, 2000). Figure 4 presents both graphic interpretations.

Figure 4: Comparison between the effectuation and the bottom-up approach in entrepreneurial marketing



The "effectuation processes take a set of means as given and focuses on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001, p. 245). The process is inherently dynamic, interactive, and pluralistic (Sarasvathy and Dew, 2005), allowing the entrepreneur to modify and shape her/his goals over time, making use of contingencies as they arise (Sarasvathy, 2001). Through strategic partnerships and the exploration of the possible customer segments, the entrepreneur manages to identify one or several possible markets. The entrepreneur develops creative courses of action by exploring anticipated latent need while leveraging on the controlled resources and an affordable loss. This process describes the entrepreneurial actions needed to identify and develop a profitable opportunity, as well as to internationalize (Schweizer et al., 2010).

While the effectuation process is usually analyzed at the individual level (the entrepreneur), the bottom-up approach is seen from a multilevel perspective (firm and entrepreneur). The bottom-up approach begins with the identification of a market opportunity (a product or a service addressing a latent need) which is tested through a process of trial and error in the market. An initial customer base is attracted, which may or may not be the originally target group by the entrepreneur. The regular contact of the entrepreneur with these customers provides the firm with knowledge about their preferences and latent needs. A customer target group emerges and the business expands by looking for more customers with the same profile. The process is not planned, but a result of customer self-selection. It also requires less resources and it is more flexible to implement (Stokes, 2000).

Although the effectuation and the bottom-up approach are present some differences, both approaches also have some similarities which match with the bases to explain entrepreneurial marketing. Both,

develop a flexible approach, with a proactive market and customer interaction which facilitates the refinement of a target segment. The initial customer becomes the reference point of the firm. The company obtains feedback from the customer and from other market participants (Baum et al., 2000) which generates new knowledge or re-shapes the old one. The process is not linear or planned. It is a trial and error process that assist the firm in dealing with uncertainty (Beckman et al., 2004; Boso et al., 2013) and identifying which is the best path to follow (Stokes, 2000). This generates new markets and discontinuous leaps in customer value that may involve either a breakthrough in technology or a breakthrough in marketing (Kumar et al., 2000). If the development is in the marketing area, the objective becomes to develop a revolutionary marketing strategy that changes the rules in the market.

IEM does not follow the market, but leads it and shapes it through the exploration of anticipated latent needs. However, to challenge the current market rules a firm requires certain marketing skills that can "...allow the resource-constrained smaller firm to achieve superior performance results via manipulation of levers such as research and development, emphasis on quality, product adaptation, and effective distribution" (Knight, 2001, p. 156). By creating something new, or by refining old ideas into a market opportunity, entrepreneurial marketing companies meet market demand in a new way.

## **Methods**

### Methodological approach and case study selection

The qualitative case study research method was used in this research due to three reasons. First, case studies allow to capture how diverse events evolve in time (Rowley, 2002), including how IEM develops as a process through the exploration and exploitation of opportunities. Current perspectives have failed to explain how IEM develops as a process. Second, case studies serve the exploratory nature of this work (Yin, 1994), as there is a gap in literature regarding IEM viewed as a process of exploration and exploitation of opportunities. IEM is an emerging area of study that involves dynamic and complex processes at different organizational levels (firm, individual, etc.). Case studies grant the possibility of focusing on understanding the dynamics present within single settings and the chance of using numerous levels of analysis (Eisenhardt, 1989), obtaining an in-depth analysis of all the phenomenon involved (exploration/exploitation and IEM/TM) and their interaction. Third, the case study methodology relies on multiple sources of evidence (Yin, 1994), facilitating the collection of the necessary data for studying and comprehending IEM through exploration and exploitation.

A multiple case study design was selected as it enables comparisons across cases, achieving a broader exploration of the research questions (Eisenhardt and Graebner, 2007). The case study firms were selected through purposeful sampling, particularly through the theoretical sampling criteria (Patton, 2002). First, the selected firms should be SME's according to the European Commission (2005) definition (less than 250 employees), as the focus of the study is on SME's. Second, the firms must belong to the food and beverage industry because these are traditional industries which are usually characterized by low-tech based innovation processes, offering the appropriate setting in studying IEM. Product innovations in this industry are usually incremental or in the marketing area, so companies are forced to find alternatives to differentiate themselves from their competitors. IEM comes as an attractive alternative for these firms.

Third, the firms must have a global mindset by being present in international markets or planning to internationalize soon. Having international networks and suppliers was also taken into consideration as a global mindset. Fourth, the firms must have distinctive or new marketing practices which differentiates them from other competitors.

The search of the case firms was done at an international level. Several sources were used (databases, news, previous publications, etc.) and special focus was put into their marketing approaches. Finally, the process led to the selection of three firms (see Table 1), which fit the previously presented requirements and were willing and able to cooperate with the research.

Table 1: General information on the case firms

Information/company	Jones Soda	SPUD	Ignacow cider
Foundation year	1987	1998	2011
Founder	Peter Van Stolk	David Van Seter	Thomas Porowski, Marcin Hermanowicz
Still active	No	No	Yes
Industry	Beverages	Food	Beverages
Main product/service	Natural flavor soda	Web-based grocery delivery service	Dry traditional cider
Distinct /new market practices	New product lines, line extensions, distribution, advertising, customer relation	New service lines, distribution, advertising, customer relation	Process innovation, distribution, customer relation
Markets	Canada, USA, United Kingdom	Canada, USA	Poland
Networks*	Canada, USA	Denmark	England, Poland
Type of firm	Small	Medium	Micro

\*Networks includes any kind of – official or unofficial- business or social networks with other firms.

Each case was first analyzed individually. Then a cross-case analysis was developed. While developing the analysis, the theory started to saturate, so no further case firms were needed (Eisenhardt, 1989).

### Data collection

Following Yin (1994), evidence was collected from a variety of sources to enhance methodological triangulation and to assure validity. Primary data was collected through semi-structured interviews to all founders and current CEO's or marketing managers, depending on their availability. Interviews were done through skype, giving the widespread target. For those interviewees that were not available for a call, a questionnaire was sent via e-mail, followed by an exchange of e-mails to clarify any doubts. Secondary sources included firm reports, company sites, news releases, previous case studies, customers and other written documents.

## **Findings and Discussion**

### Individual case analysis – Looking into the face of giants

#### *Jones Soda Co.*

Since an early age Peter Van Stolk, founder of Jones Soda Co., had a clear vision that he wanted to be an entrepreneur. He was looking at problems and trying to find business solutions for them. After working for some time in the beverages distribution industry, the entrepreneur saw his opportunity:

*"I knew that soda was a growing market, people are going to drink sugar, I knew that and I knew that people were looking for different alternatives to have more healthier alternatives" (Founder/Jones Soda Co.).*

Based on his experience and knowledge, the founder thought it was time to create Jones Soda, a premium soda made with pure cane sugar. The soda was known for its bold, unique flavors, colors, and ever changing labels (Jones Soda Co., 2014). But the firm was also aware that the soda market was tough and a small firm like them would not manage to compete with giants as Coca Cola or Pepsi. So, they approached the market with a new and innovative vision of how marketing and customer relationships should be carried.

Customers were central in the development of the product, allowing the firm to research the market by interacting with the first customers. Jones Soda initially was distributed only in certain shops (skaters, hair salons), attracting a young customer looking for an identity and a way to express. They needed to get people engaged and they did so:

*"We had a, sort of a screw you attitude, you can't hearth us. And that's something very powerful. And that was magical about Jones Soda, that kids were drinking their sodas as a way to say "this is not the soda that my parents drink, this is not theirs, this is mine". And that's something very special about Jones Soda, was the first, it was theirs, it wasn't their go get a Coke or go to get a Pepsi, that is what my parents drink. No, that was their generation" (Founder/Jones Soda Co.).*

The original concept of the product changes. From having a focus on the healthy soda, the product evolved to target customers that felt identified with the product as a generation issue. Additionally, with the creation of the website in 1999, the interaction with the customer got stronger. Initially the customer could submit their photos hoping to get them on the bottles or their quotes for the bottle- caps. However, giving this interest, later the company also offered the opportunity of customizing the bottles that were acquired on the website.

The website also enhanced their internationalization process. In the year 2000, 84% of their sales were from United States, so Jones Soda Co. moved their main headquarters to Seattle, to be closer to their consumers and suppliers (most are based in United States of America). In the same year, the firm also allocated 5% of its sales in the United Kingdom.

Even if Jones Soda Co. established its market, the firm did not stop there. It continued to innovate and to launch new products (only while the entrepreneur was still in the company<sup>1</sup>) and to experiment with extensions of current ones, while withdrawing the not profitable ones. The company had a clear vision, it knew where it wanted to go, a final goal, but the path was not clear. As the founder expresses:

*"Let's say I want to climb the mountain but as you start climbing the mountain you don't know really which trail to take up this mountain, you just know it that you want to get to the top of the mountain... In school, they say what trail, they really focus on the trail, but in life as you know things change and just crazy things happen and you may have to change the trail that you are climbing to get to the top of the mountain, but your vision and goal is always the same to get to the top" (Founder/Jones Soda Co.).*

Nowadays, Jones Soda Co. continues being a successful company. Andrew Baumann, current marketing manager at Jones Soda Co, considers the firm continues with their core line of being innovative with fun releases and new products in order to keep in line with their consumer trends. The marketing tactics have not changed much. The firm still sticks a lot to the tactics used in the early days, as guerrilla marketing. Their main improvement has been to evolve with social media, as social media is constantly changing and the firm must keep up.

#### *Sustainable Product Urban Delivery (SPUD)*

In the case of the founder of SPUD, David Van Seters realized that he wanted to start his own business after getting his business degree. As the entrepreneur mentions:

*"I got a business degree because I was promoted in my company (in which he worked) to be a manager and I didn't know how to be a manager. When I had both the skills of being an environmental biologist and a business person, then I really wanted to put those two together to start an environmental business" (Founder/SPUD).*

The previous quote shows the importance of the accumulation of knowledge and experience by the entrepreneur (Carson and Gilmore, 2000). It also focuses on the importance of achieving the right combination of means, or in this case capabilities as in resource based view (Barney, 1991), provide the individual with the ability to identify future profitable opportunities that others might ignore (Klepper and Sleeper, 2005; Shane and Khurana, 2003). Indeed, thanks to this combination of skills and knowledge, David Van Seters could see an opportunity while working in a project to improve the economy of food farming and sustainable community food systems. As the entrepreneur states:

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<sup>1</sup> Until 2008

*"I looked at small scale food production and how its economics can be improved, that is, how can farmers make a living with small scale food production. And then I looked at food processing, and at retailing and*

*realized that so much of the power in the food industry is held at the retail level and they are the ones who force the low prices into the farmers” (Founder/SPUD).*

The entrepreneur used his previous knowledge to get insights on new ideas or alternatives through the combination of previously-disparate information (Baron, 2006). At the same time, he showed the ability of assessing a profitable business opportunity (McMullen and Shepherd, 2006) which lead him to invest \$150,000 of his personal capital to found SPUD (Renewal, 2016). So, the entrepreneur, using his knowledge, resources and capabilities, started his own business, a web-based grocery delivery business, promoting organic food from local production for consumers with informed food choices.

He wrote a business plan based on his initial idea. However, when the exploitation of the opportunity started, the founder understood that changes were needed. As he explains:

*“I couldn’t just do it on a small scale. I had to grow to make the economics work because I needed a very sophisticated website to be able to handle all these different products. So, I meant to do this just as a small little demonstration business, just to be in Vancouver but I couldn’t find how to do that profitably. So, then I had to change that to something larger” (Founder/SPUD).*

The firm expanded to United States, particularly to San Francisco and Los Angeles. Cities geographically and culturally close to Vancouver. Although the business was force to increase its size, its target market stayed the same, a niche of consumers attracted by local and organic products. In fact, this turned out to be the strong point of the company, as the founder expresses:

*“We had this big companies come in and try to sell very conventional, not local products like (...) A whole bunch of very, very large companies that were very well funded with public stock market money. Initially I thought that will be very stiff competition, but then I realized that the customers that we were serving didn’t want to buy those standard products. They wanted to buy the healthy local products. That wasn’t so bad. In fact, most of those companies, because they had bigger costs, they didn’t survive” (Founder/SPUD).*

The firm realized the key role of its initial customers and listened carefully to their feedback to improve their services and maintain their customers. SPUD frequently sends newsletters and requests feedback from their customers. Several surveys requesting information on needs and wants were also sent to their users. This was the way they were informally executing market research.

Furthermore, the firm was not only collecting feedback from their customers, but also from competitors in Europe. According to the founder, the firm internationalized from Canada to United States because of economies of scale, however it didn’t have any plans of going to Europe. The reason was that the firm had close contact with another company that is doing a similar business in Europe. Both firms provide help and feedback to each other regarding experiences and knowledge, with the informal agreement of not entering each other’s market.

After consolidating the organic web-delivery market, the company expanded to new areas, such delivery programs for offices, including the organization of picnics of large organizations and the creation of the juice club (Business Vancouver, 2013). Nowadays, SPUD is the largest internet grocer for organic/natural food in North America; a \$10 million business with over 3,500 deliveries a week and \$16 million annual sales (Renewal, 2016). Nevertheless, according its current CEO, the company has many plans for the future, mainly motivated by growth.

### *Cydr Ignaców*

A change of law in 2011 allowed Polish fruit growers to produce up to 10.000 liters of cider per year (*Ustawa Z Dnia 12 Maja 2011 R. O Wyrobie I Rozlewie Wyrobów Winiarskich, Obrocie Tymi Wyrobami I Organizacji Rynku Wina*, 2011). Such circumstances generated an opportunity that was spotted by Cydr Ignaców founders, Tomasz Porowski, a lawyer, and Marcin Hermanowicz, an apple grower. Both, decided to become the first growers’ cider makers in the country (Porowski and Hermanowicz, 2014). Clearly their past knowledge and experience, gained from their work, gave them an additional edge to be able to identify the arising opportunity experience (Klepper and Sleeper, 2005; Shane and Khurana, 2003). Additionally, one of the founders had a clear idea that he wanted to do something else besides his job, something that involved also a practical job:

*“After working in an office as a lawyer for more than a dozen years, I asked myself a simple question: what do I like to do and what would give me a life and financial satisfaction? I like alcohol and its production is an interesting and complex process” (Founder/Ignacow cider).*

The availability of resources facilitated the decision of focusing on the cider production. Production of other types of alcohol in Poland required an important financial capital, which the entrepreneurs lacked. On the other hand, there was high availability of apples in Poland, which made cider production more affordable and reachable for the entrepreneurs.

Uniting their knowledge and resources, the entrepreneurs began experimenting with different varieties of apples, yeast strains and the course of fermentation. The objective was to produce a dry cider in accordance with the cycle of nature. To achieve so, the founders took their results to England and met with local cider producers, to receive some advice regarding technology and production.

The final product, resulted in a dry cider based on the blend of six varieties of apples that does not contain artificial flavors or dyes (Przybyłowicz, 2014), which is different from other ciders as cider usually is sweet. As the entrepreneur says:

*“The most important difference, distinguishing them from French, English or Spanish ciders are different species of apples, used by Polish producers, and thereby different taste profile of Polish cider. This style is still being shaped” (Founder/Ignacow cider).*

As the founder mentioned, even the development of the product is a continuous process that still develops. But for Ignacow cider this is normal:

*“During the last 3 years the cider market in Poland was changing month by month, situation was very dynamic” (Founder/Ignacow cider).*

Initially the product was only distributed in certain bars and restaurants (Plucinska, 2015), but in the summer of 2015, it also appeared on the shelves of a Poland-wide supermarket chain. The firm continues to grow and keeps close relationships with its customers. In fact, being a small business gives them the advantage of creates a personalized treatment with the customers:

*“The relationship with our clients (no matter if restaurants or private persons) is based on the fact, that we are the real producers, that behind our product stands our personal effort, our product has also our face, and not a faceless form, created by a marketing department of a big industrial producer (...) We do not use classical marketing language full of clichés about “naturality” of our product, we try to show factual actions, by which we build trust between us and our clients” (Founder/Ignacow cider).*

Today the company is looking to develop their international markets through exports:

*I think that a good direction for us would be markets of Germany, Sweden, Norway. These are the countries where cider is well known and consumed, while our prices could be attractive for clients” (Founder/Ignacow cider).*

#### IEM: exploration and exploitation of opportunities

Based on the results of the single case studies, it is possible to conclude that all firms use a bottom-up approach when developing their international entrepreneurial marketing activities (Stokes, 2000). However, the relationship between exploration and exploitation varies, depending to the state of the firm and the level of analysis. As in the bottom-up approach, the process starts with the identification of the opportunity and it is analyzed at the individual level.

Although all entrepreneurs present different backgrounds, they all have in common the clear goal of having their own business. However, in order to be able to identify their business opportunity, all entrepreneurs first acquired certain experiences (Alvarez and Busenitz, 2001; Corbett, 2007), knowledge (Klepper and Sleeper, 2005; Shane and Khurana, 2003) that allowed them to be able to identify the opportunities that others were not capable of seeing.

Entrepreneurs showed clear signs of entrepreneurial alertness, “a distinctive set of perceptual and cognitive processing skills that direct the opportunity identification process” (Gaglio and Katz, 2001, p. 96). In particular,

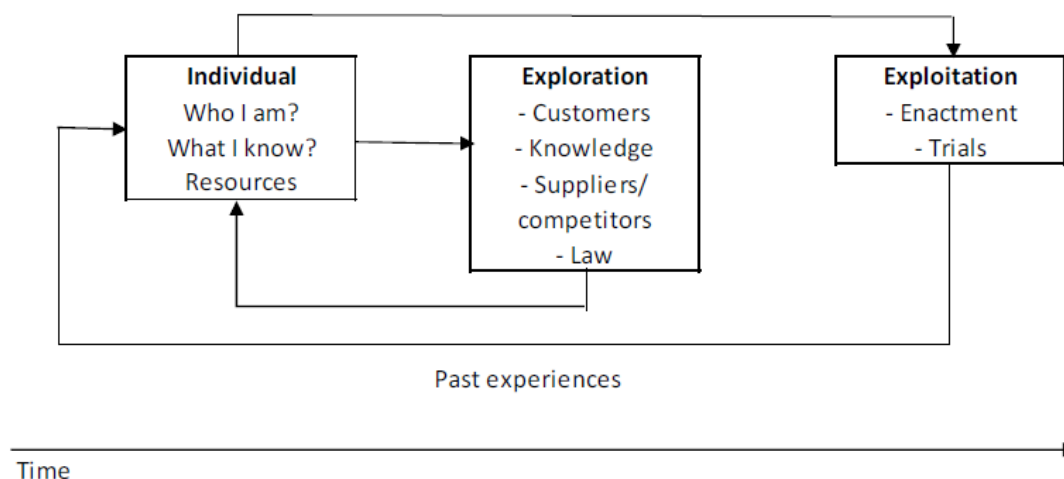


the founders practiced search and scanning activities (Valliere, 2013) related with evaluation and judgement of profitable opportunities (McMullen and Shepherd, 2006; Tang et al., 2012).

This clearly defines an explorative action (March, 1991) at the individual level, which allowed the entrepreneur to identify opportunities that later were exploited. However, from the search of the opportunities through exploration until the exploitation stage, there was an active process of learning through variation and experimentation (explorative learning), as well as through local search and experiential refinement (exploitative learning) (Baum et al., 2000). These learning processes provided the entrepreneur with an accumulation of knowledge and experiences (Carson and Gilmore, 2000) that later were key in the exploitation of the opportunity, additional to the already acquired firm's resources and capabilities (Barney, 1991).

The entrepreneur explores and interprets the information coming from the environment through the lens of his/her knowledge and experience. These interpretations generate an initial trial of exploiting a possible profitable opportunity. If the knowledge and experience are the right combination, a new opportunity is created/identified. But if the knowledge and experience still needed some refinement, the process starts again until finally generating the opportunity. Figure 5 illustrates the dynamic between exploration and exploitation processes at this stage.

Figure 5: Identification of opportunities at the individual level



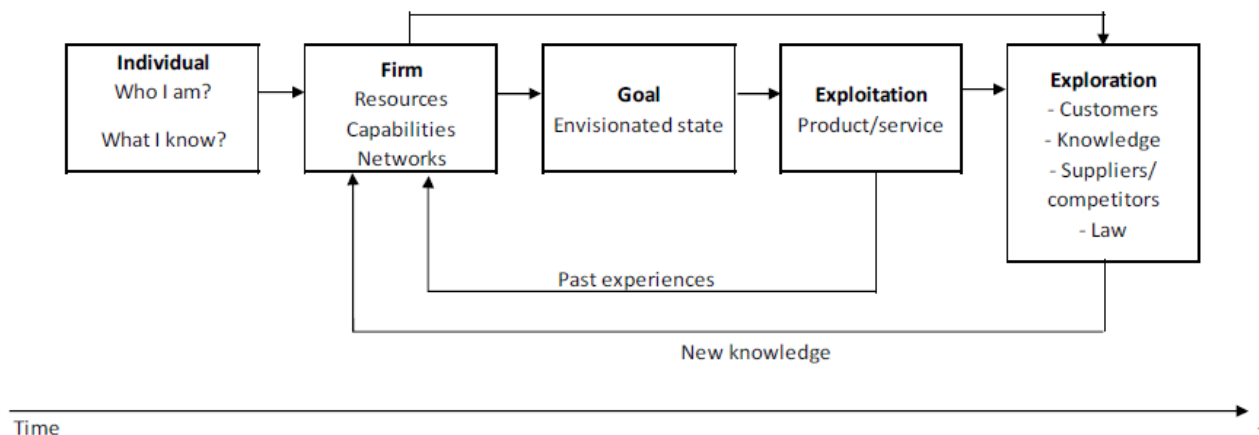
Following the stages of the bottom-up approach, the entrepreneur has identified the initial idea of an opportunity based on the available resources and capabilities (Barney, 1991). The identification of the opportunity also includes the establishment of a goal that the entrepreneur and the firm would like to reach. However, the path is not clear. Decisions are made one day at the time and paths or business plans are flexible to change. This corresponds with the teleology theory which rests on the assumption that the firm socially constructs "...an envisioned end state and selects from alternatives a course of action to reach it" (Van de Ven, 1992, p. 178).

To reach this envisioned state, the firm, purposeful and adaptive, acts and monitors the progress. Alternatives are not prespecified but are discovered through proactiveness and innovativeness in an iterative process of search and development toward the desired end state, generating an interaction between exploration and exploitation. For example, while SPUD explore the market by observing the big competitor that was entering their market, the firm was also exploiting it through the refinement of their knowledge by interacting with their customers. So, while the entrepreneur and the firm explore how the market behaves (exploration), they also gain experiential refinement (exploitation) (Turner et al., 2013).

The firm and the entrepreneur manage to test their product/service through a sequence of trial and error in the market. The firm exploits the opportunity by launching the initial product through certain distribution and advertising channels, attracting the initial customer base. The first customer may or may not be the consumer that the entrepreneur had in mind. However, this customer plays a key role in the exploration and exploitation of the entrepreneurial opportunity, as this customer would provide feedback (exploration) to the firm which will have a significant effect on the path that the firm and the entrepreneur take. This becomes a continuous and iterative process and the company expands by reaching more customers like their initial ones (Stokes, 2000).

Nevertheless, close contact with the customer, as well as openness to listen to her, must be turned into adaptation and change if necessary. Flexibility under a bottom-up approach allows the company to change its path according to the new developments of the market and/or the new goals of the firm (Hills and Hultman, 2011). The new knowledge generated through the exploration and the refined knowledge obtained through the exploitation, feed into the past experiences of the firm. Based on them, the firm might change/modify its goal and how it approaches the market. This can be seen in Figure 6.

Figure 6: IEM through the exploitation and exploration of opportunities



In general terms, the bottom up approach seems to offer many advantages to the small entrepreneurial firms. It requires less resources and is a more flexible and adaptable approach (Stokes, 2000). It also generates a closer relationship with the customer, that allows to better understand their needs and get feedback from them (Mort et al., 2012).

The relationship between the exploration and exploitation of the market opportunities is from an ambidexterity nature. The flow of information and the development of improved versions of the opportunities are a continuous process focused on reaching goals that can also be modified based on the accumulated knowledge and experience of the entity (Van de Ven and Poole, 1995).

However, this feedback is a continuous process, in which the firms are looking for continuous improvement. As one of the entrepreneurs stated:

*“The goal is not achieving perfection, but progress” (Founder/SPUD).*

### Implications and contributions

The current research has four main contributions in the current research. First, the paper explores the international entrepreneurial marketing concept and identifies the two main frameworks used to describe it: effectuation (Sarasvathy, 2001) and bottom-up approach (Stokes, 2000). The paper analyzes both approaches, showing their conceptual differences and then, through multiple case studies, provides evidence on the bottom-up approach as the best fit for the development of international entrepreneurial marketing. Second, the model contributes with the exploration/exploitation literature by providing two models, one at the individual level and the second one multi-level, in which the relationships between exploration and exploitation are analyzed for IEM.

Third, the present research provides additional support for the key role of marketing in the internationalization processes. The marketing area has been commonly ignored by scholars, although previous research has already concluded that marketing activities might have a positive effect implemented in entrepreneurial firms (Knight, 2000). Fourth, an important issue that arises from the collected information is the fact of sharing knowledge among possible competitors, but in different geographical areas. For example, SPUD instead of internationalizing into Europe decided to make an informal agreement with a competitor in the European market by which, both of them could exchange knowledge about their markets and strategies. Also Cydr

Ignaców went to England in order to get some feedback on their cider from local producers. This is an issue that haven't been studied before in literature and might have potential as an alternative to internationalization.

### Concluding observations

With the present study it was possible to describe the IEM through the exploration and exploitation of opportunities. The paper started by introducing alternative views on the relation between exploration and exploitation, as well as diverse definitions of IEM. Results show that IEM develops through a bottom-up approach. The initial stage, during the identification of the opportunity, is analyzed at the individual level and the exploration precedes exploitation. Their interaction is an iterative cycling between both. But as the IEM process unfolds, the relation between exploration and exploitation changes. When the opportunity is enacted, the exploitation precedes exploration and their interaction has a relation based on ambidexterity.

The results of this study also show that even with time, entrepreneurial marketing companies continue being entrepreneurial in their marketing activities, even after the firm matures and evolves. This result contradicts Kotler's (2002) and Carson's (1985) believe in which they consider that entrepreneurial marketing is just the initial phase of the marketing development in the company.

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## International entrepreneurial marketing: a process of exploration and exploitation of opportunities

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Emilia Cubero Dudinskaya

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### Conceptual framework

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- International entrepreneurial marketing as a process
  - Bottom-up approach and/or effectuation?
- Exploration and exploitation of opportunities
  - Ambidexterity or punctuated equilibrium?

**Research question:** How should small firms explore and exploit their opportunities through international entrepreneurial marketing?

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# Methodology: Multiple case study

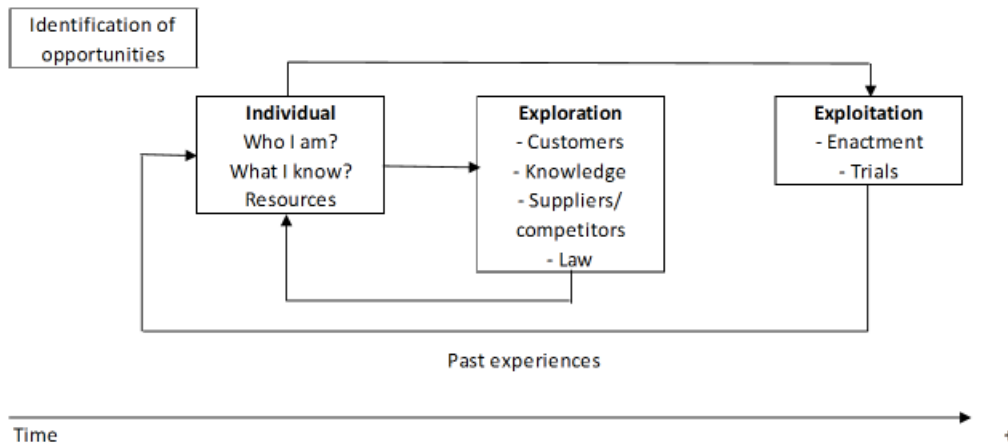
- Why
  - Exploratory → Dynamic and complex
  - Process in time
  - Multiple sources of information
  
- Theoretical sampling
  - SME's
  - Within Food and beverages industry
  - Global mindset
  - Distinct/new marketing practices

## Case studies

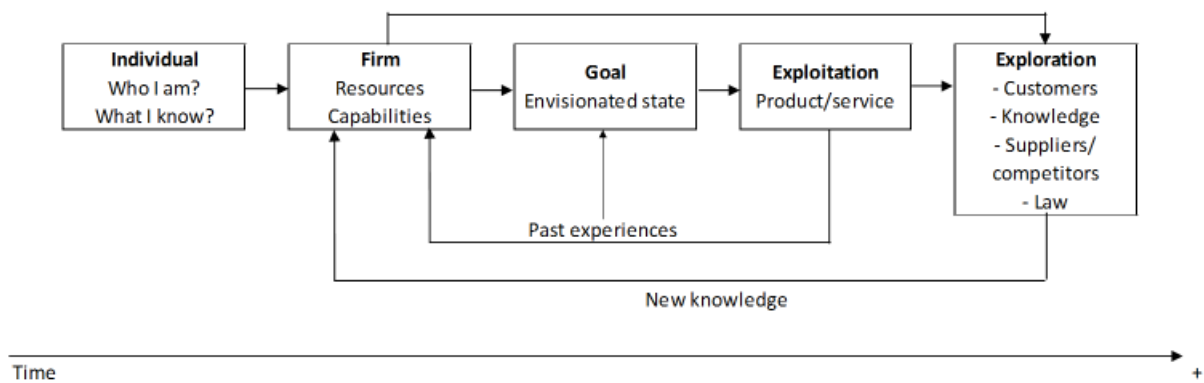
Information	Jones Soda	SPUD	Ignacow cider
Foundation year	1987	1998	2011
Founder	Peter Van Stolk	David Van Seter	Thomas Porowski, Marcin Hermanowicz
Still active	No	No	Yes
Industry	Beverages	Food	Beverages
Main product/service	Natural flavor soda	Web-based grocery delivery service	Dry traditional cyder
Distinct/new marketing practices	New product lines, line extensions, distribution, advertising, customer relation	New service lines, distribution, advertising, customer relation	Process innovation, distribution, customer relation
Markets	Canada, USA, United Kingdom	Canada, USA	Poland, Russia, Finland, Netherlands
Networks	Canada, USA	Denmark	England
Type of firm	Small	Medium	Micro

# Key findings

## Individual level



## Model



## Contributions and implications

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- Model → relation between exploration/exploitation
    - Ambidexterity → Firms need to do both
    - Bottom-up approach → goals are define from the begining.
  - Marketing is a key process that needs more consideration.
  - Interaction between traditional marketing and entrepreneurial marketing
- 

## Future research

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- Quantitative research
    - Measure international entrepreneurial marketing
    - Relationship with performance
  - Different industries
    - Other low-tech industries
    - Effects in high-tech industries
  - Emerging countries
-

Thank you for your attention!

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## **Exploring Country Institutional Profiles on Entrepreneurial Orientation**

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**Keywords:** *Institutions, Entrepreneurial Orientation, Cross-Country Study, Cluster Analysis.*

### **Abstract**

Cross-country data on entrepreneurial intention and activity (e.g. GEM, GUESSS) shows significant differences among countries. Institutional theory offers a valuable framework in terms of regulatory (government policies), cognitive (social knowledge) and normative (value systems) dimensions that define the alternative courses of action open to individuals and firms and, at the same time, help to identify the “why” of the different courses of action.

The present study draws on the construct of a country *institutional profile* to identify normative, cognitive, and regulatory institutional structures that may influence entrepreneurial orientation, understood as the commonly accepted combination of proactive, innovative and risk-taking posture. Using data from 349 firms in nine European countries, the study assesses the impact of the country institutional dimensions on the levels of entrepreneurial orientation.

Results from a cluster analysis provide evidence of heterogeneity rather than precisely defined country institutional profiles at the European level, as these vary according to key firm’s and entrepreneur’s characteristics. Differences are found across the three institutional pillars. In the regulatory clusters, the key differences are based at the individual level, particularly on age and experience. The low-regulatory cluster is composed by older entrepreneurs with higher experience in national and international markets, as well as in managerial positions. Instead, the high-regulatory cluster is associated with younger and less experienced entrepreneurs.

Experience is also a key variable in the normative dimensions, although in this case only national experience is significant. At the firm level, the type of business and country of origin are also important. The low-normative cluster includes service’ firms from Italy and France, with experienced entrepreneurs in the local market. The high-normative cluster is represented by individuals with limited national experience and manufacture firms. Regarding the cognition clusters, the main difference is the experience as an employee and the firm’s country. High levels of cognition are present in German firms with entrepreneurs with experience as employees. Low-cognition clusters include Italian firms managed by entrepreneurs with limited experience as employees.

For entrepreneurial orientation, significant differences are revealed between higher, average and lower levels of the construct. Low levels of entrepreneurial orientation are present in low-tech firms with lower levels of internationalization. Average levels of entrepreneurial orientation present average levels of proactiveness and innovativeness, but low levels of risk. Firms in this cluster are the oldest and more internationalized of the sample, representing mainly French and Islandic companies. The cluster with high levels of entrepreneurial orientation includes young and high-tech firms with high internationalization.

Results of a multinomial logistic regression substantiate how the dimensions of country institutional profiles affect in a different way the diverse levels of entrepreneurial orientation. Average entrepreneurial levels are more likely than lower levels in high normative contexts; while high entrepreneurial levels are more likely in high cognitive institutional contexts. Additionally, high-tech firms are more likely to have higher levels of entrepreneurial orientation.

This study contributes to existing theories of national institutions by adding evidence on *how* dimensions of institutional country profiles have an impact in a different way entrepreneurial orientation.

## Introduction

Cross-country data on entrepreneurial intention and activity, for example GEM, GUESSS and CIS databases, show significant differences among countries regarding their entrepreneurial intentions and activity (Bosma et al., 2010). These differences have also been studied by scholars trying to identify the 'why' of such country-level variances. This study contributes fresh insights to contemporary knowledge of national institutions by adding evidence regarding *how* dimensions of institutional country profiles have different kinds of impacts on entrepreneurial orientation. Among the possible explanations, Levie and Autio (2008) claimed that the presence and strength of entrepreneurial framework conditions explain the observed differences, while others scholars (e.g. Fayolle et al., 2010; Kreiser et al., 2010) view cultural diversity as the reason. Regardless of the kind of 'contextual' explanation used, the importance of institutions in determining entrepreneurial intention and activity is confirmed by emerging research (Stenholm et al., 2013).

The institutional theory offers a valuable framework in terms of regulatory (government policies), cognitive (social knowledge) and normative (value systems) dimensions that may define the alternative courses of action open to the firms, in this way establishing the framework for the market transactions (Spencer and Gómez, 2004).

Differences between diverse institutional contexts and countries generate diverse conditions that might benefit the development of certain types of firms, strategies and entrepreneurial intentions more than others (Busenitz et al., 2000). Understanding the impact of the institutional environment and the potentially different impact of the three pillars on entrepreneurial intentions and behaviour is of primary importance to policy makers and academia alike. For example, it is still unclear why high levels of entrepreneurial intention in some countries do not translate into actual entrepreneurial activity. Reynolds et al. (1999, p. 43) propose that among the factors that support entrepreneurship, perhaps the most critical is 'a set of social and cultural values along with the appropriate social, economic and political institutions that legitimize and encourage the pursuit of entrepreneurial opportunity'.

Based on the country institutional profile (Busenitz et al., 2000) and the entrepreneurial orientation (EO) (e.g. Covin and Slevin, 1989; Lumpkin and Dess, 1996), the present study aims to assess the influence of the complete set of institutional dimensions on different levels of EO.

Our research is based on primary data collected in nine European countries with 349 respondents. Through a cluster analysis and a multinomial logistic regression, the results from this work will shed further light on how institutional elements impact entrepreneurial behaviour.

The remainder of the paper presents a literature review on institutional theory (Scott, 1995) and institutional country profiles (Busenitz et al., 2000; Kostova, 1997), and their relationship with entrepreneurial orientation (Covin and Slevin, 1989; Lumpkin and Dess, 1996; Miller, 1983). Next, the selected methodology and key measures are introduced, followed by the preliminary results of the cluster analysis and the multinomial logistic regression. Discussion and integration with extant work is followed by reflections on theoretical and managerial contributions and future research avenues.

## Literature review

### *Entrepreneurial orientation (EO) and institutions*

Extant research has suggested that EO is a strategic response to a complex set of institutional environment and firm factors, combined with the perceptions that firm managers/entrepreneurs have regarding the interaction of both perspectives (Dickson, 2004). EO '... is demonstrated by the extent to which the top managers are inclined to take business-related risks, to favor change and innovation in order to obtain a competitive advantage for their firm...' (Covin and Slevin, 1989, p. 77). As such, EO is described through combinations of innovativeness, proactiveness and calculated risk-taking behaviours (Covin and Slevin, 1989; Miller, 1983).

Each country is characterized by its idiosyncratic institutional background, and thus national economies may differ significantly in the attitudes, beliefs and behaviours that create and develop EO (Covin and Miller, 2014). In fact, past studies have suggested that diverse national cultural values might affect entrepreneurial cognition levels (Mitchell et al., 2000), risk propensity and entrepreneurial orientation in general (Mueller and Thomas, 2001; Reynolds et al., 1999; Stewart et al., 2007). Kreiser et al. (2010) attempted to measure national culture through some institutional variables. However, the authors focused on the cultural measures (Hofstede, 1986), leaving unexplored the way in which each institutional dimension affects the diverse levels of EO. Only Stenholm et al. (2013) analysed the effects on types and levels of EO at the dimension level, measuring EO in a linear way and using secondary data. Although an important stream of studies has explored how EO varies within diverse cultures by focusing on cultural values, other institutional pillars have been neglected (Ahlstrom and Bruton, 2002; Dickson, 2004).

Scott (1995) was the first to propose three central elements of institutional structures: regulative, cognitive and normative. Although all three of these dimensions relate to the same institutional environment, each of them reflects different facets of it. Moreover, each dimension invokes diverse types of motivations or intentions that lead to different types and levels of adoption and outcomes (Kostova and Roth, 2002). For example, a poor normative environment with regard to entrepreneurial behaviour (i.e. entrepreneurship is not regarded favourably) will impact entrepreneurial intentions, i.e. the desire to become an entrepreneur, negatively. At the same time, a strong regulatory framework that focuses on incentives for entrepreneurs may positively impact entrepreneurial intentions. Finally, the cognitive dimension, and the related perception of skills and competences, influences levels of entrepreneurial orientation or intentions, e.g. innovativeness. For this reason, each of the dimensions should be analysed separately in order to identify their individual effects on the varied contexts and levels of entrepreneurial orientation.

We will now elaborate on such a differentiated role of institutions and theorize the differentiated impact of the three pillars on the dimensions of entrepreneurial orientation.

### *Breaking down the institutional environment*

The regulatory dimension of the institutional profile consists of laws, rules, regulations and government policies in a particular environment that might promote or obstruct entrepreneurial orientation (Stenholm et al., 2013) in a particular place and moment in time. Entrepreneurial behaviours are influenced by laws and regulations because they shape the level of risk involved in the formation of a new business as well as the level of and access to the resources required to achieve such a goal (Autio and Acs, 2010; Busenitz et al., 2000). A favourable regulatory environment in terms of strong entrepreneurial framework conditions instead enhances perceptions of opportunity and builds the foundation for knowledge and innovation spill-overs. In fact, Baumol and Strom (2007) suggested that entrepreneurship is heavily influenced by the regulations adopted by a government and the vigour of their enforcement.

The normative dimension incorporates social norms, values, beliefs and assumptions related to human behaviour (Scott, 1995; Stenholm et al., 2013). A favourable normative dimension means that the practice in question is consistent with the norms and values held by the people (Kostova and Roth, 2002). Therefore, a society with high admiration for individuals starting a new business will encourage entrepreneurial orientation (Busenitz et al., 2000). On the other hand, societies with a negative perception of uncertainty and risk will develop a lower appreciation of entrepreneurial behaviours (Stenholm et al., 2013; Thomas and Mueller, 2000), as they are much less innovation-oriented. In fact, previous research in international entrepreneurship has suggested that the country's culture, values and norms affect the entrepreneurial orientation of its residents (Busenitz and Lau, 1996).



Finally, the cognitive dimension constitutes knowledge, skills and cognitive structures shared by the people in a given country (Busenitz et al., 2000), as well as the frameworks used to categorize and evaluate information (Spencer and Gómez, 2004). Cognitive structures affect the individual's behaviour by shaping the cognitive frames (Kostova, 1997). For instance, in some countries, the required knowledge to start a business might be widely available and dispersed among individuals, while in other nations it is not (Busenitz et al., 2000). With regard to entrepreneurial orientation, it is evident that, e.g. the quality and level of education and the type of knowledge transferred may have an immediate impact on the dimensions of innovativeness and proactiveness, both of which are constituent dimensions of entrepreneurial orientation.

As seen before, all three dimensions of institutional profiles have mixed effects on entrepreneurial orientation. A single and direct relationship therefore might not be adequate in order to analyse their interaction correctly. We therefore propose an investigative approach in order to be able to isolate such complexity, which we elaborate on in the next section.

## **Methods**

### *Sample and data collection*

The empirical grounding of this study is a multi-industry sample of companies operating in Europe. Companies are drawn from national databases, industry trade groups and national association lists, which cover the largest European markets, such as France, Germany, Italy and Spain, but also smaller national markets, such as Finland, Iceland and the Netherlands. This sample is a sound representation of European companies and their business environments, as it encompasses a combination of the traditional cultural (Gupta et al., 2002), socioeconomic and institutional (Busenitz et al., 2000; Kostova, 1997) environments in Europe. Each company is represented by one respondent who provided information in a self-administrated web-based questionnaire. The questionnaire was developed and pre-tested in English. For pretesting and face validation, we received support from researchers from all countries involved. Subsequently, the final version was translated into the national languages and back-translated until convergence among all national-language versions was reached, thereby ensuring idiomatic, grammatical and syntactical equivalence (Sekaran, 1983).

The total sample includes 349 responses. All observations with more than 15% of missing values were eliminated. We checked for outliers by computing Mahalanobis distances (De Maesschalck et al., 2000; Penny, 1996), which resulted in a final sample of 331 companies.

Our sample consists of 77% male and 21% female respondents, with an average age of 44 years, which matches well the European context of entrepreneurs (European Commission, 2014). At the firm level, the companies have an average (median) age of 9 years and employ 9.5 employees, representing mainly small and young companies and thus mirroring the European small and medium firm universe (92% of European firms in 2014 were micro-enterprises) (European Commission, 2015). The median turnover is 600,000 euros a year, with an average of 23% of this coming from foreign sales. Furthermore, 40.1% of the interviewed firms perceive themselves to be more high-tech, while 23.4% indicated that they were in more traditional (low-tech) sectors. The service sector is predominant (43.4%), 25% is focused on production and 31.6% operates in both sectors, again corresponding to the overall European economic landscape (European Commission, 2015; Eurostat, 2016).

### *Methodology*

The statistical analysis of the current research is divided in two parts. In the first part, a cluster analysis is performed on each institutional dimension and on the entrepreneurial orientation dimensions. The objective of using this method is to identify homogeneous entities and group them in clusters (Harrigan, 1985; Mooi and Sarstedt, 2011). This is a commonly used statistical technique in a variety of disciplines and in the area of entrepreneurship and international business (Denicolai et al., 2015; Hagen et al., 2012; Knight and Cavusgil, 2005; Zahra, 1993).

Following the recommendations of Ketchen and Shook (1996) and Mooi and Sarstedt (2011), the authors applied a two-stage procedure, starting with a hierarchical cluster and followed with a k-means cluster (non-hierarchical). The hierarchical cluster analysis is done based on the Euclidean distance, as it is the most commonly used type when it comes to analysing interval-scaled data, in combination with the Ward method which combines the objects whose merger increases the overall within-cluster variance to the smallest possible degree (Mooi and Sarstedt, 2011). By performing the hierarchical cluster analysis, it is possible to

identify the number of clusters to be introduced later in the k-means cluster analysis, according to the agglomeration coefficients. After determining the number of clusters for each institutional dimension and for the entrepreneurial orientation construct, the k-mean cluster analysis produces the best configurations of clusters.

The second part of the analysis involves a multinomial logistic regression, where the dependent variables are the entrepreneurial orientation clusters. This method is useful when the dependent variable is not restricted to two categories. Likewise, this kind of regression allows the researcher to classify the observations based on the values of a set of predictor variables. In the following section, the dependent, independent and control variables used in the regression are explained.

### *Variables and Measures*

#### *Dependent variable: Entrepreneurial orientation*

EO was measured using the Miller/Covin and Slater scale (Covin and Slevin, 1989; Miller, 1983), including all original 9 items (please see Table 1 for the items). The scale is commonly used in entrepreneurial research (Anderson et al., 2015) and has also been validated for different cross-cultural settings (Knight, 1997).

#### *Independent variables: Institutional country profiles*

The diverse institutional dimensions were measured using Busenitz's et al. (2000) institutional country profiles scale. They tested the scale and determined "a good reliability, strong discriminant validity, adequate cross-cultural validity, and reasonable external validity" (p. 1001). Validating this scale with the data at hand results in similar loadings and meets the common quality criteria (Henseler et al., 2016).

#### *Control variables*

The following additional control variables at the firm level are included: country of origin, age, number of employees and the technological level. The country of origin is measured through a categorical variable that included the following countries: Finland, France, Germany, Hungary, Iceland, Italy, Lithuania, the Netherlands and Spain. The age of the firm and the number of employees are measured as continuous variables. The technological level of the firm is measured using a two-ends scale from 1 to 10, in which the respondents could position their firm between high-tech (1) and low-tech (10) extremes.

## **Findings**

### *Cluster results*

#### *Cluster analysis: Entrepreneurial orientation clusters*

Based on the hierarchical cluster analysis for the items regarding the EO construct, it was possible to determine that the optimal number of clusters was three. This is determined by the GAP criterion assessing change of agglomeration (Wagner et al., 2005). The significance of the clusters differences is confirmed using a one-way ANOVA. The mean of each item according to each cluster is presented in Table 1.

Table 1. EO cluster profile

Items	EO clusters		
	Low	Average	High
A strong emphasis on the marketing of tried and true products or services/R&D, technological leadership and innovations	2.38	3.35	3.80
No new lines of products or services/Many new lines of products or services	2.43	3.71	3.91
Changes in product or service lines have been mostly of a minor nature/have usually been quite dramatic.	2.25	3.41	3.82
Typically responds to actions which competitors initiate/initiates actions which competitors then respond to	2.92	3.48	4.11
Is very seldom/often the first business to introduce new products/services, administrative techniques, operating technologies etc.	2.38	3.68	4.32
Typically seeks to avoid competitive clashes, preferring a 'live-and-let-live' posture/adopts a very competitive, 'undo-the-competitors' posture.	2.56	2.63	3.49
A strong proclivity for low-risk projects (with normal and certain rates of return)/proclivity for high-risk projects (with chances of very high returns).	2.69	2.61	3.82
Owing to the nature of the environment, it is best to explore it gradually via timid, incremental behaviour/bold, wide-ranging acts are necessary to achieve the firm's objectives.	2.70	2.68	3.90
Typically adopts a cautious, 'wait-and-see' posture in order to minimize the probability of making costly decisions/adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.	2.64	2.67	3.85

The first cluster of EO is characterized by a generally low level of all the elements of EO. It is also the cluster with the lower percentage of international sales and is mostly focused on low-tech products/services. It represents around 40% of the Finnish firms, 35% of Icelandic companies and most of the Hungarian and Lithuanian enterprises. On the other hand, the second cluster of EO presents average levels of proactiveness and innovativeness, but low levels of calculated risk. It also presents among the highest percentages of international sales and represents the oldest companies of the sample. Around 40% of French and Icelandic companies belong to this cluster, as well as close to 30% of Finnish and Italian firms. The third cluster of EO is characterized by high levels of all EO dimensions. It is a cluster with a high percentage of international sales, comprised of young firms focused mainly on high-tech products/services. It represents most of the companies from Italy, Germany and the Netherlands. However, an important percentage of Finnish and Icelandic firms also belong to this cluster.

#### Regulatory dimension clusters

After performing the hierarchical cluster analysis for the items regarding the regulatory dimension, and based on the GAP criterion assessing change of agglomeration (Wagner et al., 2005), the optimal number of clusters was defined as three. Additionally, the significance of the cluster differences is confirmed using a one-way ANOVA. The mean of each item of the scale, according to each cluster, is presented in Table 2.

Table 2. Regulatory dimension clusters

Items	Regulatory clusters		
	Average	Low	High
Government organizations in this country assist individuals with starting their own business.	2.70	1.54	4.04
The government sets aside government contracts for new and small businesses.	2.53	1.35	2.55
Local and national governments have special support available for individuals who want to start a new business.	2.77	1.46	3.90
The government sponsors organizations that help new businesses develop.	2.73	1.55	3.85
Even after failing in an earlier business, the government assists entrepreneurs in starting again.	2.32	1.32	3.28

The significant differences among the regulatory clusters are mainly based on the individual data. The first cluster of the regulatory dimension is characterized by an average level of regulations and an average level of experience in national and international markets. As a manager, the respondent has around 6 years of experience on average and the firm is mainly focused on B2C activities. The second cluster presents low levels of regulations. However, the respondents were the oldest and the most experienced in national and international markets and in managerial positions. The firms were also mainly focused on B2C activities. The third cluster is characterized by high levels of regulations. However, in this case, the respondents are the youngest and least experienced in all fields (national, international or managerial). Moreover, the companies in this cluster are mainly focused on B2B activities.

#### Normative dimension clusters

After completing the hierarchical cluster analysis for the items regarding the normative dimension and applying the GAP criterion assessing the change of agglomeration (Wagner et al., 2005), the optimal number of clusters was determined to be three. The significance of the cluster differences is confirmed using a one-way ANOVA, and the mean of each item of the scale according to each cluster is presented in Table 3.

Table 3. Normative dimension clusters

Items	Normative clusters		
	Average	Low	High
Turning new ideas into businesses is an admired career path in this country.	3.51	1.88	4.30
In this country, innovative and creative thinking is viewed as the route to success.	3.40	1.82	4.35
People in this country tend to greatly admire those who start their own business.	2.87	1.81	4.12
Entrepreneurs are admired in this country.	2.91	1.72	4.20

Significant differences among clusters are found mainly in national experience and the nature of the business (goods or services). There are also significant differences between countries. The first cluster of the normative dimension is characterized by an average level of social norms and national experience. Most of the firms from Germany, Finland and the Netherlands belong to this cluster. However, around 40% of Italian and Icelandic firms also form part of this cluster. The second cluster presents low levels of norms, is highly focused on services and has the most experienced managers. Most of the Italian and French firms fall into this cluster. However, 40% of Finnish companies also belong to it. The third cluster is characterized by high levels of norms. It is mainly focused on goods production and it includes the firms with the least experience. It is mainly represented by Icelandic firms.

#### Cognitive dimension clusters

After completing the hierarchical cluster analysis for the items regarding the cognitive dimension and using the GAP criterion assessing change of agglomeration (Wagner et al., 2005), the optimal number of clusters was determined to be two. The significance of the cluster differences is confirmed using a one-way ANOVA. Additionally, Table 4 provides a summary of the means of each item according to each cluster.

Table 4. Cognitive dimension hierarchical clusters

Items	Cognitive clusters	
	High	Low
Individuals know how to legally protect a new business.	3.03	1.83
Those who start new businesses know how to deal with a lot of risk.	3.04	1.79
Those who start new businesses know how to manage risk.	3.17	1.97
Most people know where to find information about markets for their products.	3.44	2.18

The only significantly different variables between the two clusters are employee experience and country of origin. The first cluster of the cognitive dimension is characterized by high levels of cognition and more experience as an employee. Most of the firms from Germany, Hungary and Lithuania belong to this cluster. However, almost 50% of the companies from France and the Netherlands also fall under this category. The second cluster presents low levels of cognition and less experience as an employee. Most of the Italian, Finnish and Icelandic firms belong to this cluster.

#### *Multinomial logistic regression*

Initially, a multinomial logistic regression with main effects is performed for all 9 countries. In the dependent variable, EO, the first cluster (Low EO) is used as a reference category. Although the full model produced statistically significant results and its goodness of fit (measured through the Pearson chi-squared statistic) suggests that the model fits the data well, the model presented unexpected singularities in the Hessian matrix. After analysing the dependent variable and the predictors, three of the countries (Lithuania, Hungary and Spain) were identified to be a constant predictor, so we combined the categories.

The resulting model's goodness of fit (measured through the Pearson chi-squared statistic) suggests that the model fits the data well. Furthermore, the full model is statistically significant. However, not all independent variables were significant. Among the independent variables, only the level of technology (high/low-tech) of the firm, the company age, the cognitive dimension and the country are significant as illustrated in Table 5.

Table 5: Likelihood ratio tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	454.128 <sup>a</sup>	.000	0	.
High/low-tech	469.696	15.568	2	.000
Company age	464.472	10.345	2	.006
N. of employees	455.630	1.503	2	.472
Regulatory	458.144	4.017	4	.404
Cognitive	463.207	9.080	2	.011
Normative	460.295	6.168	4	.187
Country	478.381	24.254	12	.019

From the model, it is possible to conclude that it is more likely for a firm to have average EO than low EO if the firm is in a high normative institutional context rather than in an average normative institutional context. However, when comparing low levels of EO with high levels of EO, other predictors are significant when comparing average EO with low EO. In this case, it is more likely for a firm to have high EO than low EO if

the firm is in the high-tech industry rather than in the low-tech industry. In addition, it is more likely for a firm to achieve high EO than low EO if the cognitive institutional context is high rather than low and if the firm is in Italy rather than in Finland, Lithuania, Hungary, Spain or Iceland. Table 6 shows the results in more detail.

Table 6: Parameter estimates

Cluster of EO		B	Std. Error	Wald	df	Sig.	Exp (B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Average	Intercept	1.198	.812	2.177	1	.140			
	High/low-tech	-.010	.068	.024	1	.877	.990	.867	1.130
	Company age	.010	.008	1.696	1	.193	1.010	.995	1.025
	N. of employees	-.001	.001	.478	1	.489	.999	.998	1.001
	Reg. average	.394	.529	.555	1	.456	1.483	.526	4.179
	Reg. low	-.392	.521	.568	1	.451	.675	.243	1.875
	Reg. high	0 <sup>a</sup>	-	-	0	-	-	-	-
	Cog. high	-.174	.425	.168	1	.682	.840	.365	1.933
	Cog. low	0 <sup>a</sup>	-	-	0	-	-	-	-
	Norm. average	-1.064	.498	4.567	1	.033	.345	.130	.916
	Norm. low	-.283	.550	.266	1	.606	.753	.257	2.211
	Norm. high	0 <sup>a</sup>	-	-	0	-	-	-	-
	Finland	-1.085	.594	3.335	1	.068	.338	.105	1.083
	France	-.654	.798	.670	1	.413	.520	.109	2.488
	Germany	.105	.926	.013	1	.909	1.111	.181	6.819
	Lithuania, Hungary, Spain	-2.475	1.163	4.526	1	.033	.084	.009	.823
	Iceland	-.763	.577	1.751	1	.186	.466	.151	1.444
Netherlands	1.636	1.194	1.879	1	.170	5.136	.495	53.303	
Italy	0 <sup>a</sup>	-	-	0	-	-	-	-	
High	Intercept	2.474	.795	9.686	1	.002			
	High/low-tech	-.228	.069	11.000	1	.001	.796	.696	.911
	Company age	-.019	.010	3.417	1	.065	.981	.962	1.001
	N. of employees	.000	.001	.137	1	.711	1.000	.999	1.002
	Reg. average	.558	.539	1.072	1	.301	1.748	.607	5.031
	Reg. low	.168	.533	.099	1	.753	1.182	.416	3.358
	Reg. high	0 <sup>a</sup>	-	-	0	-	-	-	-
	Cog. high	.887	.399	4.929	1	.026	2.427	1.109	5.308
	Cog. low	0 <sup>a</sup>	-	-	0	-	-	-	-
	Norm. average	-.560	.495	1.280	1	.258	.571	.216	1.508
	Norm. low	-.306	.552	.306	1	.580	.737	.250	2.174
	Norm. high	0 <sup>a</sup>	-	-	0	-	-	-	-
	Finland	-1.269	.593	4.573	1	.032	.281	.088	.900
	France	-1.084	.838	1.675	1	.196	.338	.066	1.746
	Germany	-.488	.866	.318	1	.573	.614	.112	3.347
	Lithuania, Hungary, Spain	-1.748	.699	6.264	1	.012	.174	.044	.684
	Iceland	-1.640	.587	7.800	1	.005	.194	.061	.613
Netherlands	1.131	1.152	.965	1	.326	3.100	.324	29.645	
Italy	0 <sup>b</sup>	-	-	0	-	-	-	-	

- The reference category is 1.
- This parameter is set to zero because it is redundant.

## Discussion

The cluster analysis provides several interesting results. First, concerning EO, it is clear that there are three distinct groups. The first one is a cluster characterized by low EO in general, low-tech and low internationalization, which seems to describe a really national and traditional firm. The second cluster, on the other hand, presents higher levels of proactiveness and innovativeness, but still has low levels of risk-taking. However, it includes older firms which are highly internationalized. This cluster seems to describe firms which the literature describes as followers, as they are not the first in the market because they avoid risks, but they do export and develop. The third cluster seems to describe highly technological firms, which are international, young and have a high level of EO. These firms could be described as what is commonly known in the literature as the international new ventures. Such a clear division on EO is in line with the literature (McDougall, 1989), and thus we believe this could be a reliable dependent variable.

Regarding the different clusters of the institutional dimensions, it was possible to determine that the differences among each dimension cluster were based on different firm and managerial variables. The differences in the regulatory dimension were mainly driven by the experience of the entrepreneur, which seems to suggest that dealing with regulations is something that can only be learned with experience. As entrepreneurs had more experience, they perceived lower levels of regulation. This is probably because with time, entrepreneurs learn how to deal with regulations, which thereby reduces the regulation barrier. Additionally, there were no significant differences at the country level. This makes sense, as the sample was composed of European countries, all of which were from the European Union, so the regulations between countries are quite similar.

The normative dimension differences among clusters depended on national experience. This matches with the theory, as the normative dimension is based on social rules that belong to a certain culture. Such rules cannot be learned, but must be experienced inside each context; for this reason, the key difference is the national experience. The cognitive dimension, on the other hand, presented surprising results, as the main significant difference between clusters was the experience as an employee and the country. Previous studies (Zahra et al., 2005) have already explored the fact that

cognition differs among countries; however, the relationship between cognition and experience as an employee is new. We believe that the link between employee experience and cognition is based on learning.

Regarding the multinomial logistic regression, the results confirm that at different levels of EO, the institutional dimensions have different effects. The likelihood of reaching an average EO level rather than a low EO level is tied to a high normative dimension rather than an average normative dimension. This is an interesting result, as it shows that regarding average levels of EO, the firms must know the social rules, as knowing only some of them will likely lead to a lower EO level.

On the other hand, high levels of EO were confirmed to be related to young, high-tech firms with high levels of cognition. This shows how important the role of the cognitive dimension is in promoting high levels of EO. Additionally, our results match with GEM and GUESS data, as being an Italian firm was associated with a higher likelihood of having high EO. In fact, according to GEM and GUESS data, Italians present among the highest levels of entrepreneurial intention.

## Implications

The current study contributes to entrepreneurship and business literature by identifying some key variables that affect the differentiation between the levels of regulatory, cognitive and normative institutional dimensions. Moreover, the results of this research also contribute to the new stream of research on linking institutional theory with entrepreneurial intention and provide more detail on how the diverse levels of entrepreneurial orientation might be affected by different levels of the institutional dimensions.

Although in the present research the single pillars are hypothesized to impact EO individually, we also propose that future research should consider combined effects. For example, in many poor countries, entrepreneurial activity is commonly developed as a necessity. In such economies, therefore, while enabling entrepreneurship may be desirable, more basic requirements, such as primary education, may be needed and may thus be prioritized (Bosma et al., 2010).



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## Exploring Country Institutional Profiles on Entrepreneurial Orientation

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### Conceptual framework

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- Institutional theory
  - Regulatory (Government policies)
  - Cognitive (Knowledge)
  - Normative (Social norms)
- Entrepreneurial orientation

**Research question:** Assess the impact of the country institutional dimensions on different levels of entrepreneurial orientation.

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# Methodology

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- Primary data from 349 firms in nine European countries
  - 4 Cluster analysis:
    - Entrepreneurial orientation (EO)
    - Institutional Regulatory dimension
    - Institutional Cognitive dimension
    - Institutional Normative dimension
  - Multinomial logistic regression
    - Dependent variable: EO clusters
    - Independent variables: Regulatory, Cognitive and Normative clusters.
    - Control variables: Country, Number of employees, Firm age, High/low tech.
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## Key results: EO clusters

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Variables associated to the clusters	Low EO	Average EO	High EO
Firm age	23 years old	28 years old	12 years old*
Technological level	Low tech	Low tech	High Tech*
Internationalization	11% international sales*	26% international sales	25% international sales

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## Key results: Regulatory dimension clusters

Variables associated to the clusters	Low Reg	Average Reg	High Reg
Entrepreneur's experience in national markets	20 years	n.s.	13 years
Entrepreneur's experience in international markets	9 years	n.s.	5 years
Entrepreneur's experience as a manager	10 years*	6 years	6 years
Entrepreneur's age	46 years old*	42 years old	39 years old
Firm's activities (B2B/B2C)	n.s	B2C	B2B

## Normative and cognitive dimension clusters

### Normative clusters

Variables associated to the clusters	Low Normative	Average Normative	High Normative
Entrepreneur's experience in national markets	19 years old	n.s	15 years old
Nature of business	Services	Services	Goods

### Cognitive clusters

Variables associated to the clusters	Low Cognitive	High Cognitive
Entrepreneur's employee experience	8 years	10 years

## Key Results: Multinomial logistic regression

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- Average entrepreneurial levels are more likely in high normative contexts.
  - High entrepreneurial levels are more likely in high cognitive institutional clusters.
  - High-tech firms are more likely to have higher levels of entrepreneurial orientation.
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## Contributions and implications

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- Updated Institutional country measures
  - Diverse associations of different variables on the regulatory, cognitive and normative institutional dimensions.
  - Links EO with Institutional country profiles showing a differentiated effect at different levels of EO and the diverse institutional dimensions
    - High normative profiles in average EO
    - High cognitive profiles for high EO
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## Future research

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- Combined institutional effects on EO.
  - Institutional effects on performance measures.
  - Longitudinal studies on the effects of institutional effects on long term EO.
  - Expand the measure to non-European countries.
  - Emerging economies.
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Thank you!

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**There and back again, a possibly international tale by Bilbo ‘Large enterprise’  
Baggins and the Lord of the Innovations  
by Frodo ‘SME’ Baggins**

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Keywords: *Reverse Innovation, Innovation Intermediaries, Technology Transfer, Sustainable Development Goals, Open Innovation platforms*

**Abstract**

“Internationalisation continues to represent opportunities for growth, productivity and innovation” is not always true as most of the practitioners would prefer to change the sentence in “Innovation continues to represent opportunities for growth, productivity and internationalisation”.

Innovation and internationalisation could represent a chicken-egg duality but if we look at the economic **indicators**, the **global challenges** ahead and the international targets like the **Sustainable Development Goals**, it’s quite clear how the paradigm has changed and **innovation has become THE only driver**. The point is on what kind of Innovation we should aim at: some front running (developed?) countries are more and more looking at disruptive and cutting-edge innovation while the followers ones (developing?) are looking at even frugal innovations that solve challenges and propose solutions. **New approaches like Reverse Innovation have demonstrated how ‘solveo ergo sum’ is better than ‘innovo ergo sum’ and can create opportunities also in countries different from the one where new products or services were conceived.**

The world is changing very quickly and the journey is even more complicated and dangerous, large enterprises showed how going international with the same product has not been that successful (FMCG sector, Health, appliances, tech-consumables are well known examples) and in many cases the only solution was a move back to redefine strategy. The middle earth is represented by the (fast) emerging economies that are learning from mistakes of developed nations and looking at developing countries as potential markets and opportunity. On the other side, the **journey for SMEs is not to ‘move’ products but to ‘design’ products**... sorry, solutions, using the power of the innovation magic ring. Flexibility and dynamism have been since long the powers and strengths of such fellowship but the rivals are getting more and more prepared and less picky, new powers and partners are required to make such journey. Innovation intermediaries, technology transfer broker, ad hoc policies, overall strategies and tools/platforms are the new powers a wizard should provide the travellers. **This review paper highlights how a new order is possible and a new knot between SMEs and internationalisation can be tied up if the fellowship includes supporting actors and the overall strategy is not only to move from developed countries to developing ones but target global challenges to create opportunities in both areas.** The power relies in both how innovation can help delivering solutions and how the members of the fellowship can support/advice all the actors. How those services can be delivered? Does the innovation intermediaries role follow a one-fits-all approach? Is the dualism between developing and developed countries still valid if we think at innovation driven solutions? Can reverse innovation be an opportunity for western SMEs? Those are some of the questions addressed in this paper along with presentation of real cases and tools (eg OPENiSME digital platform) that can be useful to support medium sized enterprises in their internationalisation-and-innovation journey.



*“There are hundreds of paths up the mountain, all leading to the same place, so it doesn’t matter which path you take. The only person wasting time is the one who runs around the mountain, telling everyone that his or her path is wrong.” Hindu Proverb*

## Methods

The main results of this review paper are based on 16 years’ experience of the author and interaction (through interviews and vis-à-vis meetings) with 100 Small and Medium Enterprises (SMEs) in Italy, India and Europe on the topic of using their (local) innovation to enter new markets and be internationalized in a wide sense. The continuous interaction with entrepreneurs, R&D directors and export managers has made this paper possible as well as the Innovation and Internationalization match-making that drove last 10 years assignments. Some literature review and examples are presented. Some ‘Take home messages’ are highlighted ( ) in each paragraph.

## Introduction

The Global Competitiveness Report released by the World Economic Forum, measures competitiveness of 138 economies according to 12 key pillars. 2016-2017 report shows that Switzerland, Singapore and the United States ranked in top three of the world’s most competitive economies. Besides the rankings, the report reaches key conclusions in terms of **drivers of productivity and growth**. This year’s edition highlights that monetary stimulus in countries without strong economic conditions is not enough as efforts to revitalize growth through monetary policies alone would be less effective. Secondly, to stimulate entrepreneurship and the establishment of new businesses, **countries need to adopt more comprehensive competitiveness agendas putting technology and innovation at the core** of their strategies. Last but not least, reducing openness represents a major risk for a country’s future growth and prosperity. Openness to trade and foreign investments is fundamental to incentive businesses to innovate. Inclusive growth strategies shall be a top priority for countries to avoid the risk of protectionism. If we cross data with economic indicators and ultimate desire of SMEs, namely profitability and growth, seems clear that **countries who make easy for industries invest in innovation are the same who have the highest rate of international business**. From econometric point of view seems that innovation comes before internationalization in policies priorities of the top-ranking economies in the world.

“Innovation represent opportunities for growth, productivity and internationalisation”.

Foreword looking emerging economies are learning from mistakes of western countries thus driving policies towards innovation and then internationalization, **not vice versa**. There are already many examples like the rise of Chinese equipment for High Performance Computing (HPC) not because price but because of performances or the increasing importance of Malaysia start-up ecosystem.

## The Lord of the Rings



The Lord of the Rings is an epic-fantasy novel written by English author J.R.R. Tolkien and is a story about a conflict between good and evil powers that is set in the land known as Middle-earth. The title of the novel refers to the story's main antagonist, the Dark Lord Sauron who had in an earlier age created the One Ring to rule the other Rings of Power as the ultimate weapon in his campaign to conquer and rule all of Middle-earth. The three ages of Middle-earth that had then passed had seen many great battles, and in the greatest of these the Dark Lord, Sauron, was defeated by the Last Alliance of Elves and Men. Following the battle, Isildur, the son of Elendil, King of Gondor, cut the Ring of Power from the hand of Sauron and took it to be an heirloom of his house. The final war at the end of the Third Age would have been

unnecessary had Isildur destroyed the One Ring instead of taking it for his own, but the persistence of the ring meant the survival of its master, Sauron. It was the task of the lords of Middle-earth to take council on how finally to destroy Sauron and then to run that destruction. Their decision was to send the Ring to the fire, and a group was formed, called the Fellowship of the Ring, to see it done. From quiet beginnings in the Shire, a hobbit land not unlike the English countryside, the story ranges across Middle-earth, following the course of the War of the Ring through the eyes of its characters, not only the hobbits Frodo Baggins (who became the Ring-bearer), Samwise "Sam" Gamgee, Meriadoc Brandybuck and Peregrin Took, but also their chief allies and travelling companions: the Men Aragorn and Boromir; Gimli a Dwarf warrior; Legolas an Elven prince; and Gandalf, a Wizard. The path before them was unclear, however, and they were soon turned from their way. Over time, the Fellowship was divided, with the Ring-bearer taking his journey to Mordor with his faithful companion while the others were dispersed, by fate it would seem, to other tasks. As the Ring-bearer made his way in secret, diversionary battles had to be fought to prevent the destruction of the various peoples and to hold the gaze of the Dark Lord away from his own lands. Thus was the destruction of Sauron achieved. The Ring was finally cast into the Cracks of Doom destroying both it and its master, and the West was liberated from the oppression of the Dark Lord. Once Sauron had been destroyed, the king could take up his throne in Gondor and also restore the northern kingdom of Arnor.



The film series inspired by the Lord of the Rings and directed by Peter Jackson (The Fellowship of the Ring (2001), The Two Towers (2002) and The Return of the King (2003)) are considered to be one of the biggest and most ambitious film projects ever undertaken. How such a novel and movies can be representative of innovation and internationalization pathways of SMEs?

## Objectives

“Internationalisation continues to represent opportunities for growth, productivity and innovation” is not always true as most of the practitioners would prefer to change the sentence in “Innovation continues to represent opportunities for growth, productivity and internationalisation”. In a pleonastic way the innovation intermediaries role is not a one-fits-all approach but should be linked to the local ecosystem. Main objective of the interviews was to understand how the industrial ecosystem was evolving and which were the enabling factors to enter new markets. The ‘coordination of’ and ‘involvement in’ SMEs-led projects were taken as opportunities to understand needs and opportunities to better internationalize. New terms like Reverse Innovation and Sustainable Development Goals have been included in discussions with entrepreneurs.

## Discussion

### 1. Economic and Innovation situation

In recent decades, the majority of European industrial districts have shaped a **context conducive to the development of Small and Medium sized Enterprises** (SMEs), a place where the vitality and entrepreneurial-, work- and social- skills have been a flywheel for the growth of the local economy and community. From another perspective, the conventionally labelled developed countries have designed strategies to keep the momentum and boost the rise back from the crisis: ‘scrambled’ or ‘last-minute’ innovation policies, government funds, access to finance and equities, technology transfer, start-ups funding have been some of the conventionally adopted schemes. In some cases, something went wrong. South European countries like Spain, Italy, Greece and France launched reforms later than expected and wrongly assuming that the backbone of their economy, ie SMEs could have filled the gap as fast as the crisis hit their businesses in late 2008.

This economic picture can be also matched with the innovation level in Europe as depicted in the “Innovation Union Scoreboard” 2015 and 2016 editions. *“Global growth remains moderate, with uneven prospects across the main countries and regions. It is projected to be 3.5 percent in 2015. Relative to last year, the outlook for advanced economies is improving, while growth in emerging market and developing*

*economies is projected to be lower, primarily reflecting weaker prospects for some large emerging market economies.”<sup>1</sup>*

Despite official economic outlook/reports, if we look at the so-called developing countries, the ‘Next Eleven’<sup>2</sup> or BRICS + MINT<sup>3</sup> innovation policies and linked economic results, their performance can be evaluated as outstanding from the value-for-money and return-on-investment time unless their challenges are quite different and more oriented to inclusive innovation and social inclusion (along with economic benefit and growth). In some countries, the innovation policies have been designed following western countries experience after a sort of SWOT analysis and since the beginning innovation was one of the fundamentals on which base the next decade economy.

SMEs growth is the cornerstone to produce wealth and favor growth.

We currently experience another layer of complexity: **market is global and the meaning of internationalizing only by selling products is very difficult to demonstrate**. The geography of innovation is very diversified and characterized by a multi-parameter modelling: cost reduction, productivity increase, quality enhancement, market share, revenues and margins are some of the economic challenges. Those parameters shall be coupled with social challenges (eg. social inclusion, disparity reduction, population rural diaspora, ageing population, etc.) as well as technical ones (eg. urbanization, lack of innovation, low technology level, manufacturing conditions, environment friendly and greening industry, etc.). In a nutshell, we can encompass all the above topics in the United Nations Sustainable Development Goals (<http://www.un.org/sustainabledevelopment/>) or, from a regional point of view, in European Horizon2020 Societal Challenge pillars or United States National Science Foundation Strategic Plan 2014-2018.

Innovation and Internationalization are the way forward for economy recover and industrial boost but the evolutionary pathway for both SMEs or grouping of SMEs is diverse and changing according priorities of different countries around the world.

## 2. Opportunities from Sustainable Development Goals

In the list of Sustainable Development Goals (SDGs)<sup>4</sup> and their associated targets, the word ‘science’ appears 10 times; ‘technology’ shows up 31 times and finally ‘innovation’ reveals itself 17 times. Clearly, Science, Technology and Innovation or STI are perceived as important instruments that can help the world attain the SDGs. Furthermore, STI is noted to have multiple roles<sup>5</sup>. First, they are goals in themselves, as for example Goal 9, which is to “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”. Second, science is recognized as forming the knowledge base for the improvement of existing technology and the creation of innovations. Third, it is acknowledged that while capabilities in STI generation, exploitation, transformation and diffusion are essential to all countries, currently, there is enormous heterogeneity between the different countries of the world. The SDGs expand upon the earlier Millennium Development Goals or the MDGs, and while they do so, they still remain subject to the same challenges<sup>6</sup>. For instance, there is a very important lack of data and indicators that are not measurable given the lack of data or lack of measurability. But, even if we had complete and perfect information on the SDGs indicators, it is not clear how resources ought to be allocated to achieve the SDGs as the different goals compete with one another for resources, while being interlinked. Some preliminary cases (Thailand Innovation program, Colombia Plan Estrategico, India Budget 2016) push for a visible STI investment in new laboratories, technology parks or software companies or invisible investment on science that can trigger new technologies, pro-poor innovations or simply better technology designs and organizational platforms that can make a big difference. Beside those actions there is the

<sup>1</sup> World Economic Outlook 2015 "Uneven Growth: Short- and Long-Term Factors"

<sup>2</sup> Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea and Vietnam

<sup>3</sup> Brasil, India, China, South Africa + Mexico, Indonesia, Nigeria, Turkey

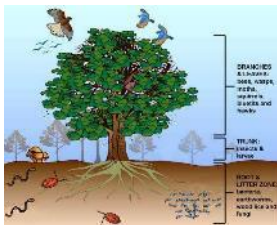
certainty that **STI can work for SDGs and could be perceived as a factor of economic growth** (not only for developing countries) given the active role of growing SMEs, innovation intermediaries and tools<sup>7</sup> and the globalization of market.

The interesting point of view is that developing countries are already used to frugal innovations that are adopted by wide number of users (TATA Nano car is one of the latest examples), what if this attitude could be merged with western (accessible and affordable) technologies to face SDGs? This approach is conventionally referred as Reverse Innovation. The process of reverse innovation begins by focusing on needs and requirements for low-cost products in countries like India and China. Once products are developed for these markets, they are then sold elsewhere - even in the West - at low prices which creates new markets and uses for these innovations. This process make opportunities come from south-south cooperation but pave the way for east-west new collaboration.

Developed countries are more and more looking at disruptive and cutting-edge innovation while the developing ones are used to frugal innovations but what if those can propose solutions to global challenges?

If we think at developing countries innovators they are more focused on providing solutions rather than innovations ('solvo ergo sum' is better than 'inno ergo sum'). This approach was the contrary of the developed countries where the 'mantra' was providing products (and maybe investing a lot in marketing to make them successful). The new race is now on providing solutions to global challenges through products (ops, solutions!) that could be used by high number of people. The profile of export oriented company is going to change radically but a new solution cannot be delivered without innovation.

### 3. Local Industrial ecosystems



The basic unit of study in environmental science is the ecosystem (short for 'ecological system'). An ecosystem consists of a biological community and its physical environment. An ecosystem can be as small as a drop of water or a puddle, or as large as a forest and vast, such as an ocean. Some eco-systems (such as caves) have clear boundaries, while others (such as forests) do not. An eco-system provides the organisms that live in it what they need to survive: food (energy), water and shelter. The number of producers (or plants) in an ecosystem determines that ecosystem's productivity potential. Plants and animals depend on each other to survive. This connection of living things to each other is called biodiversity. Ecosystems provide services, such as food production (farmland), water filtering (wetlands), carbon removal, raw material production (timber, rubber), and aesthetic value. The balance of an ecosystem is delicate, and a disruption such as the introduction of a new element can damage it. Because many modern human societies get their food, water, and other resources from all over the planet, you can consider the entire globe to be the human ecosystem.

Using the same approach, we can also define the enlarged industrial society (ie expanding the triple helix concept<sup>8</sup>) an ecosystem where different actors are benefitting from common resources (ie energy, services, provisions, etc.) and contributing to the sustainment of the system (tax, wealth, income). Each actor is an independent being with own characteristics (it can be a manufacturing unit or a research organization, a service provider or a school, a public entity or an intermediary), weaknesses and strength but all contribute to the 'biodiversity' and complexity of the system, although it could be (at macro level) a specific domain of interest (ie industry and sectors of activities in which the eco-system is operating, like automotive, health, agro-food etc.).

<sup>4</sup> [http://www.un.org/pga/wp-content/uploads/sites/3/2015/08/120815\\_outcome-document-of-Summit-for-adoption-of-the-post-2015-development-agenda.pdf](http://www.un.org/pga/wp-content/uploads/sites/3/2015/08/120815_outcome-document-of-Summit-for-adoption-of-the-post-2015-development-agenda.pdf)

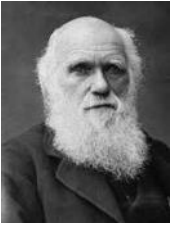
<sup>5</sup> <http://blogs.royalsociety.org/in-verba/2015/11/19/what-do-the-sustainable-development-goals-say-about-science-and-innovation/>

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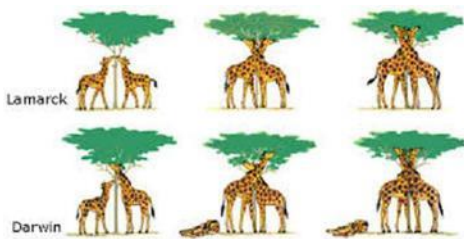
<sup>8</sup> [http://triplehelix.stanford.edu/3helix\\_concept](http://triplehelix.stanford.edu/3helix_concept)





Sir Charles Darwin (1809-1882) believed that the desires of animals have nothing to do with how they evolve, and that changes in an organism during its life do not affect the evolution of the species. He said that organisms, even of the same species, are all different and that those which happen to have variations that help them to survive in their environments survive and have more offspring. Other individuals, that are not so well adapted, die off. Most elephants used to have short trunks, but some had longer trunks. When there was no food or water that they could reach with their short trunks, the ones with short trunks died off, and the ones with long trunks survived and reproduced. Eventually, all of the elephants had long trunks.

Jean-Baptiste Lamarck (1744-1829) is best known for his Theory of Inheritance of Acquired Characteristics, first presented in 1801 (Darwin's first book dealing with natural selection was published in 1859): If an organism changes during life in order to adapt to its environment, those changes are passed on to its offspring. He said that change is made by what the organisms want or need. For example, Lamarck believed that elephants all used to have short trunks. When there was no food or water that they could reach with their short trunks, they stretched their trunks to reach the water and branches, and their offspring inherited long trunks. Lamarck believed that giraffes stretched their necks to reach food and their offspring and later generations inherited the resulting long necks.



**The evolution process is now affecting the ecosystem** as a whole and not only the single species or the single elements (ie SMEs, large enterprises, policy makers, government, research organizations, universities etc).

The new paradigm requires more flexibility and adaptability but increases the complexity and ecosystem overall entropy. Species (stakeholders, ecosystem components) are evolving, thus appearing new champions (ie start-ups), new domains (digital economy), new approaches (Inclusive, Jugaad, Reverse Innovation). **The ecosystem evolution is pushing for collaborative projects (multi-companies, mix-up of large enterprises and SMEs) and new actors (dynamic intermediaries that can offer also solutions and services) to deliver growth and approach new markets, rather internationalizing.** Innovation can be considered the 'changing factor' as it has demonstrated how 'new product' is seen differently from 'innovative product' when approaching new markets. Treviso (Veneto Region, Italy) industrial ecosystem is a peculiar example of different clusters (white goods industry led by companies like De Longhi, Electrolux Professional, Prisma, Inox Veneta, etc.) that after the 2008 crisis decided to invest (late is better than never...) in innovation delivering products that were not only 'new but also innovative to certain extent. What Treviso experience demonstrated is that the evolutionary theories mash-up is the best compromise if we want to state how SMEs 'happen' to become innovative, hence internationalized, and how they responded to ecosystem outer stimulus (economic crisis, exhaustion of domestic market) when supported by added-value services intermediaries and tools. The clusters are evolving thus responding to external factors, ie modification of the environment, but it is not clear which are the 'off-springs' that will survive or if the modified factor is going to be maintained.

### There and back again

Since late 80s, large enterprises were seen as industrial strategy lighthouse from SMEs entrepreneurs and a sort of role model. Huge investments in marketing and endless effort in branding as 'appearing was more important than product'. Clothing and fashion sector, consumer goods and personal care lists quite well known cases. After a decade, smooth change of paradigm came up: sectors with outstanding brands started facing competition from newcomers who were proposing new products and new marketing approach. Coca Cola and PepsiCo saw the rise of Red Bull, Boeing and Airbus witnessed the coming up of Bombardier and Embraer. Peculiar sectors like FMCG, Health products, appliances, technology consumables, invested a lot in opening new markets with the same products. Early years of the new millennium witnessed some change of paradigm in terms of market, customers, products. An interesting literature has been built around the GE Health case study in developing countries<sup>9</sup>, namely India and China. Their first attempt was unsuccessful and led to a step back to rethink their strategy. The same product was not enough for a globalized customer or a more demanding client. The 'localization' approach

used in the software industry was not working. A product was not required to be simply 'translated' in another language but re-designed according end-users needs. Companies like P&G and Nestlé invested lots of money and effort in Asia and Latin America marketing products that have been very successful in western countries. Very slowly they realized the need of a different approach. This speed limitation is naturally there in such large enterprises while it is a great advantage for SMEs. **These years are characterized by a chaotic run to deliver products and, if needed, 'fail fast' to rethink business and products.** Speed is the advantage of SMEs but resources and budget is (still) on large enterprises side. The strategy redefinition is currently guided by **deep understanding of customer need** (User Centered Design), **knowledge of the market dynamics and innovative product** (VS new). The case of GE Health comeback to China and India thanks to ultrasound machine supported by the above-mentioned points is one of the best examples of Reverse Innovation.

Where the SMEs are? The (fast) emerging economies are learning from mistakes of developed nations and catching up with new products or innovations. Who might take advantage of this new order could be western SMEs. Seems a paradox. Medium sized enterprises, met by the author, who succeeded in finding new markets demonstrated their resilience to Endogenous and Exogenous factors. The first one include: (i) Entrepreneur's availability and readiness to innovate; (ii) Need of interaction with external R&D or technology providers; (iii) Access to external support (ie from private entities like consultants or facilitators or semi-public intermediaries); (iv) Sustain good ideas with business possibilities; (v) Need of well-prepared management and technical staff open to internal discussion. The exogenous factors were: (i) Global competition and widest challenge; (ii) Value for money as new driver for customers; (iii) My competitor is everywhere; (iv) General problems and particular solutions are the new factors of growth; (v) Developing countries not only as potential markets but also a company development opportunity.

## The power of innovation

### 1. From products to solutions

Looking at the Veneto Region, flexibility and dynamism have been historically the strengths of local SMEs who have been identified as ideal supplier and 'problem solver' for large enterprise (generally located in Europe). In the past, the denomination of this region was the 'China of Germany' while companies continued acting as 'Tier 1 supplier' entities without developing new solutions or products. The credit crunch and economic crisis of 2008 took the ecosystem to rethink their priorities and positioning itself on the global stage along with discussing what would be the next evolutionary step. International markets were in demand of added value products, while the domestic market was already plenty of low cost products from Asian countries. Almost after a decade the availability of easy-to-access technologies is helping SMEs developing solutions instead of products. Taking inspiration from IBM turnaround and 'escape' from hardware market (selling its division to Chinese Lenovo) many SMEs started putting added value after-sale services in their products. Companies like TEXA (leader in vehicle maintenance systems [www.texa.com](http://www.texa.com)) or INCAS GROUP (leader in logistics management systems [www.incasgroup.com](http://www.incasgroup.com)) structured new services for their customers based on data management, after-sale and data processing tools. An interesting example is CAREL (leader in microcontrollers for Mass Market Retailers [www.carel.com](http://www.carel.com)) who decided to provide turnkey solution to their customers as a differentiating feature as well as establishment of local small design and production units close to the customers' premises. This trend and ecosystem evolutionary step is becoming global. The next level is supporting SMEs in going international with innovative products/solutions that could be part of a global value chain. Networking, Innovation intermediaries, technology transfer brokers, have become the key actors to support ecosystems as a whole and not single companies. An interesting example of such ecosystem evolution happened in France in 2004-2005 with the Poles de Competitivité or the German policy of Fraunhofer Institute re-organization.

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<sup>9</sup> Harvard Business Review

## 2. Intermediaries best profile

The above mentioned industrial ecosystems started including in their general services (deployed by a super partes entity) activities like:

- Technology audit in order to better understand what where the needs to enter new markets
- Scouting of similar solutions, suppliers and competitors
- First level analysis of returns, drawbacks, financials and business impact
- Discussion on Return On Investment vs Return On Technology
- Supporting the 'last mile' (R&D Technology final product/service) and make it real!

This approach made evident and of **paramount importance the role of intermediaries** who have been asked to favor information flow, spread technology and deploy new services. Finding sources of funding and interact with policy makers were given the same priority. After such 'evangelization' activity the first round of companies who started exporting innovative products had some common characteristics:

- Foresight: the capacity to see further and how the product could upgrade in the next 5 years and which could be the new markets;
- Perseverance: 'failure is a success' if the lessons learnt can be helpful to launch new opportunities
- Investment capacity: financial capacity is an issue but in many cases, it can be coupled with public or private funds
- Market clear objectives: understanding of the market after a study on product placement and value proposition in front of state-of-the-art
- Team: the one-man-band era is over, teamworking and competence are essential

## 3. An Open Innovation Tool

Once the role of intermediaries (public or private) has been granted it is crucial putting in place efficient tools that can give companies the flavor of potentiality of innovation and, in the midterm, act alone. The following example is an action at European level. OPENISME ([www.openisme.eu](http://www.openisme.eu)) is a project co-funded by the CIP initiative (Competitiveness and Innovation Program) of the European Union (Grant Agreement no. 621121), designed to help unlock the innovation capacity for smaller firms that aspire to grow, through the facilitation of new "Open Innovation" partnerships. OPENISME, launched in December 2014, is focusing on partnerships between SMEs and research institutions which are able to contribute novel resources, expertise or insights, as this represents a massive yet underexploited opportunity. Through increased automation, the innovative partner matching technology at the heart of the OPENISME platform can significantly extend the reach of SME's, returning the expertise most appropriate and able to respond to specific business challenges. The still running second stage of OPENISME is investigating the utility of the techniques developed to other forms of partnerships that underpin effective innovation, including SME relationships with complementary private sector organizations (B2B). Typical use-cases start with an SME seeking to solve a business problem but not having the skills, time or money to come up with a solution. The provided Open Innovation Platform harnesses automated matching through a concierge service to assist SMEs is based on a natural language algorithm. Having demonstrated the utility of data driven partner matching in this use-cases the project will investigate other contexts where automated expertise discovery can assist the pace and reach of SME partnering activities. The platform is still freely available to SMEs.



## Concluding observations

If a sociologist wants to shape the normo-type of firms that innovate thus internationalize it's indeed a great challenge. Even though it's hard to design a reliable and trustworthy profile an achievable result could be the identification of macro- characteristics or common/general parameters. With no doubt, a crucial role is played by the intermediary for innovation whose mission is to win the technology transfer match and support the increase of knowledge on new markets. The variables are many and plenty of complexity so that the one-fits-all profiling is almost a fantasy. Some countries like Japan, South Korea, Germany, Denmark, Sweden, have demonstrated that **strategy, focus and perseverance could pave the way to victory on international market** but a key role has to be played by the intermediaries (public or private) whose main aim is to make the love-story happen, help meet the global challenges and favor the evolution of the eco-system.

Chance and randomness do factor into evolution and the history of life in many different ways; however, some important mechanisms of evolution are non-random and these make the overall process non-random. For example consider the process of the already mentioned natural selection, which results in adaptations, features of organisms that appear to suit the environment in which the organisms live (Lamarckian approach). Such amazing adaptations clearly did not come about 'by chance. They evolved via a combination of random and non-random processes. The process of mutation, which generates genetic variation, is random, but selection is non-random and we can state **that selection favored variants that were better able to survive and reproduce**. Over many generations of random mutation and non-random selection, complex adaptations evolved.

The new (mixed) evolution paradigm require more flexibility and adaptability but increases the complexity and eco-system overall entropy.

Species (stakeholders, eco-system components) are all evolving, thus appearing new champions (ie start-ups), new domains (digital economy), new approaches (inclusive and jugaad innovation) and new challenges (international market). The ecosystem **next stage is pushing for collaborative projects** (multi-companies, mix-up of large enterprises and SMEs) and new actors (dynamic intermediaries that can offer also solutions, easy-to-use tools and new market access services). Developing and developed countries have different challenges but it has become evident how they put great expectations on intermediaries' actions (technology transfer brokers, innovation agencies, finance, investment attraction, foreign networking, cluster management).

The Darwin and Lamarck theories started from different views and approached but they were both focusing offspring evolution factor to continue. This is the weak point of the joint vision applied to innovation driven eco-systems for internationalization.

It is not given nor 'by default' the inheritance of innovation factor neither in developed nor in developing countries (despite might be easier in these ones as they are much more driven by public agencies). Innovation approach must be continued (with understandable peak and lows) and kept alive even during difficulties. Everyone must radically innovate and go international or die? Inclusive innovation or inclusive growth? Reverse innovation is the solution to internationalization gap not only for SMEs from developing countries? Does the innovation intermediaries role follow a one-fits-all approach? Questions not easy at all. Despite different challenges, the role of intermediaries (or innovation practitioners) has been acknowledged as crucial. They can be a private legal entity or government driven or public-private joint venture or cluster leaded but their role as ecosystem animator has been demonstrated as vital but they should act differently, namely through: (i) Physical presence; (ii) Direct involvement and (deep) understanding of the ecosystem; (iii) Drive and support policies; (iv) Propose direct and on-hand added value services; (v) Skills, competence and 'human touch'.



## The Lord of the (Innovation) Ring



If we paraphrase the novel and make some similitudes, we could see the Ring as the innovation power that makes both large and small enterprises go beyond their borders to search for new domains and markets. Adaptability and knowledge through local partner are keys as well as guidance of reliable and prepared intermediaries. Lord of the Rings can be very inspiring in this sense through its main characters.



**Bilbo** 'large enterprise' Baggins: He started the journey far before Frodo and with more resources but he didn't succeed as the Fellowship was not there and the objective was not clear. The product he was supposed to sell was difficult to 'localize' and expensive.



**Frodo** 'SME' Baggins: He is the driving force of the ecosystem and the Fellowship and the main character. Frodo demonstrated that given the right guidance and tools the hidden braveness and courage to go international will naturally emerge. He has adapted to different environments and battled with many competitors but didn't lose faith in innovation (Ring).



**Middle-Earth:** Emerging economies through which journey seems mandatory to success global market, sell products and face global challenges. The Middle-Earth population are learning they have the potential and the capabilities to develop solutions also for western countries aspiring to the role of new center of gravity.



**Fellowship:** heterogenous ecosystem that needs to be flexible, dynamic and open to new alliances and solutions. The members of the Fellowship should be brave in finding (and adopting) the hidden messages like moving from pure production status to a design-cum-service mode.



**The Ring:** magic of innovation that creates value only if the right hands (fingers) or well used (ie to create value). The innovation ring can make people and ecosystem move toward new sectors and geographical areas.



**Gandalf and Aragorn:** Not leaders but intermediaries among the fellowship and the outer world. Their guidance and leadership helped delivering the solutions and products. They offered the Fellowship the tools (like OPENiSME) and the knowledge on new markets.



**Men, Dwarfs and Elves:** Successful Fellowship can be very supportive to nonmembers to find new ways of development (innovation by emulation) through their champions.



**Sauron:** Single-eye limitation and conviction that the world (ie economic scenario, market, customers) will remain the same and not change could lead to blindness and definitely not help finding new solutions to face economic crisis.



**Tools and gifts** of the Fellowship: Tools are important but innovation is what makes the world move.

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## **Antecedents of Early Internationalising New Ventures: Exploring the Role of Innovation**

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### **Abstract**

The emergence of internationalised new ventures has cast a new light on the pattern of internationalisation among firms, which had been previously considered to be more incremental in execution (Cavusgil & Knight 2015). This paper explores the characteristics of internationalised new ventures in the UK, here defined as those that have been trading for 5 years or fewer and are engaged in export activities (Masango & Marinova 2014). Using data from the Longitudinal Small Business Survey in the UK, a government sponsored survey of over 15,000 SMEs, to examine the role of innovation in the internationalisation of new ventures the results suggest that a higher proportion of internationalised new ventures are innovative, and both in goods or services, compared to their domestic facing counterparts. Furthermore, a multivariate logistic regression model confirms the overall importance of innovation activity to the propensity of new ventures to internationalise. However, when decomposing innovative activity, given previous research pointing to a strong relationship existent between product innovation and internationalisation activity (Roper and Hewitt-Dundas, 2015), we confirm that it is product innovation that has a positive and significant effect on the propensity to export. We report no evidence for service innovation influencing the early internationalisation of new firms.

### **1. Introduction**

This paper examines the characteristics of internationalised new ventures (INVs) in the UK and explores the role of innovation in this process. We define INVs as new businesses that have been trading for 5 years or fewer and which have engaged in export activities (Masango & Marinova 2014). The existence of new ventures that internationalise soon after inception questions the accepted theories that see the process as incremental in nature. Thus, the theoretical and conceptual underpinnings of this paper are within the literature on international entrepreneurship, which focuses on international new ventures or born global firms, defined as “a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and from the sale of outputs to multiple countries” (Oviatt & McDougall 1994 pg. 49). The extant literature on international entrepreneurship draws closely on both the entrepreneurship and international business literatures with the aim of conceptualising internationalisation activities that begin at a firm's inception. As a result, international entrepreneurship is associated with a broad range of cross-border activities, ranging from low to high risk entry mode strategies; exporting, importing, licencing and franchising, alliance formation, and foreign direct investment. However the focus on exporting as the dominant mode of cross border engagement for small to medium enterprises has been retained (Knight & Cavusgil 2004; Kuivalainen et al. 2007; Hennart 2014).

However, a clear understanding of the nature and key antecedents of early internationalising firms remains a work in progress. Prior studies have been limited by the use of specially constructed samples containing

details of firms pre-identified as international new ventures or samples that use large firms as the unit of analysis. Limited effort has been made to examine the counterfactual, i.e. the factors that differentiate *internationalised* new ventures from other new ventures. Furthermore, the existing literature is generally skewed towards more high-technology sectors in terms of sampled firms (Yli-Renko et al. 2002; Knight & Cavusgil 2004; Laanti et al. 2007) rather than looking at a broad population of new start-ups.

The paper presents analysis that utilises data from the Longitudinal Small Business Survey (LSBS), which provides a unique opportunity to examine the factors outlined above in significant depth. This dataset contains details of over 15,502 UK SMEs constituting a representative sample of SME population. The LSBS dataset contains details of 1887 firms aged 5 years or under, of which 320 had internationalised through exporting their product or service.

The paper is structured as follows; Section 2 outlines the theoretical and conceptual work that underpins the empirical analysis. Section 3 presents the methodology and sets out the analytical techniques employed. Section 4 presents the results of the analysis, while Section 5 offers conclusions and recommendations based on findings reported here.

## **2. Theoretical Background**

### **2.1 International Entrepreneurship and Internationalised New Ventures**

The past two decades has seen increasing interest in international entrepreneurship, a field of research focussing on the creation of what have been termed international new ventures or born global firms (Cavusgil & Knight 2015). The emergence of this field has cast a new light on the pattern of internationalisation among small to medium sized firms, which had been previously considered to be incremental in execution (McDougall et al. 1994; Cavusgil & Knight 2015). As a result, the internationalisation of new ventures has become the subject of increasing research by scholars within business and management studies (Rialp et al. 2005; Aspelund et al. 2007) for a number of reasons. Firstly, in a theoretical sense, their presence questions the previously accepted model of incremental internationalisation. Secondly, these firms, potentially, make a significant contribution to the economy through adding value and jobs, whilst also contributing to a positive trade balance through their export activities (Anyadike-Danes et al. 2015; Esteve-Pérez & Rodríguez 2012; Golovko & Valentini 2011). Consequently, this field unifies a number of broad literatures, that of international business, entrepreneurship, and SMEs, and while it has broadened over time, the focus on new ventures that internationalise in the immediate aftermath of their founding remains the primary area of focus (Peiris et al. 2012; Knight & Liesch 2016).

Internationalisation, however, is a broad term covering a wealth of cross-border activities, including exporting, importing, licencing and franchising, alliance formation, and foreign direct investment (Brouthers et al. 2009). This has been reflected in the move toward redefining international entrepreneurship in more general terms as "a combination of innovative, proactive and risk-seeking behaviour that crosses national borders and is intended to create value in organisations" (McDougall & Oviatt 2000). While the process of international entrepreneurship may potentially involve a broad range of cross border activities, the extant literature is dominated by studies that focus on exporting as the new ventures' primary means of engaging in cross border activity (Knight & Cavusgil 2004; Hennart 2014; Kuivalainen et al. 2007). Indeed, the accompanying interest in export-led growth (Balaguer & Cantavella-Jordá 2004; Siliverstovs & Herzer 2006) also highlights the potential benefits of promoting this type of new venture creation to policymakers. Furthermore, as other scholars note, exports represent a straightforward and relatively low risk entry strategy to foreign markets (Etemad 2009). Consequently, a large proportion of the extant literature focuses on the internationalisation activities of small new ventures after start-up, particularly exports (Autio 2000; Mudambi & Zahra 2007; Aspelund et al. 2007). Accordingly, we follow Kuepp & Gassmann (2009) in acknowledging that the process of international entrepreneurship covers a diverse range of cross-border activity, of which the internationalisation of new ventures through exporting represents a sub-set and not the whole field.

### **2.2 Exploring the Antecedents of Internationalised New Ventures**

Internationalised new ventures have two important barriers to overcome in order to be successful, the liability of both newness and foreignness (Zahra et al. 2005). As such, it is not a simple task for a new venture to engage in exporting its output in the immediate aftermath of its start-up. Indeed, the relative youth of these firms provides a number of drawbacks, specifically their lower level of resources compared with more established firms; consequently, they are also required to overcome this 'asset parsimony' in order to internationalise (Cavusgil & Knight 2015). Despite the existence of these barriers, internationalisation soon after start-up has been suggested as an important advantage to firms, allowing significant market gains to be made at a time when the firm is more agile and flexible, and also when there are fewer cultural constraints on pursuing new opportunities (Liesch & Knight 1999). Indeed, internationalisation has shown to have a positive effect on firm survival, suggesting that it is an appropriate strategy to follow for new ventures (Puig et al. 2014; Coeurderoy et al. 2012).

For SMEs, exporting and innovation are considered to be complementary activities (Esteve-Pérez & Rodríguez 2012; Golovko & Valentini 2011); consequently, the Innovation activities of new ventures have been shown to have an important bearing on their internationalisation. Typically, firms with innovation capabilities in terms of the introduction of new products and services are prone to earlier internationalising (Yip et al. 2000; Jones & Coviello 2005). Indeed, firms which sell niche products and services are seen to have an advantage in the development of international markets early in their lifetime (Zucchella et al. 2007; Hennart 2014), thus those new ventures that are producing a more innovative offering may find that they have more markets available to them. Furthermore, particular types of innovation may be more important than others, for example a strong relationship has been found to exist between product innovation and internationalisation activity (Roper & Hewitt-Dundas 2015).

Associated with innovative capability is the membership and access to networks through which external knowledge may be sought. The extant literature suggests that the ability of new ventures to develop broad networks is crucial for development of international markets (Sharma & Blomstermo 2003; Freeman et al. 2006; Baronchelli & Cassia 2014; Masango & Marinova 2014; Coviello 2006). Furthermore, these networks may facilitate access to both venture capital and appropriate business support organisations, which have also been shown to have a positive effect on early internationalisation (Bloodgood et al. 1996; Fernhaber & McDougall-Covin 2009; Shane & Cable 2002). Access to these factors may be of particular importance as prior work has highlighted the constraints posed by a lack of finance to small firm growth (Carpenter & Petersen 2002). Thus, the ability to secure appropriate external funding through venture capital has a positive effect on the internationalisation of new ventures (Fernhaber & McDougall-Covin 2009). In addition, interaction with appropriate business support organisations have been shown to have an important role in the start-up and survival of firms (Atherton et al. 2010), yet this remains rather under-researched with respect to the International Entrepreneurship literature (Cumming et al. 2014).

The extant literature provides a wealth of evidence as to the factors which influence the propensity of a firm to engage in exporting from inception. The remainder of this section reviews these antecedents in order to provide a framework for the analysis that follows. Firstly, as overcoming the liability of newness is one of the key objectives of these ventures, then the first area of focus is on the influence of the age of the firm on its internationalisation. While the development of the firm may promote learning and advance experience and capabilities, the extant literature suggests that the age of a venture may have a negative effect on its internationalisation activities; instead, it is experience of internationalisation that is the important factor (Love et al. 2016; McDougall et al. 2003). Furthermore, these experiences can be captured and conceptualised as knowledge and dynamic capabilities, which evidence shows are important factors in the development of international markets, with new ventures that possess greater knowledge assets and capabilities being more able to develop internationally upon start-up (Bell et al. 2003; Laanti et al. 2007). Indeed, the importance of unique resources in enhancing firms' abilities to internationalise at inception is a key feature of the extant literature (Cavusgil & Knight 2015; Oviatt & McDougall 1994); thus, the firm must possess inimitable knowledge assets plus the dynamic capabilities to be able to exploit them. Yet, dynamic capabilities are a diverse phenomenon (Teece 2009), with the literature providing evidence that a wider range of these are important, including market identification and exploitation (Mort & Weerawardena 2006; Weerawardena et al.



2007), knowledge acquisition, and networking capabilities (Oxtope 2014; Schweizer et al. 2010; Evers 2011b). Yet, others have found capabilities such as strategy or process development to not affect the ability to internationalise (Jantunen et al. 2008). Thus, as Peiris et al. (2012) suggest, work on the capabilities and their influence on internationalisation is still in its initial stages and more evidence is required to make more substantiated claims.

Despite the limited focus of the extant literature on the internationalisation of new ventures, which tends to focus on high-tech sectors in terms of both manufacturing and services, there is evidence that the sector in which a firm operates does influence internationalisation. Firstly, the very characteristics of an industry as well as its structure may be either enablers of barriers to selling in foreign markets (Fernhaber et al. 2007; Mudambi & Zahra 2007; Baronchelli & Cassia 2014). For example, some products or services may lend themselves easily to export as they require little in the way of adaptation (Hennart 2014). Furthermore, some sectors may face particular barriers to internationalisation; for example, biotechnology firms may face significant regulatory barriers that may delay their internationalisation as they face higher scrutiny of their products (Knight & Liesch 2016). In addition, the maturity of a particular sector may also have a bearing on the level of internationalisation observed amongst its firms (Andersson 2004; Vernon 1979). Yet, Fernhaber et al 2007 argue that the effect of industry structure has been largely implicit in the extant literature highlighting a number of factors that may differ according to sector: evolution, concentration, knowledge intensity, local internationalisation, global integration, and venture capital.

Finally, there are a number of issues that appear to be under-examined with respect to internationalised new ventures surrounding both the influence of the identity of the business owners and the location of the venture. In terms of identity, issues related to the gender and ethnicities of entrepreneurs are rather under-examined; for example, while significant gender differences are noted in terms of entrepreneurship (Kobeissi 2010; Langowitz & Minniti 2007; de la Cruz Sánchez-Escobedo et al. 2014), these have not been explicitly examined with respect to the internationalisation of new ventures. In addition, while there exists a wealth of literature on migrant and ethnic minority entrepreneurship (Ram & Jones 2008; Ram et al. 2012), only scant interest has been paid to this issue with respect to the internationalisation of new ventures (see for example Prashantham et al. 2015).

### **3. Data and Methods**

The previous section identified a range of factors that are of importance to the internationalisation of firms in their start-up phase. Thus, the extant literature provides a broad set of characteristics that influence the propensity of a new venture to internationalise early in its lifetime. However, one criticism of this literature is that empirical analysis of the phenomenon does not always focus on new ventures; typically, the methodologies employed involve the identification of a sector or sectors of interest and then data is collected on firms. Following this, firms which report that they have been engaged in exporting from start-up are identified (Kuivalainen et al. 2010). While there are exceptions where scholars focus exclusively on new ventures and making comparisons between those that are internationalised or not (Baronchelli & Cassia 2014; McDougall et al. 2003), the weaknesses of this work are that either the sole focus is internationalised new ventures, or the population of firms does not cover SMEs but larger firms that have been through the IPO process. As such, the extant literature has not sufficiently examined the counterfactual, i.e. when looking at a sample of new ventures what are the factors that encourage their internationalisation?

As previously noted, another omission within the literature is the virtual ignorance of location based factors. In order to tackle this, we look at the spatial distribution of internationalised new ventures across the UK and examine this with respect to a number of regional economic development indicators such as regional GVA per capita, expenditure on R&D, degree level qualifications of the regional workforce, and overall business growth rates.

Therefore, this report addresses these gaps through the analysis of new ventures based in the UK in order to understand the antecedents of internationalised new ventures, their differences between these and their non-internationalised counterparts, and their geographic distribution across the UK. We acknowledge that



internationalisation may in fact involve a broad range of activities from export, imports, licencing, and foreign direct investment (Brouthers et al. 2009), due to data limitations we follow the extant literature by focusing on exporting as the primary means of engaging in cross border activity (Knight & Cavusgil 2004; Kuivalainen et al. 2007).

In order to achieve the project's objectives data from the Longitudinal Small Business Survey (henceforth LSBS), originally commissioned by BEIS (Department for Business, Energy and Industrial Strategy), was used. This dataset contains details of 15,502 SMEs responses from a representative group of UK firms, according to regional, sector, size, and legal status strata. The key feature of the survey is its longitudinal character, in other words, the respondents will be surveyed again over the next 5 years annually to obtain a timely perspective on changing circumstances for UK SMEs.

The survey was conducted in 2015 via telephone interviews that lasted on average approximately 25 minutes. The respondents within each business constituted individuals with one of the following executive roles: owner, proprietor, managing director, or other senior decision maker. Consequently, the LSBS dataset provides a large dataset containing the broad characteristics of SMEs from multiple sectors, and located across the entire UK, providing an excellent opportunity to examine the characteristics of internationalised and non-internationalised new ventures. The dataset provides two important advantages; firstly, it allows both the factual and the counterfactual to be examined with respect to the characteristics and determinants of internationalised new ventures, something that has not so far been achieved. Secondly, the location data provided by the survey enables the consideration of their spatial distribution across the UK, a factor that is hitherto unexamined.

Within the LSBS dataset 1887 firms were identified as aged 5 years or under, of which 320 were found to have engaged in exporting either goods or services. The sample only consists of firms that range in size from 0 employees to 240, even though LSBS has cut-off criteria at 249 employees. This report examines the characteristics of these 320 firms, the determinants of their exporting activity, and their spatial distribution across the UK.

The analytical approach thus consisted of 2 key stages: 1) bivariate analysis, and 2) regression analysis.

### 3.1. Model and Variables

The dependent variable used in the analysis has a binary nature measuring whether firms in the sample engaged in exports of goods and/or services (taking a value of 1) or not (assuming a value of 0). The reason for using such a construct is in maximising the available observations engaging in exports, given the realities of datasets where missing variables would otherwise invalidate a multinomial approach of the following order: exporting goods, exporting services, exporting goods and services, or not exporting, limiting the number of parameters entered into the regression equation. It is crucial to note here, that LSBS does not collect data on other modes of foreign market entry, e.g. FDI (foreign direct investment) or franchise. Finally, unlike previously used by BIS Annual Business Survey, the LSBS does not collect data on importing activity of SMEs.

There are four control variables adopted in the analysis that define firm's demographic characteristics: size, age, sector, and region. Firm's size is expressed by measuring the number of employees reported by the company to be currently on payroll, excluding owners and partners, across all sites of the firm. To control for the age a variable is adopted from the categorical grouping and transformed into a continuous type data, as the analysis excludes ranged groupings (e.g. 11-20). In effect firm's age takes value between 0 and 5 years, given this study's focus on new ventures. The sector of activity is measured through five dummy variables that take value of 1 if a firm has registered its activities within a particular sector or value of 0 otherwise:

- a) manufacturing (SIC 2007 1 digit category: C<sup>17</sup>),
- b) business services (SIC 2007 1 digit category: J, KL, M, N<sup>18</sup>)

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<sup>17</sup> Manufacturing.

<sup>18</sup> Information/ Communication, Financial/ Real Estate, Professional/ Scientific, Administrative/ Support.

- c) consumption-based services (SIC 2007 1 digit category: G, H, I, R<sup>19</sup>)
- d) education and personal services (SIC 2007 1 digit category: P, Q, S<sup>20</sup>)
- e) other (SIC 2007 1 digit category: ABDE, F<sup>21</sup>).

In the multivariate analysis, dummy for 'other' sectors is treated as a reference case. Regional location of the sample is controlled with 12 dummies representing UK's official unitary regions<sup>22</sup>. Each dummy takes value of 1 if the firm is based in that particular region or 0 otherwise. In the multivariate analysis London is adopted as a reference case.

The analysis undertaken here focuses on a number of independent variables, which may enhance the understanding of determinants of new venture's internationalisation activity. First, the analysis investigates whether gender of the business owner is related to company's internationalisation activity. The variable has a dummy character and takes value of 1 if the firm is mostly women-led (over 50% of the business owned by women) or 0 otherwise. Second, the ethnicity of business owners is tested with another variable of a dummy construct. It measures whether the business owner belongs to any ethnic minority group, taking value of 1, or 0 if this is not the case. Third, business capabilities are tested with the use of dummies, which take value of 1 if a firm expressed to have a specific capability and 0 otherwise. The following capabilities are examined; people management; business management; innovation in product or service; raising finance; and innovation in operations.

Whilst the underlying questions have a 5-point Likert character, the dummy variable coding of 1 corresponds to the following replies: average, strong, very strong. Conversely, a coding of 0 represents ordinal answers of: very poor, and poor. Four, innovation activity is tested using three dummy variables:

- a) goods innovator (i.e. whether firm introduced new or significantly improved goods in the last 3 years)
- b) service innovation (i.e. whether firm introduced new or significantly improved services in the last 3 years)
- c) goods, service or process innovation (i.e. whether firm whether firm introduced new or significantly improved goods, services or processes in the last 3 years).

Each dummy takes value of 1 if the company has reported a particular innovation type and 0 otherwise. Five, the report tests whether there is a relationship between new venture's awareness of support organisations and its internationalisation activity. In particular, firm's awareness of UK Trade and Investment (UKTI) support is tested using a dummy variable, taking value of 1 if the company is aware of UKTI's support and 0 otherwise. Furthermore, the report makes use of a variable that combines awareness of all support available in the UK<sup>23</sup> (inclusive of UKTI), by measuring how many business support agencies a company is aware of on a continuous scale. Six, productivity of new ventures is examined in relation to internationalisation activity. It is designed by simply dividing firm's reported turnover over the past 12 months by the number of employees. The variable is expressed in millions of Pounds Sterling. Seven, the report measures different types of finance and their relation to firm's internationalisation activity using three dummy variables: debt finance<sup>24</sup>, equity finance<sup>25</sup>, and other<sup>26</sup>. The variable takes value of 1 if a firm used a particular form of finance and 0 otherwise. Eight, future expectations of new ventures are studied here in terms of their association with firm's internationalisation activity. This is achieved through three variables that measure: a) expectation of employment growth over the next 12 months through 3 categories: 'more than currently', 'about the same', 'fewer'; b) expectation of turnover growth over the next 12 months via three categories: 'increase', 'decrease',

<sup>19</sup> Wholesale/ Retail, Transport/ Storage, Accommodation/ Food, Arts/ Entertainment.

<sup>20</sup> Education, Health/ Social Work, Other service.

<sup>21</sup> Primary, Construction.

<sup>22</sup> East Midlands, East of England, London, North East, North West, South East, South West, West Midlands, Yorkshire and the Humber, Scotland, Wales, Northern Ireland.

<sup>23</sup> UK Trade and Investment, The Tools for Business section on the .GOV website, The British Business Bank, Innovate UK, The Business Growth Service, Local Enterprise Partnership, Growth Hubs, Manufacturing Advisory Service, Scottish Development International, Business Gateway, Scottish Enterprise, Highland and Islands Enterprise, Skills Development Scotland, Co-operative Development Scotland, Scottish Manufacturing Advice Service, NI Business info.co.uk, Invest Northern Ireland, Department for Enterprise Trade and Investment, Department for Employment and Learning, InterTrade Ireland, The Pensions Regulator, Investors in People, Scottish/Highland and Islands Enterprise.

<sup>24</sup> Bank overdraft, commercial mortgage, credit cards, mezzanine, peer-to-peer, other loans.

<sup>25</sup> Private equity, public equity.

<sup>26</sup> Factoring/invoicing, leasing or hire purchase, charitable/trust/grant, government schemes, other finance.

'stay the same'; and c) aim to grow sales over the next 3 years expressed in a dummy variable taking value of 1 if a firm aims to grow sales and 0 otherwise.

### 3.2. Analytical approach

The report undertakes three types of analyses: 1) bivariate statistical tests, 2) multiple regression, and 3) spatial decomposition. The bivariate statistical tests uncover associations between the dependent variable that measures whether the company engages in internationalisation activity and a number of explanatory variables. The statistical tests used are selected in accordance to the characteristics of the variables tested, with Mann-Whitney U-test and Chi-Square techniques applied, given non-parametric character of examined measures.

The multivariate analysis applies a logistic regression model to measure the probability of a firm  $i$  to engage in internationalisation activity. The use of logit model is dictated by the nature of the dependent variable, being of binomial character. The multiple regression model used in the analysis takes the following logit form:

$$g(x_i) = \ln\left(\frac{\pi(x_i)}{1 - \pi(x_i)}\right) = \alpha + \beta x_i + \varepsilon_i$$

Where  $x_i$  denotes a vector of variables defining firm  $i$ ,  $\alpha$  is a model constant, whilst  $\beta$  represents coefficients of parameters used. Finally,  $\varepsilon_i$  denotes an error term capturing variance unaccounted for by the model. In effect, the regression model examines the probability of firm  $i$  to engage in export activities, given a number of parameters tested.

First, linear associations between variables are explored in Table 3.3 to identify strong relationships between measures and inform the multivariate analysis of potential modelling issues, i.e. multicollinearity. There are 4 relationships that could constitute a collinearity issue for the following regression analysis, with one in particular: *Support Awareness* and *UKTI Support Awareness* (55%), *Innovation in Product/Service/Process* and *Innovation in Product* (59%), *Innovation in Product/Service/Process* and *Innovation in Service* (87%), *Productivity* and *Turnover* (51%). In order to elucidate whether these indeed translate into modelling problems a linear regression is fit using all explanatory variables to observe values of Variance Inflation Factors (VIFs). The only collinear pair is identified to be between innovation variables (i.e. the 87% pair) with VIFs raising to 6.7 for *Innovation in Product/Service/Process*. Whilst this is not within a conventional value of 10 for VIFs, a cautious approach is adopted. Consequently, the innovation variables are modelled separately, i.e. *Innovation in Product/Service/Process* enters regression equation separately from *Innovation in Product* and *Innovation in Service*, both kept in the same specification.

A number of variables are used to measure such activity, with Tables 3.1. and 3.2. depicting characteristics of all parameters adopted in the report.

Table 1 Descriptive Statistics of Continuous Variables

	Mean	Std. Deviation	Minimum	Maximum	Observations
Employment	11.49	24.85	0	240.00	1881
Turnover [£m]	£ 1.27	£ 5.49	£ 0	£ 80.00	1356
Age	3.25	1.49	0	5.00	1881
Support Awareness	3.89	2.51	0	13.00	1881
Productivity [£m]	£ 0.12	£ 0.28	£ 0	£ 3.50	848

Table 2 Profile of Categorical Variables

	Yes	No	Observations
Dependent Variable: Exporting Sectors	320	1561	1881
Manufacturing	120	1761	1881

	Business Services	749	1132	1881
	Consumption-Based Services	544	1337	1881
	Education & Personal Services	254	1627	1881
	Primary & Construction	214	1667	1881
Regions				
	East Midlands	142	1739	1881
	East of England	181	1700	1881
	London	301	1580	1881
	North East	56	1825	1881
	North West	174	1707	1881
	South East	302	1579	1881
	South West	177	1704	1881
	West Midlands	137	1744	1881
	Yorkshire & the Humber	134	1747	1881
	Scotland	137	1744	1881
	Wales	70	1811	1881
	Northern Ireland	70	1811	1881
Women-led business		382	1499	1881
MEG-led business		172	1709	1881
Capabilities				
	People Management	1176	705	1881
	Business Management	1705	176	1881
	Innovation in Product or Service	1571	310	1881
	Raising Finance	952	929	1881
	Innovation in Operations	1672	209	1881
UKTI Support Awareness		733	1148	1881
Innovation				
	Goods	439	1425	1864
	Services	756	1112	1868
	Goods/Services/Processes	887	994	1881
Finance Used				
	Debt	473	205	678
	Equity	90	588	678
	Other	274	404	678
Applied for Finance in past 12 months		379	1502	1881
<i>Future Performance Expectation: next 12 months</i>				
Turnover				
	Increase	1163	666	1829
	Decrease	100	1729	1829
	No Change	566	1263	1829
Employment				
	Increase	770	1094	1864
	Decrease	107	1757	1864
	No Change	987	877	1864
<i>Future Performance Expectation: next 3 years</i>				
Sales Growth		1542	339	1881

## 4. Results

### 4.1 Bivariate Analysis

The first part of the analysis examines differences between internationalised and non-internationalised new ventures, with Table 4.1 highlighting the main characteristics of the firms in the sample. On average, the internationalised new ventures in the sample employed 13 individuals, with no statistically significant difference observed between these and non-internationalised new ventures ( $U=242351$ ,  $Z=-0.86$ ,  $p=0.39$ ,  $r=0.02$ ). Output per worker within these firms averaged nearly £170,000, comparing favourably over their non-internationalising counterparts (just over £100,000), depicting a statistically significant difference ( $U=39434$ ,  $Z=-6.37$ ,  $p<0.01$ ,  $r=0.22$ ). On average, internationalised new ventures' turnover for the previous financial year was just over £2m, which is double of the firms focused on the domestic market, a difference that is statistically significant ( $U=114970$ ,  $Z=-5.24$ ,  $p<0.01$ ,  $r=0.14$ ). Internationalised new ventures, on average, have been trading slightly older than those non-internationalised counterparts, a difference that is statistically significant ( $U=213452$ ,  $Z=-4.20$ ,  $p<0.01$ ,  $r=0.10$ ). Finally, there is only a coincidental and small disparity found between the level of awareness of state support organisations between internationalised new ventures and their non-internationalised counterparts ( $U=241037$ ,  $Z=-0.99$ ,  $p=0.32$ ,  $r=0.02$ ).

Table 3: Firm characteristics

	Non-internationalised new ventures		Internationalised new ventures		p-value
	Median	Mean	Median	Mean	
Firm Size	2.00	11.14	2.00	13.2	0.391
Firm's Age	3.00	3.18	4.00	4.00	0.000***
Awareness of State Support	4.00	3.86	4.00	4.00	0.321
Productivity (£000s)	41.91	107.07	84.52	169.75	0.000***
Turnover (£000s)	127.50	1053.92	220.00	2171.91	0.000***

Note: N=1881, except Productivity - N=848, Turnover - N=1356; All tests are independent samples non-parametric Mann-Whitney U-tests; One-sample Kolmogorov-Smirnov tests indicated non-normality in variables' distribution.

This results of the regression analysis exploring the antecedents of internationalised new ventures in order to identify the characteristics that promote and negate a new venture's propensity to export. Tables 4.10 and 4.11 report the results of the logit regression models. In total, four models are presented; Model 1 presents a base model with basic characteristics of the firms (total employment, age, turnover, sector, and regional location); Model 2 builds in characteristics of the owners, capabilities, networks of support organisations, and innovation activity; Model 3 includes a broader exploration of innovation, and Model 4 includes future expectations. These four models represent the most complete coverage of the dataset, including over 1300 observations (as not all firms answered all questions our sample size is slightly restricted).

The results highlight a number of interesting findings. Firstly, we find that the age of the venture has a positive influence on propensity of new venture to internationalise; thus as new ventures develop and, more importantly, survive they are increasingly more likely to internationalise. Consequently, the internationalisation of a new firm can be seen as a sign that is likely to survive the initial years after start-up, or has survived the initial start-up phase and is developing export markets as their liability of newness recedes.

There is evidence that the gender of the business owner has some influence on the propensity of a new venture to internationalise but that their ethnicity does not. The analysis found evidence to suggest that new ventures led by women have a lower propensity to internationalise. However, this result may not be directly related to gender, but instead to the types of new ventures started by females as further examination of the data found higher proportions of female owners in sectors that tend to be more 'untraded' in nature, particularly consumption-based services and the education and health care sectors.

The types of innovation activities undertaken by new ventures have a significant effect on their propensity to internationalise. The analysis highlights the fact that innovation activities that focus on the introduction of new goods has a positive effect on the firm's propensity to internationalise. Conversely, no significant relationship is observed with respect to innovation activities that focus on the introduction of new services.

The findings suggest that the firms' capabilities influence their propensity to internationalise. Importantly, we find that those firms reporting higher levels of capabilities in terms of innovation management are more likely to internationalise, providing further evidence that innovation is one of the key determinants of the internationalisation of new ventures. Conversely, there is evidence that new ventures firms reporting higher levels of financial acumen are less likely to internationalise. This finding suggests that possessing higher levels of innovative capabilities is likely to enable a firm to expand its markets through internationalisation. Equally, those possessing higher levels finance seeking acumen may instead be focussed on raising funds rather than market growth, possibly as the business may require repeated cash injections to survive.

Awareness of specific support organisations influences their propensity to internationalise, as the results show that those firms that are aware of UKTI, the UK's export support agency, have a higher propensity to internationalise. Conversely, the results show that a general awareness of support organisations actually has a negative effect on the propensity to internationalise. Thus, it appears that it is the specificity of knowledge that is the key to internationalisation and interacting with a specialist organisation that can provide specific help to the firms in this particular activity.

Table 4 Logistic Regression of Internationalisation Activity

	Model 1	S.E.	Model 2	S.E.
Employment ['000]	0.307	0.003	0.861	0.004
Turnover [£m]	0.020	0.013	0.022	*
Age	0.200 ***	0.054	0.181 ***	0.056
Manufacturing	2.245 ***	0.371	2.262 ***	0.384
Business Services	1.508 ***	0.319	1.493 ***	0.327
Consumption-Based Services	0.860 **	0.339	0.866 **	0.348
Education & Personal Services	-0.111	0.448	0.095	0.461
East Midlands	-0.536 *	0.325	-0.466	0.340
East of England	-0.228	0.281	-0.253	0.295
North East	-1.012 *	0.565	-1.055 *	0.593
North West	-0.866 ***	0.317	-0.671 **	0.331
South East	-0.275	0.238	-0.215	0.253
South West	-0.345	0.278	-0.208	0.294
West Midlands	-0.715 **	0.342	-0.746 **	0.359
Yorkshire & the Humber	-0.318	0.310	-0.304	0.325
Scotland	-0.511	0.320	0.144	0.379
Wales	-0.320	0.403	-0.330	0.421
Northern Ireland	0.190	0.384	0.814 *	0.429
Women-led business			-0.507 **	0.227
MEG-led business			-0.147	0.271
People Management Capabilities			0.014	0.167
Business Management Capabilities			-0.022	0.279
Innovation in Product or Service Capabilities			0.671 ***	0.246
Raising Finance Capabilities			-0.468 ***	0.155
Innovation in Operations Capabilities			-0.071	0.260
UKTI Support Awareness			1.037 ***	0.191
Support Awareness			-0.168 ***	0.044
Innovation in Goods/Services/Processes			0.461 ***	0.156
Constant	-2.956 ***	0.393	-3.269 ***	0.534
DF	19		29	
N	1356		1356	
Hosmer-Lemeshow Test	7.04		11.98	
Hosmer-Lemeshow Test p	0.53		0.15	
Percentage Correct	80.24		81.27	
-2LL	1224.17		1152.18	
Nagelkerke R <sup>2</sup>	0.13		0.21	

Note: \*\*\* denotes significance at 1% level; \*\* denotes significance at 5% level; \* denotes significance at 10% level.



Table 5: Logistic Regression of Internationalisation Activity

	<b>Model 3</b>		<b>S.E.</b>	<b>Model 4</b>		<b>S.E.</b>
Employment ['000]	1.386		0.004	0.001		0.004
Turnover [£m]	0.020		0.013	0.020		0.013
Age	0.186	***	0.056	0.193	***	0.058
Manufacturing	2.138	***	0.389	2.087	***	0.391
Business Services	1.551	***	0.328	1.544	***	0.330
Consumption-Based Services	0.843	**	0.348	0.797	**	0.351
Education & Personal Services	0.129		0.464	0.210		0.466
East Midlands	-0.394		0.343	-0.329		0.347
East of England	-0.230		0.298	-0.158		0.301
North East	-1.102	*	0.595	-1.020	*	0.599
North West	-0.654	*	0.335	-0.635	*	0.346
South East	-0.194		0.256	-0.150		0.260
South West	-0.188		0.298	-0.108		0.302
West Midlands	-0.688	*	0.364	-0.612	*	0.368
Yorkshire & the Humber	-0.309		0.327	-0.272		0.337
Scotland	0.140		0.383	0.127		0.393
Wales	-0.295		0.425	-0.241		0.430
Northern Ireland	0.864	**	0.430	0.912	**	0.433
Women-led business	-0.482	**	0.227	-0.496	**	0.230
MEG-led business	-0.139		0.270	-0.123		0.274
People Management Capabilities	0.034		0.169	-0.032		0.176
Business Management Capabilities	0.017		0.281	0.076		0.292
Innovation in Product or Service Capabilities	0.598	**	0.247	0.512	**	0.253
Raising Finance Capabilities	-0.509	***	0.157	-0.549	***	0.160
Innovation in Operations Capabilities	-0.030		0.262	-0.051		0.269
UKTI Support Awareness	1.026	***	0.193	1.002	***	0.195
Support Awareness	-0.162	***	0.044	-0.153	***	0.045
Innovation in Goods	0.740	***	0.174	0.732	***	0.176
Innovation in Services	-0.047		0.166	-0.102		0.169
Expectation of Employment Change (12m): Increase				-0.090		0.337
Expectation of Employment Change (12m): Decrease				-0.172		0.342
Expectation of Turnover Change (12m): Increase				0.057		0.192
Expectation of Turnover Change (12m): No change				-0.524		0.401
Expectation of Sales Growth (3y)				0.300		0.262
Constant	-3.294	***	0.536	-3.387	***	0.669
DF	30			35		
N	1343			1318		
Hosmer-Lemeshow Test	11.71			4.56		
Hosmer-Lemeshow Test p	0.16			0.80		
Percentage Correct	82.06			82.17		
-2LL	1133.87			1106.79		
Nagelkerke R <sup>2</sup>	0.22			0.22		

## 5. Conclusions

### 5.1 The Characteristics of Internationalised New Ventures

The analysis presented allows the development of a profile of internationalised new ventures in the UK, and highlights the difference between these and their non-internationalised counterparts. On average, an internationalised new venture has been trading for a little over 3 years, employs 13 people, has a turnover of around £2m per annum and output per worker averages around £170,000. Furthermore, we find that internationalised new ventures outperform their non-internationalised counterparts in terms of turnover and output per worker, plus they have been trading for slightly longer on average. While internationalised new ventures appear to be making a larger contribution to the economy overall in terms of value adding activity, they do not create a higher number of employment opportunities. Yet, while they may not be creating a higher number of jobs that their non-internationalised counterparts, they may typically provide highly skilled, well paid, creative, knowledge-based jobs to the economy.

A number of other statistically significant differences between the two types of new ventures were noted, the most significant being that internationalised new ventures are more innovative firms and, importantly possess the requisite capabilities to enhance their innovative activities. Furthermore, they also use different means of raising finance and they have different levels of awareness of relevant support institutions. Finally, we note that internationalised new ventures have a different sectoral composition; for example, higher proportions of firms from the business services and manufacturing sectors were observed within this group.

### 5.2 The Antecedents of Internationalised New Ventures

The analysis provides further insights into the antecedents of internationalised new ventures, with both confirmatory and contradictory findings compared to the extant literature. The main finding is that the analysis confirms prior work that innovation activities are the key to the internationalisation of new ventures (Yip et al. 2000; Jones & Coviello 2005). Furthermore, these findings legitimise the current direction which the international entrepreneurship literature is taking, with a growing interest in exploring the links between product and service innovation and internationalisation (Golovko & Valentini 2011; Hagen et al. 2014).

However, this result is nuanced by the fact that it is not all innovation activity that has a positive influence, only the introduction of new goods, following previous work that has suggested that new products lend themselves more easily to export (Roper & Hewitt-Dundas 2015). Indeed, the production of niche products has been found to facilitate early internationalisation (Hennart 2014), and good innovators may be better placed to create more novel outputs.

The importance of innovation to the internationalisation of new venture is also reinforced by the findings regarding capabilities; the analysis confirms that these do indeed influence the propensity of new ventures to internationalise (Cavusgil & Knight 2015; Weerawardena et al. 2007; Oxtorp 2014), especially where these strengths are geared towards innovation. Thus, internationalisation is promoted where a new venture is able to build on their strengths through the pursuit of new ideas and market growth. Indeed, as capabilities are a reflection of a venture's strengths (Teece 2010) it would seem sensible to suggest that internationalisation capitalises on these. Indeed, this is reinforced by the other finding which suggests that where strengths are geared towards seeking finance, the new ventures have a lower propensity to internationalise. This may mean that capabilities in this area signal a focus on raising investment in order to ensure survival rather than product and market development. Furthermore, the finding that the longer the venture has been trading increases its propensity to internationalise suggests that these capabilities may develop over time

As noted previously, the sector in which a new venture is based has a significant influence on its internationalisation. Distinct differences in the propensity for new ventures to internationalise were observed, confirming the extant literature's assertion that this is indeed important (Mudambi & Zahra 2007; Baronchelli & Cassia 2014). Furthermore, the results confirm that new ventures in what have been described as 'traded' sectors of the economy (Thirlwall 1980), i.e. those that are not solely reliant upon local or domestic demand

for their market, are more prone to internationalising. Furthermore, we find that new ventures in the manufacturing sector have the highest propensity to internationalise, a finding that may be related to the fact that they are doing so through the creation of new products, which has been shown to be an important factor.

As innovation has emerged as a key factor in the internationalisation process, the role of networks as sources of knowledge and expertise may be of importance. However, the evidence with respect to the new ventures' networks are mixed. While access to networks has been shown to be important for internationalisation (Sharma & Blomstermo 2003; Freeman et al. 2006), these findings suggest that the specificity of these networks is important. This is highlighted by the fact that an awareness of UKTI, the UK's export promotion agency, is an important factor in promoting early internationalisation. Conversely, a broader awareness of other support agencies has a negative effect, suggesting that establishing a focussed network is the essential ingredient for new ventures to internationalise early. Engaging in developing a network containing a broad range of support organisations may merely consume scarce resources (with one of the key challenges faced by these firms is to overcome their paucity of resources (Cavusgil & Knight 2015)) and, therefore, has a negative effect on the firm.

The findings highlight the fact that access to finance influences the internationalisation of new ventures. Yet, these results do not necessarily chime with the extant literature in terms of finding a relationship between availability or a lack of finance (cf. Bloodgood et al. 1996; Fernhaber & McDougall-Covin 2009), but more around the type of funding used. Here the results suggest that it is the use of equity finance that increases the new ventures' propensity to internationalise; thus, it may be that the influence of venture capital is positive in terms of providing networks and access to markets (Shane & Cable 2002), or that attracting equity finance may signal the uniqueness of a product or service, which facilitates international expansion (Hennart 2014). The question this finding raises is whether a lack of finance through equity is a significant barrier to a new venture's internationalisation?

With respect to policy implications, it is recommended that the promotion of innovation should be accompanied with the promotion of internationalisation, as developing capabilities in one will enhance the capabilities in the other. Furthermore, new ventures should be supported with respect to developing their networks to gain both knowledge for innovation and also the expertise to support their exporting activities.

## **Managing an Internationally Diversified Workforce; the Case of SMEs in the Cyprus Hotel Industry**

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### **Abstract**

Over the last two decades and with the integration of more countries into the European Union, the workforce of many SMEs (Small to Medium Sized Enterprises) became very international. This workforce diversity presents a great opportunity but also a great challenge for entrepreneurs and managers. This challenge is especially noticeable in Cyprus, which ranks top among European countries in the share of foreign workers among its labour market. It seems that Cyprus, being an attractive tourist destination and a generator of new jobs, became also attractive for international workers coming from Europe but also from Asia and Africa. The hotel industry is one of the main business sectors that has greatly been affected by the international workforce reality. Despite the benefits of an internationally diversified workforce there are many human resource management issues that need to be resolved in order to run successfully a hotel business enterprise. The hotel industry is very demanding, requiring frontline staff to work long, irregular, and unsociable hours while paying low wages. On the other hand, hotel employees need to be kept engaged and happy as it is actually them who truly provide the competitive advantage for the hotel enterprise since they are directly providing customer service.

The purpose of our study is to examine the impact on competitiveness with the internationalization of the workforce of SMEs in the hotel industry. The competitive priorities for the purpose of this study are isolated in the degree of cost reduction, the quality of service dimension and the response to customer requirements. Some of our major findings show that hotels consider cost of labour as the primary factor for hiring foreigners or European employees as it will have a great effect on reducing costs for the hotel. Further, training/education plays an important role to the achievement of the hotel's objectives. Hotel managers believe that they can improve their quality of service and the response to customer needs because foreign employees can be trained easily and effectively. On the other hand, hotel SMEs are facing a big problem with the high percentage of employee turnover, which has negative effects both on costs and quality of service. Finally, even though an internationally diversified workforce brings many benefits simultaneously it can create problems as conflicts arise among employees, and mistakes from misunderstandings because of barriers to effective communication. As a result of our study, recommendations are given to SMEs in the hotel industry on how to properly utilize the social and technical skills of its international workforce in order to provide high quality service in a cost effective way but also be innovative and thus become truly competitive.

## Introduction

Workforce diversity is undoubtedly a positive factor for organizational performance but at the same time it remains a great challenge for management. Especially, in today's globalized world, businesses need to deal with the complex task of effectively managing a diverse international workforce. Over the last decade and especially after the entrance of Cyprus into the European Union, Cyprus became an attractive destination for foreign labour. As a result, of this mobility workers the labour market of Cyprus became very international. According to a report by Gerogiannis *et al* (2012) a distinctive characteristic of the working population in the Horeca sector, which include hotels restaurants and catering services, is the high percentage of foreign workers. Among the EU countries, the highest share of foreign workers is found in Cyprus with (35%). Next comes Estonia (31%), Austria (29%), Spain (28%), Norway (27%) and the UK (21%).

The hotel industry is one of the largest sectors of the Cyprus economy that has been greatly influenced by this major change in the labour market. It could be claimed that nowadays the hotel industry is very much depended on its international workforce. Baum (2012) studied several cases around the world of migrant workers in the international hotel industry. The study shows the high interdependence of foreign workers and the hotel industry. It seems like the hotel industry survival depends a lot on its international workforce and the main driver for this is cost reduction.

A closer look though into the hotel industry shows that being a labour-intensive industry its success depends not only on labour cost parameters but also on the social and technical skills of its personnel, their ingenuity and hard work, their commitment and attitudes. It is also true that in such a labour-intensive industry, the effective utilisation of human resources can give an organisation its competitive edge. Thus, the success of the hotel industry depends on the quality of its employees. Thereby, effective human resource management practices are necessary in order for the hotel business to achieve its objectives. In the hotel industry, it is the employees who provide the competitive advantage since they are the ones that directly deal with the customer and deliver the main products and services. We would suggest that central to the achievement of competitive advantage in the hotel industry is what Henry Fayol termed *Esprit de corps* or any other words the harmonious relationships between the workforce that create a common spirit inspiring enthusiasm, devotion, and camaraderie of delivering high quality of service.

The achievement of *Esprit de corps* becomes even greater a challenge for managers who need to deal with an internationally diverse workforce. Even though there is general agreement on employing HRM practices to tackle the issue there are many questions that remain open such as the following. Which HRM practices should be given more emphasis? Which management practices are more associated with performance especially when we have an internationally diversified workforce? What is the actual impact on specific performance metrics such as cost and quality? How do we design an HRM system to respond to the challenge of an international workforce?

Having as a basis the above questions, the purpose of this paper is to identify the factors that influence the competitiveness of SMEs in the hotel industry with respect to the current international workforce diversity; to find out the main factors which determine the decision of hotels to hire foreign employees; to examine the impact of having an international workforce; and to identify how competitive priorities such as cost, quality of service, and the responsiveness to customer needs are influenced by the international workforce. To achieve our research objectives a questionnaire was developed that was divided in three main sections: a) factors that hotels consider in order to hire foreign or European employees, b) factors that affect competitiveness of an internationally diversified workforce and c) how cost reduction, service quality improvement and the response to the customers' needs. The collected data were statistically analysed using correlation, cross-tabulation, and factor analysis.

The next section goes through a literature review on HRM practices and hotel performance. As result, gaps and issues are explored, and new areas of research are identified. This is followed by the methodology section which explains the main research questions and the procedure followed to resolve them. Next we have the

main results, which show the relationships between the main factors that contribute to competitiveness using correlational analysis. Finally, conclusions are drawn and the implications for the hotel industry are explored.

## **Literature Review**

Numerous research works have attempted to identify the link between human resource management practices and hotel performance but few explored the moderating factor of an international diversified workforce. Research during the past years had the purpose to identify those elements in the working environment, which are associated with important results metrics such as service quality, customer satisfaction and business performance. Also, a number of research studies have examined the effects of training provision on customer satisfaction, financial performance and productivity. Findings generally indicate a positive relationship between HRM practices such as strong training policies and hotel performance.

Despite the many recommendations from research studies, the hotel industry is neglecting its human resources (HR), even though this is its main asset. The hospitality industry has a reputation for being demanding, requiring frontline staff to work long, irregular, and unsociable hours while paying low wages (Janes & Wisnom, 2010). As a consequence of such poor working conditions hotel employees are not able to deliver high quality service, which in turn affects the revenues and ultimately the profitability of the business. Further, administrative costs arising from dismissal compensations, new hiring and training, time to learn and low productivity have a negative effect not only on profitability but also on customer service. Hence, Baum (2007) urges the hotel industry to adopt “good human resource management practices” since in this industry, “the human resources are the most important resource.” Furthermore, there is a general agreement among researchers that in most service industries it is the HR that creates the competitive advantage for the organization.

Despite the above research findings, the challenge of developing a comprehensive and effective HRM system still remain. Unfortunately, human resource management departments of hospitality organisations constitute a so called “cost centre”. This is because although the investment on employees is directly measurable, in contrast, the outcomes of this investment are seen as difficult to quantify. But these outcomes can generally be measured with intangible factors such as employee engagement surveys, customer satisfaction indexes, customer complaints, and so on.

To add more on the challenge of developing an effective HRM system, most research studies were carried out without explicitly considering the international workforce diversity element. In fact, in a relatively recent article on workforce diversity and HRM Alcázar et al (2013) suggest that managing a heterogeneous workforce requires a holistic transformation of human resource strategies and there is a need to define cross-cultural and diversity-oriented models based on the business context.

In an era of globalization of production and markets what is missing from the literature are studies of more quantitative nature about the impact of an international diversified workforce. Such an impact can be examined on its effects on real costs, service quality, and Customer Satisfaction. Also, instead of trying to suggest universal solutions, research studies should take into account the actual context. Specifically, SMEs have many particularities, and as a result universal solutions to HRM practices are seldom appropriate. The authors experience with SMEs shows that such a context has many particularities that should alter the management approach (Efstathiades & Papageorgiou, 2016). Especially, in the hotel industry of Cyprus, which consists mainly of SMEs such a study will be very significant and original. In the next section we explain our approach to examine how HRM practices contribute to the competitiveness of hotel business enterprises.

## **Methodology**

A multi-dimensional questionnaire, with Likert-scale questions, has been designed in order to collect quantitative data. The survey was conducted through interactive structured interviews and consequently, data has been collected in a quantitative form. Our approach was based on the multi-method technique called “questerviews” (Adamson, et al., 2004). The questionnaire utilized a Likert scale where each question was

scored on a 5-point scale. The questionnaire was used as the instrument for gathering information from the respondents representing Hotel SMEs of Cyprus.

In the process of developing the questionnaire particular attention was given to the type of questions to be used which included closed multiple choice questions. Regarding the wording of the questions effort was made to use simple and comprehensive language for everyone to understand. Finally, the questions were grouped in a logical order so as to give the respondents a clear understanding through the structure of the questionnaire. The questionnaire included three sections. The first section consisted of questions aiming to establish the employment characteristics of the sample. These questions included information about the percentage of the foreign or European employees who are being employed in the hotel industry of Cyprus, positions which are occupied, duration of employment and hiring procedures. The second section consisted of 12 questions aiming to identify the impact on various factors regarding the considerations of the management before hiring foreign or European employees. The third section consisted of one question aiming to identify the impact on three main depended variables: cost reduction, quality of service and response to the customer needs by the internationally diversified workforce.

The survey was conducted on a sample of 40 Hotels throughout the 5 districts of Cyprus. The participating hotels have been selected randomly. The questionnaire was given to the Human Resource Management directors of the Hotels. The process for collecting data was initiated by phone and email contact in order to arrange a meeting if the Hotel was willing to participate in the survey. Some hotels declined to participate due to their companies' protocol or due to unexpected last minute obligations. The response rate was 53.3% as 40 out the 75 hotels participated in our study. Then the meeting took place and the questionnaire was answered in a face to face interview in order to reduce the chance of error or misunderstandings. The data collection was carried out over a 5-week period. This was followed by a statistical analysis of the results, which is presented in the next section.

### Results, Analysis and Main Findings

First in our analysis we investigated some characteristics about our sample, some of which are shown below. Figure 1 shows the percentage of the foreign or European employees that are employed in hotel SMEs. As we see from figure 1 the international diversified workforce is the new reality of the Cyprus hotel industry.

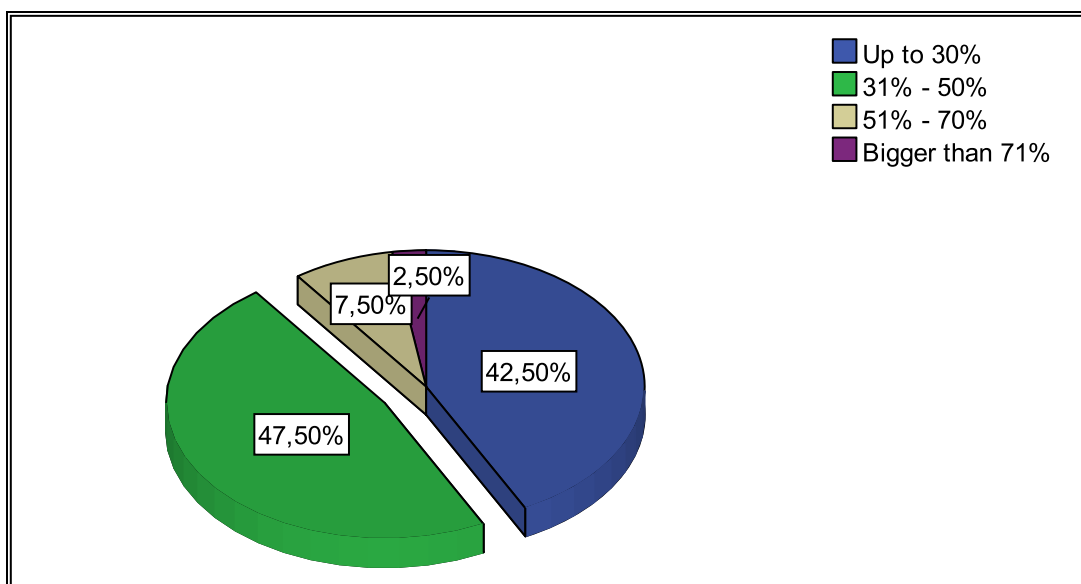


Figure 1: Percentage of the foreign or European employees who are being employed in hotel SMEs

Next in our analysis, the factors/criteria that are considered by hotel management in the process of recruiting foreign employees were thoroughly investigated. The results are presented in table 1 below.



Table 1: Factors/criteria considered when recruiting foreign employees

Factors/Criteria	Mean	Std. Deviation
Cost of labour	3,63	1,25
Reduced expectations on behalf of foreign employees.	3,18	1,15
Availability to work part time	3,7	1,09
Entrance of new "air" into the business	2,45	1,15
Productivity/efficiency	2,13	1,04
Increased Communication	2,5	1,06
Willingness to adapt to the hotel culture	2,68	0,92
Service quality perception	2,78	0,97
Country of origin	2,58	1,13
Skills and Knowledge for the position	2,48	1,26
Training and development willingness	2,85	0,80
Previous employment duration	2,78	0,86
Ability to maintain good professional relationships with their colleagues	2,90	1,01
Level of absenteeism	2,85	1,25

Our results reveal that the main criterion that is considered in the recruitment process is the availability of foreign employees to work on a part time basis. This is shown by the high mean of 3.7/5. Equal importance is given to the objective of reducing the cost of the service operation once foreign workers are employed. The managers in the hotel industry believe that foreign employees have low expectations in terms of fringe benefits. This is considered as an advantage and is in fact a decisive positive factor/criterion in recruiting foreign employees. Interestingly foreign employees seem not to be considered highly productive and efficient by the hotel management and this is revealed by the low scores of productivity/efficiency (2.13/5).

Further on, in our analysis table 2 shows the correlation between the factors/criteria that hotel managers consider in hiring foreign employees in conjunction with the level of achievement of a specific competitive priority (Cost reduction, Service Quality and Response to Customer Needs).

Table 2: Correlation between the factors/criteria that hotels consider in hiring foreign employees and the achievement of a specific competitive priority

Factors/criteria	Correlation coefficient ( r )		
	Cost reduction	Service quality	Response to customers' needs
Cost of labour	,678**	,105	-,295
Reduced expectations on behalf of foreign employees.	,549**	,083	-,198
Availability to work part time	,330*	-,005	-,218
Entrance of new "air" into the business	,116	,466**	,309

Productivity/efficiency	,179	,607**	,447**
Increased Communication	-,069	,419**	,483**
Willingness to adapt to the hotel culture	,081	,651**	,375*
Service quality perception	-,025	,539**	,374*
Country of origin	,097	,346*	,182
Skills and Knowledge for the position	,015	,412**	,264
Training and development willingness	,225	,656**	,327*
Previous employment duration	,020	-,102	,117
Ability to maintain good professional relationships with their colleagues	-,299	,265	,242
Level of absenteeism	-,193	,131	,022

The factor with the greatest impact on Cost Reduction is the cost of labour when hotels decide to hire foreign employees ( $r= 0,678$ ). This is followed by the reduced expectations and demands on behalf of foreign employees ( $r= 0,549$ ). Also important contributing factor with positive influence to Cost Reduction is the degree of considering the availability of working part-time.

Further, the factor/criterion with the highest contribution on the service quality dimension is the willingness of foreign employees to upgrade their skills and knowledge and develop their capabilities ( $r= 0.656$ ). We see here the tremendous potential of training as a key HRM practice in the hotel industry. Also, of great importance is the foreign employee willingness to adapt with the hotel's culture. This is found to be highly correlated with the achievement of increased service quality ( $r= 0.651$ ). Increased service quality is also highly affected by the productivity / efficiency criterion. Interestingly this factor is positively correlated with the response to customer needs competitive priority. The increased communication level criterion is significantly correlated with both the increased service quality competitive priority and the response to customer needs.

Interesting to note is that the communication criterion exerts the highest impact on the achievement of the 'response to customer needs' competitive advantage ( $r=0.483$ ). A highly correlated contributing factor on the achievement of increased response to customer needs is also found to be the productivity/ efficiency criterion ( $r=0.447$ ), the employee willingness to adapt with the hotel's culture ( $r=0.375$ ) and the service quality perception that foreign employees maintain ( $r= 0.374$ ).

Moreover an important finding from the above analysis, is that the criterion of Entrance of new "air" into the business, Productivity efficiency, Increased Communication, Willingness to adapt with the hotel culture, Service quality perception, Training and development willingness are highly correlated to both increased service quality dimension and ability to response to customer needs.

Further on in our results analysis, the Management / Organizational practices and competitive priorities were examined as shown below. Consequently, the impact of the application of specific HR management practices and organization characteristics on the achievement of a specific competitive priority has been investigated. The results of this correlation are tabulated in table 3 below.

Table 3. The impact of management / organizational practices associated with foreign employees on the competitiveness of the hotels.

	Correlation coefficient ( r )		
	Cost reduction	Service quality	Response to customers' needs
Level of Employee skills and knowledge	-0.154	0.219	0.270
Training provision to employees	-0.356	0.090	0.329
Degree of application of diversity Management practices	0.131	0.278	0.169
Fitness within the culture of the organization	-0.263	0.202	0.164
Level of employee turnover	0.247	-0.069	-0.228
Level of Unjustifiable absences	-0.007	-0.033	-0.167
Relationship between Local and foreign employees	0.050	-0.045	-0.090
Existence of motivation system	-0.316	0.253	0.386
Formal hiring procedures	-0.32	0.294	0.367
Personnel training and development procedures	-0.241	0.134	0.280
Detailed Job Descriptions	-0.279	0.150	0.313
Evaluation System	-0.249	0.074	0.122
Employee involvement in the determination of the company's objectives	-0.313	0.031	0.144
Employee empowerment procedures	-0.134	-0.019	0.021
Level that employees are undertaking initiatives	-0.240	0.001	0.059

The results reveal that training provision to the foreign employees is positively correlated with the achievement of high response to customer needs on the one hand but on the other hand this is negatively correlated with the cost reduction. The same picture appears with the existence of a formal motivation system. The existence of such a system fosters the response to customer needs but has a negative impact on cost. Further, formal hiring procedures and proper application of those procedures have a positive impact on the level of quality of service achieved and on the response to customer needs/requirements. On the other hand, this is negatively correlated with cost reduction.

A quite interesting finding is that the practice of involving foreign employees in the decision making process is found to be negatively correlated with the cost reduction, which might be related to communication problems. On the other hand this practice has no significant impact on the level of service quality obtained and the response to customer needs. Also, the existence of detailed job descriptions is found to have a positive correlation with the response to customer needs but negatively correlated with the cost reduction.

## Conclusions

This paper examined the relationship between the main factors associated with Human Resource Management practices and competitiveness of Hotel SMEs in Cyprus. Factors such as hiring processes, training and development, motivation systems, job enrichment, organizational culture and so on, were explored in relation to Cost Reduction, Quality of Service and Response to real customer needs.

Overall the results showed the positive contribution of an internationally diversified workforce but there are also some areas of concern that need to be further investigated. For example, job enrichment practices such

as involving foreign workers in decision making processes found to be associated with higher costs. This might be due to communication problems that create delays in making the decisions. Communication was found to be the most important factor when correlated with the “response to customer needs” dimension. Moreover, the existence of detailed job descriptions was found to have a positive correlation with the response to customer needs but negatively correlated with cost reduction.

In order to improve performance in all dimensions, hotel managers should be giving extra attention to resolve HR issues and especially communication problems that arise as a result of an international workforce. Further, from our analysis some important factors emerged that explain to a large degree the ability of hotels to perform well. These are the “Existence of Formal Human Resource Management practices”; the “Level of Matching of skills and knowledge of foreign employees with the needs and culture of the Hotel”; and the “Degree of addressing diversity management practices”. The authors plan to further study the above factors in the process of creating a model to explain what really contributes to hotel performance and competitiveness.

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## **The influence of entrepreneur-level determinants on the rapid internationalization of born global firms in Poland**

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### **1. Abstract**

The subject to be addressed in the paper is the research on the entrepreneur-level determinants of the rapid internationalization of born global companies in Poland. Born global companies represent a completely new type of firms, which is re-defining the international business theory. Being rapidly internationalizing start-ups, they start acting globally immediately after their founding. Apparently, those firms undermine the traditionally established view on companies' internationalization, as they manage to reach international markets rapidly and keep their competitive position despite significant resource limitations.

Born global phenomenon is an emerging concept in Poland, therefore literature on this topic in Polish language is limited. Most of the researchers focus on the external determinants of born global companies emergence. The topic of individual-level analysis of those firms was not so widely discussed yet. This study is aimed at fulfilling this research gap by applying the performance-oriented perspective and exploring the individual-level characteristics of born global firms.

The goal of the paper is to describe the specifics of born global firms functioning in Poland and to analyze entrepreneur-level determinants of the rapid internationalization of such companies. The explorative and theory-building goal requires qualitative methodological approach. This implies inductive reasoning approach. The case study method is used. Case studies are based on a semi-structured questionnaire addressing key issues on the organizational capabilities of the firms. The research is based on 3 case studies of born global companies from Poland.

The paper clarifies the emerging concept of born global firms, which is mainly focused on external determinants of early internationalization. Results of the research fill in the knowledge gap on born global firms performance. Understanding the individual-level mechanisms of early internationalizing companies will set a theoretical framework to further empirical research on born globals and potential fields for government support.

### **2. Introduction**

Research on international business in the 20<sup>th</sup> century has been mostly focused on large multinational companies. Management of small and medium-sized enterprises (SMEs) and venture creation was rather the topic of interest for entrepreneurship scholars (McDougall, Oviatt, 2000). However, in the end of 20<sup>th</sup> century, the research borders between international business and entrepreneurship started to vanish. Due to changing global business environment – more efficient communication technology and transportation, decrease in governmental protectionism and increasing opportunities to get international experience – it became possible to conduct business activities in different countries with limited resources. This caused the emergence of the international entrepreneurship phenomenon (McDougall and Oviatt, 2000; Zahra and George, 2002).

International entrepreneurship concept, which combines elements of international business theory and entrepreneurship theory, is devoted to the new ways of companies' internationalization. The traditional stage model of internationalization (Johanson, Wiederheim-Paul, 1975; Johanson and Vahlne, 1977) understood it as a slow process with several consecutive stages. However, new competitive environment, empowered by

globalization and integration processes, showed that stage theory cannot be applied anymore and new models are needed to explain the way SMEs internationalize. Starting from the early 1990s, the theory of international entrepreneurship evolved. New studies focused on SMEs which enter international markets immediately after their emergence (McDougall, 1989; Rennie, 1993; Oviatt, McDougall, 1994). Those companies, called *born globals* (Knight, Cavusgil, 1996; Madsen, Servais, 1997) or *international new ventures* (McDougall et al., 1994) are not using traditional incremental methods of exporting and begin to export from the first days of their existence.

The researchers have been trying to explain the key drivers of international expansion for born global companies (Knight, 2000; Zahra and George, 2002). Most of the studies show the combination of external factors, internal factors and factors related to the entrepreneur who pushes companies to go global (Zahra, George, 2002). External factors are mainly associated with the market characteristics, as sectoral or regional export culture, international trade incentives or demand characteristics. Internal, organizational reasons of going international are niche products, global strategy and resource availability. Entrepreneur-related reasons, however, are found to be fundamental in the internationalization of a company. Those reasons are usually associated with: (1) capabilities and aspirations of an entrepreneur before starting the business (Covin and Slevin, 1989; Knight, 2000; Andersson and Wictor, 2003) or (2) with entrepreneur's way of thinking and making decisions in the process of internationalization (Harms and Schiele, 2012; Sarasvathy et al., 2014).

Those entrepreneur-related constructs are often overlapping and often it is difficult to distinguish among them, in consequence there are also some confusions within the international entrepreneurship literature. Therefore, there is a need for structuring entrepreneur-related constructs and building an integrative framework that could serve as a foundation for future international entrepreneurship research.

The goal of the paper is to describe the specifics of born global firms functioning in Poland and to analyze entrepreneur-level determinants of the rapid internationalization of such companies. The explorative and theory-building goal requires qualitative methodological approach. This implies inductive reasoning approach. The case study method is used. Case studies are based on a semi-structured questionnaire addressing key issues on the organizational capabilities of the firms. The research is based on 3 case studies of born global companies from Poland.

This paper aims to describe the specifics of born global firms functioning in Poland and to analyze entrepreneur-level determinants of their successful international performance. The following section presents the literature review. The next sections present methodology used for the research, analysis and findings - key constructs emerging in the literature and proposition of a theoretical framework. Finally, conclusions and directions for the future research are presented.

### **3. Literature review**

The firm internationalization process became a subject of interest for researchers at the end of the 1960s. These studies focused on attitudes and behavior of firms in the process of going international (Li & Cavusgil 1995, p. 261). Welch and Luostarinen (1988, p. 36) state that it is the process of increasing involvement in international operations across borders, where firm expands its activities geographically, moving gradually from the domestic market to foreign markets. Internationalization was defined by Melin (1992) as a strategic change process, which results in the increase of an international enterprise involvement, and therefore, its knowledge about foreign markets, which is the core element of strategic development. Another author emphasizing the importance of knowledge in internationalization process is Beamish (1990, p. 77) who first suggested that firm starts internationalizing in the moment when its owners or managers realize the importance of involvement into foreign markets and in his later publications emphasized that during internationalization and transactions with foreign companies, a firm increases its knowledge about direct and indirect impact of the international activity (Beamish et al. 1997). Despite the dissimilarities in definitions, researchers agree that there are different stages of the internationalization process.

Researchers argue whether internationalization is a gradual, step-wise process. Majority of definitions show dynamics of the internationalization process, emphasizing its relation to change and development. However, several findings suggest that internationalization process is random. *Stage theories* (Johanson &

Wiedersheim-Paul 1975; Johanson & Vahlne 1977) argue that firm's international involvement gradually increases as it gains knowledge and experience in the international arena. The most famous Johanson and Vahlne's (1977, 1990) internationalization model, *The Uppsala Internationalization Model*, rests on the resource-based theory (Andersen 1997). The basic assumption of this model is that performing activities creates internal assets such as skills and knowledge. The Uppsala model is based on the assumptions that firm strives to increase its long-term profit and to keep risk-taking at a low level, therefore internationalization process tends to proceed slowly. The theory also suggests that companies start exporting to neighboring countries, with less psychic distance, created by language differences, culture, political systems and disturbing the flow of information between the firm and the market. Another stage model, an *innovation-related model* (Bilkey & Tesar 1977; Cavusgil 1980, Reid 1981, Czinkota 1982) states that internationalization decision is an innovation for the firm. It focuses on the learning process in connection with adopting an innovation.

The studies on firm internationalization before the 1990's are mainly based on the large multinational corporations, which developed from large, mature domestic companies (Oviatt & McDougall 1994, p. 45). However, due to the changing global business environment - technological progress, opening borders, better speed and quality of international communication, increasing numbers of people with the international experience – it became possible to conduct business activities in different countries with limited resources. This caused the emergence of the *international entrepreneurship* phenomenon (McDougall & Oviatt 2000; Zahra & George 2002). International entrepreneurship concept combines elements of international business theory and entrepreneurship theory. It was first defined by McDougall (1989, p. 389) as new international firms which from the beginning of their emergence take part in an international activity. Since then, early internationalizing firms became a very popular research subject. They have been called “born globals” (Rennie 1993; Knight & Cavusgil 1996), “international new ventures” (Oviatt & McDougall 1994), “global start-ups” (Jolly et al. 1992) and “instant internationals” (Preece et al. 1999). Such firms are defined as business organizations that, from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries (Oviatt & McDougall 1994, p. 49). Possessing limited financial resources and foreign markets knowledge, those firms manage to start international operations from or near founding.

#### **4. Methods**

The goal of the paper is to describe the specifics of born global firms functioning in Poland and to analyze entrepreneur-level determinants of the rapid internationalization of such companies. The explorative and theory-building character of the goal requires qualitative methodological approach.

The first step in the research was thorough analysis of the theoretical concepts and empirical research available on the born global companies organizational capabilities. This allowed to develop a preliminary concept at the outset of the research. Firstly, the in-depth research of the topic gave the advanced knowledge and complete understanding of the topic. Secondly, it allowed to place the empirical research in an appropriate research literature. Literature review has been carried out through a systematic analysis of 94 articles mostly from the leading scientific journals, but also from regional journals, monograph chapters and conference proceedings.

The empirical stage of the project required case study methodology, which successfully provides a dynamic and holistic view of the incident under investigation. The case study methodology is suited best when a study is asking questions How? And Why? (Yin, 1989). The case studies were based on a semi-structured questionnaire addressing key issues on the organizational capabilities of the firms. The research was based on 3 case studies of born global companies from Poland. Companies were selected according to the following criteria established by Gabrielsson et al. (2008): (1) They should be SMEs with a global vision at inception. (2) Their products should be unique and have a global market potential. (3) They should be independent firms; (4) They should have demonstrated the capability for accelerated internationalization, i.e. their international activities featured both precocity and speed. The companies which fitted the research criteria are presented in the table below.

Table 1. Case studies used for the research. Source: own work.

	Country of origin	Business type	Markets company operates in
Born Global 1	Poland	Textile industry	All over the world
Born Global 2	England	Education	Russia, China, Canada, Turkey
Born Global 3	Denmark	Circle economy technology	Brazil, Argentina, Chile, Columbia, Peru, Mexico

Data was collected according to the principles suggested by Yin (1989). First, in-depth interviews with born global entrepreneurs were conducted. After that the transcript of each interview was sent back to those entrepreneurs, to ensure that no misinterpretations occurred. Further meetings were scheduled if clarification was necessary. All interviews were transcribed. Data obtained during interviews was analyzed with the help of cross-case analysis. Cross-case analysis allowed to compare commonalities and differences in the researched companies' behavior.

The qualitative approach is broadly used in research on born global companies. For example, Gabrielsson et al. (2008) investigated born global firms using case study method in order to clarify their definition and to describe the three phases through which they progress – introductory, growth and resource accumulation, and break-out to independent growth as a major player. The authors state that the case study method is the most appropriate, as the purpose of such type of research is to generalize the results from the multiple case studies to theory and not to populations.

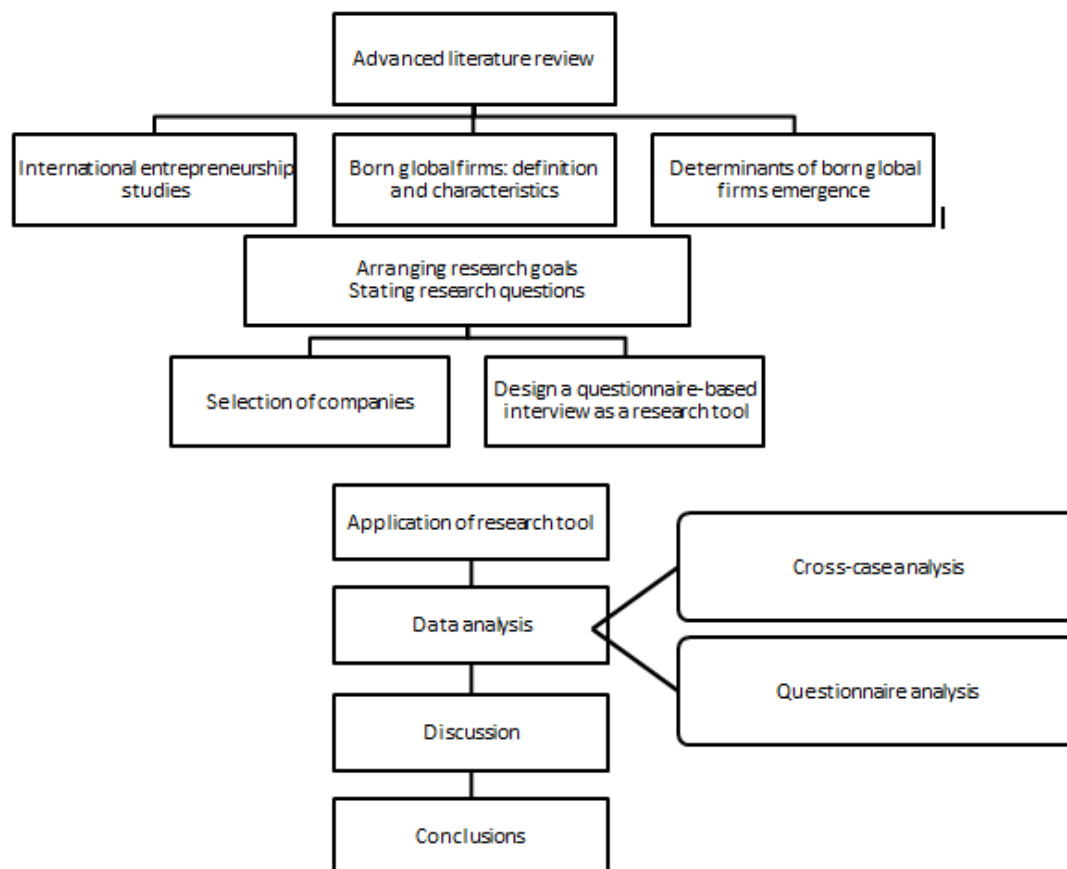


Figure 1. Methodology scheme of the paper. Source: own work.



## 5. Findings

The systematic literature review revealed that the topic of individual level factors influencing internationalization is widely discussed in the international business literature. The research methodologies used, sample sizes and context of the analysis summed up in *Figure 1* highlight balance within the international entrepreneurship research methods – there are 27 qualitative studies, 32 quantitative studies, 21 conceptual papers, 9 papers using mixed research methods (qualitative and quantitative) and 5 literature reviews.

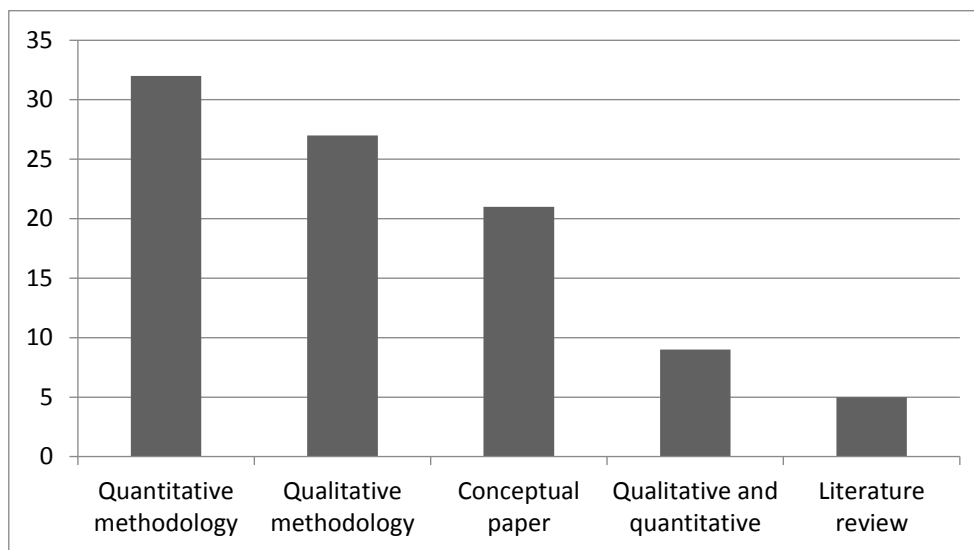


Figure 2. Methodological choices in the selected articles on the entrepreneur-related determinants of rapid internationalization. Source: Own work.

Quantitative papers dominate in the internationalization literature, although qualitative research methods, conceptual papers and literature reviews are also well represented. Empirical studies however do not tend to use a longitudinal cross-cultural approach, but focus on a specific region or specific industry and analysis tends to be short-term. The countries of origin of the studies differ significantly, what indicates the widespread research on rapid internationalization. Nevertheless, the majority of papers come from North America and the Nordic Countries.

Analysis of entrepreneur-related constructs within the internationalization process has revealed several research fields, which are partially overlapping. The main constructs relevant to the topic reviewed are: (1) innovation and technology orientation, (2) entrepreneurial /managerial knowledge, (3) entrepreneurial orientation, (4) effectuation logic, (5) international networks and (6) dynamic capabilities. Table 2 demonstrates the meaning of those constructs and their application in prior studies.

Table 2. Entrepreneur-related constructs in the prior studies and findings on early internationalization. Source: Own work.

Construct	Meaning	Supporting references
Innovation and technology	An access to the unique technology or innovational approach to organizational processes push entrepreneur towards global markets.	Vernon (1966); Rennie (1993); Preece et al. (1998); Knight (2000); Crick and Jones (2000); Chetty and Campbell-Hunt (2004); Bell and Crick (2004); Laanti et al. (2007); Freeman et al. (2006); Fernhaber et al. (2007)
Entrepreneurial/ managerial knowledge	Knowledge intensity in the specific industry, international experience, knowledge about foreign markets and internationalization knowledge accumulation influence the pace and methods of company's internationalization.	Johanson and Vahlne (1977); Luostarinen (1979); Zahra et al. (2000); Eriksson et al. (2000); Autio et al. (2000); Sharma and Blomstermo (2003); Knight and Cavusgil (2004); Prashantham and Berry (2004); Zucchella et al. (2007); Brennan and Garvey (2009); Zhang et al. (2009); Pellegrino and McNaughton (2015)
Entrepreneurial orientation	Entrepreneurial orientation is an approach combining innovativeness, proactiveness and risk-taking. It encourages experimentation, supporting new ideas, anticipating future needs, pioneering in new products/ methods and taking risks.	Covin and Slevin (1989); McAuley, A. 1999; Knight (2000); Andersson and Victor (2003); Knight and Cavusgil (2004); Jones and Coviello (2005); Jantunen et al. (2005); Freeman and Cavusgil (2007); Rutihinda (2008); Kuivalainen et al. (2012); Roudini and Osman (2012)
Effectuation logic	Effectuation is a decision-making behaviour, which is employed in the situations of uncertainty, when future is unpredictable and goals are not clearly known. Effectual thinking includes considering the available means, keeping in mind what is affordable to lose, then seeking for strategic partnerships and exploiting contingencies to control the unpredictable future.	Chandra et al. (2009); Bhowmick (2008); Mainela and Puhakka (2008); Schweizer et al. (2010); Andersson (2011); Harms and Schiele (2012); Sarasvathy et al. (2014); Gabrielsson and Gabrielsson (2013); Galkina and Chetty (2015)
International networks	Personal international networks of an entrepreneur help to find opportunities and to internationalize. Dealing with network partners for a company helps to supplement internal capabilities, for example to recruit workers with previous experience in the industry.	Forsgren (1989); Johanson and Vahlne (1990); Coviello and Munro (1997); Keeble et al. (1998); McAuley (1999); Andersson and Victor (2003); Sharma and Blomstermo (2003); Moen et al. (2004); Andersson (2004); Freeman et al. (2006); Loane (2007); Laanti et al. (2007); Rutihinda (2008); Gabrielsson et al. (2008); Chandra et al. (2009); Zhang et al. (2009); Crick and Crick (2014); Laurell et al. (2013)
Dynamic capabilities	Dynamic capabilities are the strategic routines by which ventures achieve new resources configurations. They are the drivers behind the creation of new resources and new sources of competitive advantage.	Madsen and Servais (1997); Eisenhardt and Martin (2000); Lu and Beamish (2001);  King and Tucci (2002); Jantunen et al. (2005); Sapienza et al. (2006);  Gassmann and Keupp (2007); Laanti et al. (2007); Weerawardena et al. (2007); Pranger and Verdier (2011)

## ***Innovation and Technology***

Among the key factors determining internationalization, innovation and technology orientation is often observed. In one of the first evidences on born global firms, Rennie (1993) noticed that almost half of the surveyed companies ranked technology as their most critical lever. There is an empirical evidence that SMEs in response to globalization tend to put greater emphasis on acquiring technology in order to prepare in advance before entering foreign markets (Knight, 2000; Knight, Cavusgil, 2004). Some studies (Jones, 2001; Luostarinen and Gabrielsson, 2004) state that although managers of born global companies are young and inexperienced when it comes to international business, they are often technologically competent. Especially, it is the case for high-technology companies or firms from IT sector.

Case study research showed that all born global firms surveyed use the innovational approach in their business. Entrepreneur #3, whose company is providing consultancy services for cleantech sector, said in his interview: *"We combine technologies which are already on the market with innovational approach. Our strategy has been to go for products which are proven, safe technologies but in terms of the inside technologies are radical new innovations. The products as such are known old products but we are making them optimal, new cut technologies inside our clients' companies"*. This shows that the company is highly technologically competent and puts a great emphasis on introducing new technologies on the international markets.

## ***Entrepreneurial and managerial knowledge***

Born global researchers pay much attention to the international experience and prior knowledge of an entrepreneur. There is an evidence that born global entrepreneur's international living and work experience and his education are the triggers which push them towards global markets (Madsen and Servais, 1997; Chetty and Campbell-Hunt, 2004). It is explained by the fact that prior knowledge and work experience reduce the psychic distance to global markets and minimize uncertainty. Chetty and Campbell-Hunt (2004) even hypothesize that present-day managers of born global firms are better educated than the generation of managers in 1977 when the stage internationalization model was presented. Prior international experience of an entrepreneur plays an important role in increasing the firm's speed of learning and internationalization (Oviatt and McDougall, 1997).

Researchers (Sapienza et al., 2006; Brennan and Garvey, 2009) suggest that the managers' previous international experience influences the outcomes of internationalization because it may substitute the lack of organizational experience with internationalization. They state that internationalization knowledge is already accumulated in the company through individual entrepreneurs who found the company. Entrepreneur #3 stated: *"I have been studying in 5 different countries. I have been working in 7 different countries. I was doing business with at least 50 countries before. So I would say that I had a good international experience before we started this business"*. Therefore, it might be stated that the prior international experience of the founder plays crucial role in company rapid internationalization.

## ***Entrepreneurial orientation***

Entrepreneurial orientation construct is associated with a strong leader who initiates innovativeness, proactiveness and risk taking (Knight, 2000). Firms with an entrepreneurial orientation pioneer in innovative products/ markets, engage in risky ventures and are characterized by decision action. Furthermore, according to Lumpkin and Dess (1996), such companies also connote autonomy and competitive aggressiveness, where autonomy means independent action of a person or team in giving birth to an idea, and competitive aggressiveness refers to firm's tendency to outperform in the marketplace and intensively challenge competitors.

Studies on rapid internationalization agree that born global firms tend to possess certain characteristics as management team with "unusual constellation of competencies" (McDougall et al., 1994). It has been supported by empirical research that entrepreneurial orientation has a significant effect on international

performance of companies. Entrepreneurial orientation is associated with quality leadership in born global companies (Knight, 2000; Jantunen et al., 2005; Kuivalainen et al., 2002). Researchers agree that possession of an entrepreneurial orientation is important in the development of company's strategy. Jantunen et al. (2005) state that the issue of entrepreneurial orientation within the internationalization context is a relevant and under-researched topic, and suggest that entrepreneurial orientation might have a positive effect on international performance.

All three born global entrepreneurs who were surveyed and interviewed agreed on being proactive, taking risks and being innovative, thus, showed a high level of entrepreneurial orientation.

### ***Effectuation logic***

There are several studies which connect international orientation of companies to the effectual way of thinking (Bhowmick, 2008; Mainela & Puhakka, 2008; Schweizer, Vahlne, & Johansson, 2010; Sarasvathy et al., 2014; Galkina, Chetty, 2015). A theory of effectuation, entrepreneurial way of thinking and making decisions in situations of uncertainty, was first introduced in 2001 by Saras Sarasvathy. She described two distinct types of logic used in decision-making processes – causation and effectuation. Causation refers to the typical managerial rational behavior, where decisions are based on searching the ways to reach a distinct goal. Causation starts with starting with a given goal, then focusing on expected returns and competitive analysis and finally assembling means to achieve the given goal. Effectuation includes a set of decision-making behaviours, which are employed in the situations of uncertainty, when future is unpredictable, goals are not clearly known and there is no independent environment that serves as the ultimate selection mechanism. Effectual thinking includes considering the available means, keeping in mind what is affordable to lose, then seeking for strategic partnerships and exploiting contingencies to control the unpredictable future (Sarasvathy, 2001). According to Sarasvathy, effectual thinking is the dominating logic among expert entrepreneurs in uncertain environments. Rapid internationalization of born global companies is a highly uncertain environment for a novice entrepreneur.

The first studies which applied effectuation theory in international entrepreneurship research were Andersson (2011) and Harms and Schiele (2012). They state that internationalization is basically a process of decision-making under uncertainty, therefore they claim that entrepreneurs tend to apply effectuation rather than causation. Authors agree that effectuation should be included in the future research on born globals.

Case study research showed that entrepreneurs combine effectuation approach with causation approach when making decisions and acting on them. Entrepreneur #3 said: *"It is a combination of goal and resource approach. In the beginning, of course, we invested heavily to the extent that we invested more resources than we actually had, but we only did this because we knew that investment that we did would be returned in the next couple of years. We took a chance and we took a great risk to invest, but we also did our homework, our analysis and we knew that our goal will be achieved in this investment. So it's always a balance between goal and resource approach"*. Born global entrepreneurs indeed make decisions under uncertainty, however they are guided by their entrepreneurial and managerial knowledge and experience in their actions.

### ***International networks***

Network approach suggests that traditional internationalization models are no longer applicable to internationalized markets, where firms interact with international actors within their networks. Companies develop relationships and create strategic alliances in order to exploit and enhance their own resources and to gain benefits from the resources of other firms within their network (Laanti et al., 2007). Therefore, born globals have the opportunity to globalize their activities without significant human or financial resources, as networks allow them to achieve access to complementary resources in different areas like R&D, technology, production, marketing and distribution. Sharma and Blomstermo (2003) state that the selection of foreign market entry for born global firms is based on their existing knowledge and on the knowledge supplied by their network ties. They suggest that some firms establish strong ties with internationally active firms and

consequently start internationalization processes even despite substantial cultural distance with the target market.

Entrepreneur #2 stated: *“The result of negotiations with our partner in Canada and signing the letter of intent made the result the setup of the current company. The agreement was only to do with Poland, it wasn’t initially for foreign countries. And also I suppose the initial idea was we would be outsourced from our north American partner but its now happening that our international partners in CEE countries and near East (Turkey) are coming directly to us to provide the same service”*. This is an example of how born global companies emerge because of the international networks and continue to develop within cooperation of foreign partners. Case studies presented also prove that substantial cultural distance does not limit the possibilities of international cooperation within born global business networks.

### ***Dynamic capabilities***

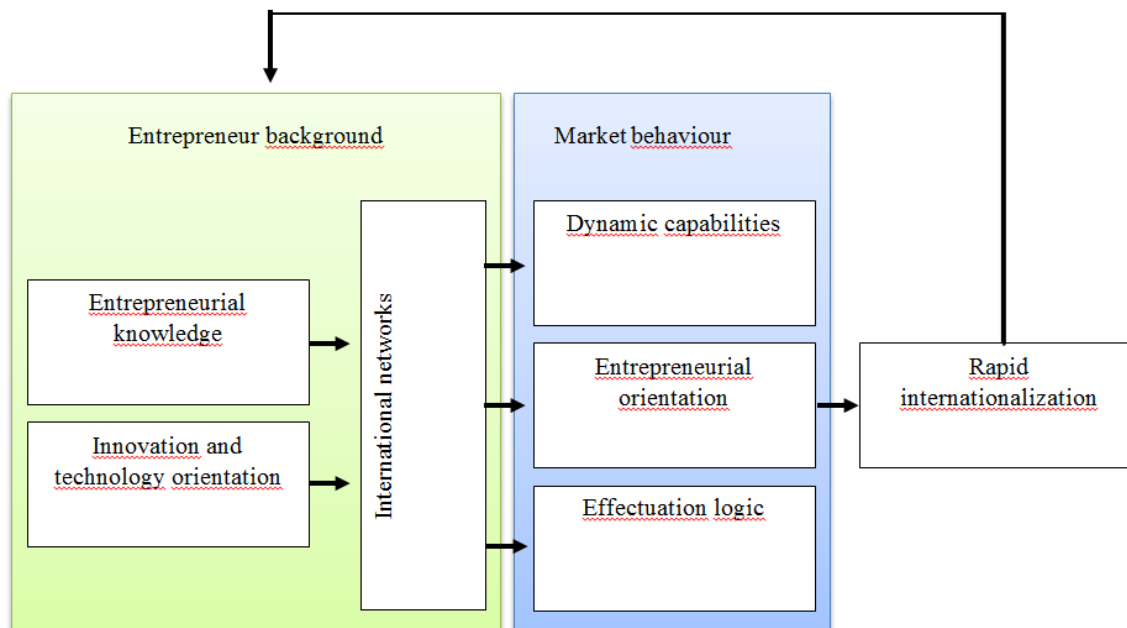
Dynamic capabilities notion has evolved from the resource-based view (Barney, 1991; Nelson, 1991) and is associated with the firm’s processes that use resources, for example the processes which integrate, reconfigure, relocate resources, which eventually might create market change (Eisenhardt and Martin, 2000). Prange and Verdier (2011) propose to divide dynamic capabilities into two groups – explorative and exploitative, where exploration refers to control, certainty, risk-reduction, while exploration corresponds to discovery, risk-taking, experimentation, flexibility and innovation. They state that both types of capabilities are applicable to internationalization, however exploitative capabilities correspond more to the incremental internationalization models, whereas explorative capabilities correspond to the accelerated foreign market entry. This distinction bears resemblance to the effectuation-causation model proposed by Sarasvathy (2001). Sapienza et al. (2006) argue that the earlier a firm internationalizes, the more deeply imprinted its dynamic capability for exploiting opportunities will be. They justify it by the fact that early exposure to internationalization creates an imprint for adaptability to uncertain environments and a receptivity for constant change.

Entrepreneur #2 stated: *“I’ll go where there is work. Government minister in 1980 Norman Tabbot said that “If you can’t find work get on your bike”. So quite simply, if I’m not able to fulfil my personal plans within 10 km radius, I’m willing to look further and further even if its 10 000 km”*. This statement is an example of the fact that explorative capabilities dominate within the mindset of born global entrepreneurs.

## **6. Discussion**

The above analysis leads to the development of conceptual framework on the entrepreneurial-related factors of rapid internationalization of born global firms. In this framework the individual-level constructs are divided into two categories – those which constitute the potential of an entrepreneur before starting a born global firm (innovation and technology, entrepreneurial/ managerial knowledge, international networks), and those which reflect the logic of an entrepreneur, his decision-making schemes throughout the internationalization process (dynamic capabilities, entrepreneurial orientation, effectuation logic).

Figure 3. Entrepreneur-related factors affecting rapid internationalization. Source: Own work.



Entrepreneurial knowledge and innovation and technology orientation are the constructs which appear in many studies on born global firms and seem to be indispensable within born global entrepreneurs. Entrepreneur's education, prior work experience, international living experience reduce the psychic distance between local and international markets (Madsen and Servais, 1997; Oviatt and McDougall, 1997). It allows entrepreneurs to see the whole world as a market place and gives them a global vision. Innovation and technology orientation is a construct often associated with born global entrepreneurs (Rennie, 1993; Knight, Cavusgil, 2004), as it allows them to operate in highly internationalized markets (IT, high-technology industries) or for more traditional industries it gives digital sales and distribution opportunities, modern communication tools or access to the latest technological advances. Using their prior knowledge and technological orientation, born global entrepreneurs use their personal international networks for entering foreign markets without substantial human or financial resources.

The second group of constructs is related to the way of thinking of an entrepreneur, his behavior and decision making models. The constructs most often mentioned in the literature are dynamic capabilities, entrepreneurial orientation and effectuation logic. Those notions are often overlapping within international entrepreneurship studies. Indeed, there are common features within those constructs. All three of them take into consideration proactiveness of an entrepreneur and constant searching for new opportunities. However, each of them has a different meaning – dynamic capabilities notion is grounded in the resource-based view, entrepreneurial orientation is a firm-level construct originating from entrepreneurship research, and effectuation logic is an entrepreneurial way of thinking and making decisions. Those constructs reflect the behavior of a born-global firm from different perspectives.

There is an evidence that rapid internationalization increases speed of firm's learning and gaining new market knowledge (Oviatt and McDougall, 1997; Chetty and Campbell-Hunt, 2004). The framework shows that after rapid internationalization born global firms gain additional entrepreneurial and technological knowledge and access to new international network chains. This process allows to search for new market opportunities and therefore creates new possibilities for born global entrepreneurs.

Emergence of born global companies cannot be explained solely by the entrepreneur-related constructs presented in the framework in Figure 3. Apart from entrepreneur characteristics, rapid internationalization may be explained by a combination of external and internal factors (Pawęta, 2013). External factors are usually connected with sectoral, regional or national export culture, specific demand characteristics or foreign trade

facilitators (Zahra & George, 2002). Internal determinants of internationalisation are unique products or services which have potential of gaining worldwide acceptance and human or financial resources availability (Cavusgil & Knight, 2009). In order to explain the rapid internationalisation phenomenon, the conceptual framework presented should be extended and include the above mentioned external and firm-level factors.

## 7. Conclusion

Multiple studies focus on determinants of internationalization of born globals, firms which enter international markets immediately after their emergence. However, those constructs are often overlapping, what causes difficulties in interpretation in the international entrepreneurship literature. This paper presents a literature review of earlier research on born global companies and presents a theoretical framework of entrepreneur-related constructs which are regarded to determine rapid internationalization based on born global literature and 3 case studies. Structuring entrepreneur-related constructs and building a conceptual framework is necessary for future international entrepreneurship research.

The major theoretical contribution of the study is the conceptual framework of the main entrepreneur-level determinants of rapid internationalization. The framework illustrates two groups of entrepreneur-related constructs in an internationalization literature – those which constitute the potential of an entrepreneur before starting a born global firm, and those which reflect the logic of an entrepreneur, his decision-making schemes throughout the internationalization process. The importance of entrepreneurial knowledge and technological orientation seem to be one of the main explanatory factors of born global companies appearance. International networking chains are a significant factor positively influencing rapid internationalization. The second group of factors connected with behavior of an entrepreneur and his or her decision-making styles.

There are also managerial implications which can be drawn from the framework developed. The framework demonstrates the knowledge and capabilities needed at the early stage of a born global startup creation and further capabilities needed for running such firm. For governmental programs supporting firms internationalization it indicates a shift from providing direct financing towards training of founders and management and development of international networks for born global firms.

Future research might try to integrate the reviewed entrepreneur-related constructs with organizational characteristics and external characteristics which determine born globals emergence. The results of the study are exploratory and there is a need in validating the theoretical framework through an advanced quantitative study.

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## 9. Appendices

### Appendix 1.

#### Questionnaire

##### **PART A.**

*Please, provide some information about yourself.*

1. How old are you?
  - 1 20-29 years
  - 2 30-39 years
  - 3 40-49 years
  - 4 50-59 years
  - 5 over 60 years
2. Gender
  - 1 woman
  - 2 man
3. What is your education
  - 1 Compulsory education → please move to question nr 5.
  - 2 Upper secondary education → please move to question nr 5.
  - 3 Higher education
4. Have you been attending entrepreneurship course during studies?
  - 1 Yes
  - 2 No
5. Are you currently running your own company?
  - 1 Yes
  - 2 No → please, answer the questions about the firm you used to run
6. Is this your first business?
  - 1 Yes
  - 2 No

##### **PART B.**

*Please answer the questions about your company.*

7. What is the size of your company according to the number of personnel?
  - 1 One-person business
  - 2 Micro-business, with less than 10 workers
  - 3 Small business, with 11-50 workers
  - 4 Medium business, with 51-250 workers
  - 5 Large business, with over 250 workers
8. What is the type of business you run? Are you operating in:
  - 1 production
  - 2 sales
  - 3 services
  - 4 mixed type of business (for example production and sales)
  - 5 other type of business, which?.....
9. What is the branch of industry where your company operates (hi-tech, IT, farmaceutic, construction etc.)  
.....
10. How long has your company been present on the market?
  - 1 Less than a year
  - 2 Over a year, but no longer than 3 years
  - 3 over 3 years , but no longer than 10 years
  - 4 over 10 years
11. Does your company operate in international markets?
  - 1 yes
  - 2 no → please move to question number 19
12. What was the period between starting your company and its entrance to the international market??  
..... years
14. How many foreign markets does your company operate in? Please, write the numer  
.....

15. Please, name those markets .....

.....

16. What was the percentage of export in company sales in the third year of company existence?

- 1 - 1-9 %
- 2 10-19%
- 3 - 20-29 %
- 4 30-39%
- 5 - 40-49%
- 6 50-59%
- 7 – 60-69%
- 8 70-79%
- 9 80-89%
- 10 - 90-100%

11 – we didnt operate in the international markets back then

17. What is the percentage of export in company sales now?

- 1 - 1-9 %
- 2 10-19%
- 3 - 20-29 %
- 4 30-39%
- 5 - 40-49%
- 6 50-59%
- 7 – 60-69%
- 8 70-79%
- 9 80-89%
- 10 - 90-100%

18. What was the form of entering first foreign market?

- 1 indirect export
- 2 direct export
- 3 foreign direct investments (FDI)
- 4 licence sale
- 5 franchise sale
- 6 strategic alliance
- 7 manager contract
- 8 other form, which?.....

**PART C.**

19. Below you can find statements describing different situations in the company. Please, refer to each of them by marking one of the answers.

	Totally agree	Rather agree	Neither agree nor disagree	Rather dont agree	Totally disagree
We analyzed the long-run opportunities and selected what we thought would provide the best returns.					
We researched and selected target markets and did meaningful competitive analysis.					
We designed and planned business strategies.					
We organized and implemented control processes to make sure we met objectives					

The product/service that we now provide is essentially the same as originally conceptualized					
We experimented with different products and/or business models.					
The product/service that we now provide is substantially different than we first imagined.					
We tried a number of different approaches until we found a business model that worked.					
We were careful not to commit more resources than we could afford to lose.					
We were careful not to risk more money than we were willing to lose with our initial idea.					
We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.					
We allowed the business to evolve as opportunities emerged.					
We adapted what we were doing to the resources we had.					
We were flexible and took advantage of opportunities as they arose.					
We avoided courses of action that restricted our flexibility and adaptability.					
We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.					
We used pre-commitments from customers and suppliers as often as possible.					
We used agreements with other people and organizations to help deal with changes in our business environment.					
Friends, family, and other network contacts provided services that we otherwise would have had to pay for.					
We were able to use family, friends, and other network contacts to provide low cost resources.					
We have focused on taking advantage of our resources and capabilities.					
Our first consideration when selecting among business options					

was our knowledge and resources.					
Our decision making has been based on the knowledge and resources we control.					
When we started the business we carefully looked at our knowledge and resources before thinking about different alternatives for products/services.					
When selecting opportunities our decision-making is focused more strongly on what we know how to do well than on external factors.					

Thank you very much for taking part in the research!



## The Influence of Entrepreneur-level Determinants on the Rapid Internationalization of Born Global Firms in Poland

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### Entrepreneur-related constructs in the prior studies on early internationalization

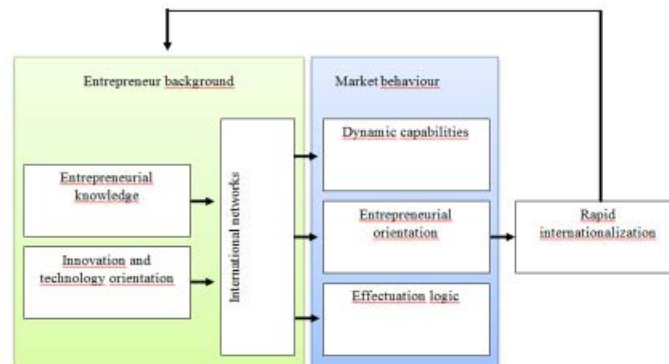
- Innovation and technology
- Entrepreneurial/ managerial knowledge
- Entrepreneurial orientation
- Effectuation logic
- International networks
- Dynamic capabilities



## Methodology

- Systematic literature review – 94 articles in 41 scientific journals
- 3 case studies among born global entrepreneurs

## Entrepreneur-related factors affecting rapid internationalization







## Conclusions and directions for further research

- Overlapping constructs → Difficulties in interpretation
- Two groups of entrepreneur-related constructs in the internationalization literature
- Managerial implications
- Future research → Integration entrepreneur-related constructs with external determinants
- Need in validating the theoretical framework through an advanced quantitative study



## The Influence of Entrepreneur-level Determinants on the Rapid Internationalization of Born Global Firms in Poland

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## **Capitalising On Institutional Voids In Emerging Markets: The Case Of Sri Lankan Transnational Entrepreneurs**

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**Keywords:** *Emerging Markets, Transnational Entrepreneurs, Formal Institutions, Informal Institutions, Institutional Voids*

### **Abstract**

Despite the rapid economic growth in emerging markets in recent years, it is argued that the uncertainty risk faced by entrepreneurs in emerging or transition economies is greater than those in more developed economies. Much of this uncertainty risk can be attributed to the institutional voids owing to missing, weak, or inadequate formal institutions. In this respect, what can we learn from transnational entrepreneurs who use their distinct advantage of bi- focality to navigate the often vastly differing institutional conditions of their country of origin and host country context? This paper posits that transnational entrepreneurs are well placed to perceive institutional differences and are not deterred to invest in these markets despite their cognisance of the institutional voids in their countries of origin. Based on interviews with 10 transnational entrepreneurs in Sri Lanka, this paper investigates how transnational entrepreneurs capitalise on institutional voids and how they are further seeking out markets with similar institutional voids in their business ventures.

## **The SEBRAE's roles in the internationalization of the Brazilian Micro and Small Enterprises**

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*Keywords: Micro and Small Enterprises. Entrepreneurship. SEBRAE. Internationalisation. Brazil.*

### **Abstract**

Micro and small enterprises (MSEs) have been attracting the attention of economic analysts, because of its potential for income and employment generation, as well as its entrepreneurial training capacity and hand labor. However, despite its importance, these companies often lack competitiveness. It can be said that the technological backwardness, lack of preparation of entrepreneurs, lack of planning, lack of resources and difficulties in access to credit are some of the obstacles inherent in MSEs in Brazil. Given this context, the Brazilian Support Service for Micro and Small Enterprises (SEBRAE), a private nonprofit organization, aims to promote the competitiveness and sustainable development of micro and small enterprises. The institution encourages entrepreneurship and sustainable development of MSEs, acting in the capacity of entrepreneurs and businessmen. Among the development projects of MSEs proposed by SEBRAE, one that stands out is the "small business Internationalization: partnerships for export." The concept of internationalization of companies, in projects of this institution, involves three main bodies: i) the care of foreign markets through exports; ii) the establishment of strategic alliances; and iii) direct investment abroad, whether for the installation of commercial offices or for the implementation of production units. The aim of this study was to analyze the results of the project "Small Business Internationalization: partnerships to export" developed by the SEBRAE in order to promote access to MSEs international market are located only in Minas Gerais State - Brazil. This research has exploratory and study data were collected through desk research in SEBRAE files, characterized as survey of secondary sources. Following were conducted unstructured interviews with entrepreneurs from different sectors affected by the actions of the program that institution during the year 2015. The research selected companies are located only in Minas Gerais State, since the tax regime adopted in this state if It differs from the others. It was found that the lack of planning, institutional void and insufficient management training are the main causes of the high number of enterprises that can not access to international markets. It was concluded that, in general, the SEBRAE's actions contributed to the search for innovative solutions for support and development of business, which seems to show the importance of such institutions in the development of the Brazilian economy, especially when it is internationalization of MSEs. The analyzed results of the project raise doubts about the effectiveness of aid programs, which stimulates the formation of export consortium as the main form of support to market access.

## Introduction

In the world scenario, micro and small enterprises make up an important part of the economy. According to data from SEBRAE (2015), in Brazil, 7.3 million formal jobs were created between 2003 and 2013 in MSEs, bringing total employment in these companies from 9.8 million in 2003 to 17, 1 million in 2013. During this period, MSEs had an average growth of 5.7% per year in the number of employees. The good performance of MSEs in this period demonstrates the importance of this segment to the Brazilian economy.

By 2013, micro and small enterprises accounted for 99 per cent of establishments, 52.1 percent of formal private non-agricultural jobs in the country, and 41.4 per cent of total wages. Between 2003 and 2013, of each R \$ 100 paid to workers in the private non-agricultural sector, about R \$ 40, on average, were paid by SEBRAE micro and small enterprises (2015).

The real average remuneration of formal employees in micro and small enterprises increased by 2.8% pa between 2003 and 2013, from R \$ 1,123 in 2003 to R \$ 1,485 in 2013. This result was higher than the increase in average income (2.4% per year) and those allocated to medium and large companies (1.8% per year).

Faced with such expressiveness, MSEs represent an important base of Brazil's economy, moving all sectors and being a significant part of the country's development.

Keedi (2007) points out that the motivation for the realization of foreign trade can originate from several factors, from commercial, political and even interest in the foreign product. Fonseca (2011) already points out that another important aspect of international trade correlates with the trade balance of countries, that is, the purchase and sale of goods and services between countries.

In general, international trade comes from a complex process that encompasses several fronts and several decisions, initiated in the analysis of the internal and external market, the competitive differential, the competition, the quality and the differentiation of the products and services that moves the financial Market and consequently the Brazil commercially and financially (Lopez, 2008; Vendramin, Teixeira, 2014).

With globalization many changes have taken place in the economic and governmental scenario, as countries have begun to protect themselves commercially and economically through regional economic blocs, such as the European Union, Mercosur, NAFTA, and others (Hoji, 2004).

Despite having registered growth in its merchandise exports over the last decade, Brazil has exported at a slower rate than other emerging countries (Unctadstat, 2012, Narula, and Kirillos, 2013). Companies that operate internationally also have advantages in that they sell their products to various countries and enable cost reduction through economies of scale (Hoji, 2004; Vendramin, Teixeira, 2014).

Traditionally export is the most popular way to enter the international markets, especially because it involves less risk, allows greater strategic and structural flexibility and requires few resources (Leonidou, Paliwadana and Theodosiou, 2011). In Brazil, exporting companies are concentrated in the industrial and commercial sectors. In 2014, industrial firms accounted for 63.4% of the total number of exporting companies in the country and accounted for 83.4% of the exported value. Commercial firms, on the other hand, made up 26.7% of the companies and 9.9% of the total exported value of the country. Regarding MSEs, the profile is different, since the commercials have a much higher share than among the larger firms (Sebrae, 2015).

Minas Gerais is the second state of the federation with the largest number of MSEs in Brazil, behind only the state of São Paulo. According to data from Sebrae (2015), in 2013 the number of companies in this segment in the state was 737,767. Regarding the evolution of the number of jobs in micro and small enterprises, in 2013, the State of Minas Gerais had 1,868,957 employees, the 2nd largest unit of the federation with the largest number of employees in MSEs, behind only São Paulo.

Considering that many studies on internationalization of companies involve large companies, Bedê et al (2013: 72) point out that:

The fact that most realized on export performance studies were conducted in the context of large multinational companies in industrialized countries shows the need to be stepped up efforts to develop focused studies on the process of internationalization and export performance of micro, Small and medium-sized enterprises (MSEs) in developing countries.

Given this fact, SEBRAE plays a relevant role in the preparation of MSEs in the internationalization of their businesses. In addition to studies and research carried out with companies of this size, SEBRAE works in programs and projects focused on training and structuring MSEs for internationalization.

Thus, the general objective of this work was to analyze the results of the project "Internationalization of small businesses: partnerships to export" developed by SEBRAE in order to promote access to the international market of MSEs located in the southern state of Minas Gerais -Brazil.

The work is structured in six sections, the first being this brief introduction. Section two presents the literature review on MSEs in Brazil, especially in the state of Minas Gerais and the internationalization of companies. Section three presents the methodological procedures used in the development of the research. Section four presents data on the projects, studies and research carried out by SEBRAE. In Section 5 the results obtained are highlighted and discussed. Finally, the final considerations of the study are presented, followed by references.

## The MSEs

In Brazil, the definition and stratification of companies according to size can be based on two criteria, which are not exclusive to each other. One is by the amount of revenue / billing and another by the number of people employed. The criterion of the value of the revenue has been used for fiscal purposes, however, to characterize them for purposes of definition and implementation of government policies, development of studies, surveys and statistical surveys, companies have been classified according to the personnel employed. The option for the criterion of total employees has some advantages in the case of carrying out surveys and statistical surveys, since this criterion is not affected by price variations over time. The predominance of this criterion reflects, especially when doing studies and research, the fact that this information (total employees) is easier to obtain and less subject to restrictions derived from commercial or statistical secrecy (Sebrae, 2015).

According to the General Law of Micro and Small Enterprises, the classification according to the gross billing takes place according to the limits established in 2006. Accordingly, those that have annual revenues up to R \$ 240 thousand are classified as Micro-enterprises and as small companies the Which bill between R \$ 240 thousand and R \$ 2.4 million, regardless of the branch of activity. For the purposes of this work, the classification according to the criterion of number of employees, described in table 01.

Table 01: Company size stratification criteria

COMPANY SIZE	BRANCHES OF ACTIVITY	
	Industry Construction Agricultural Others	Trade services
NUMBER OF EMPLOYEES		
Microenterprise	0 a 19	0 a 9
Small company	20 a 99	10 a 49
average company	100 a 499	50 a 99
Large Company	above 500	above 100

Source: Sebrae (2015)

In emerging countries such as Brazil, MSEs have been playing an important role as they produce wealth, generate income and enable economic and financial growth for many people by improving socioeconomic patterns (Sebrae, 2015, Silvia and Novôa, 2015).

The need for Brazilian companies to plan their business strategies, contemplating the possibility of the internationalization of their businesses, has been changing in Brazil since the 2000s, when the competitiveness of Brazilian companies and the vision of management became increasingly focused on the Global market (Bueno and Domingues, 2011). In the international scenario, Brazil has presented itself with the expansion of companies that, through processes of merger, acquisition, partnerships or installation of subsidiaries, have been allowing the increase of its operation and operation around the world, which brings to the fore, and the need to expand studies and research that address and analyze the strategies adopted by different types of companies (Silvia and Novôa, 2015).

Several theories and arguments are being used to defend or criticize the phenomenon of internationalization. The role of government in this process shows great variation in the experiences of international level, which creates an environment for deep discussions about the degree of state intervention in the economy (Silvia and Novôa, 2015). According to Silvia and Novôa (2015), the fact is that the world economy is increasingly integrated due to the continuous decline of the barriers imposed by governments and also by the advancement of technology, which can be expected to further boost the internationalization of MSEs.

In the case study of MSEs in the European economy, published in 2016, it is highlighted that achieving sufficient numbers of clients is one of the main stimuli for the internationalization of MSEs. Innovative activities of MSEs. The internationalization of innovation activities in these companies helps to sustain and increase the quality of products, services and customer relationships.

Recognizing the internationalization movement of MSEs, both in developed countries and in emerging countries, it becomes relevant to understand the process of internationalization of MSEs.

## INTERNATIONALIZATION OF MSEs

To understand the term internationalization, it should be noted that the concept is not closed in the sense of referring to a rigid and fixed procedure (Rocha et al, 2014). According to Dal-Soto (2008: 2) "internationalization can be defined as a growing and continuous process of involving a company's operations with countries outside its home base."

For Faro and Faro (2007), in the scope of international business and management, the use of the comparative analysis of the operating agents in a certain segment, allows the verification of the performance of a certain sector and also of the quest to overcome the challenges.

Several researchers in various areas of knowledge have been giving special attention to the topic of internationalization of companies (Oliveira, 2010). Their gaze has been kaleidoscopic, because of multiple issues that address the studies. However, a large part of the studies carried out report medium and large company experiences, thus not revealing experiences in internationalization of MSEs (Oliveira, 2010).

The study on Italy's competitive position in the world economy, conducted by the Italian Ministry of Industry, points out that considering the main EU countries, Italy with 95% of companies with less than 10 employees holds the record of productive fragmentation (MINISTERO DELLE ATTIVITÀ PRODUCTIVE, 2005). In Spain, the Chups case, which is considered to be very small in the past, today is the world leader in the manufacture of lollipops based in Barcelona, reveals the importance of researching the phenomenon of market opening of micro and small companies.

When it comes to internationalization, the sector in which MSE operates can influence competitiveness factors, barriers to entry, learning opportunities and the incorporation of value into the product, as well as the number and type of competitors. More traditional markets such as manufactures (furniture and footwear) may have a closed structure controlled by global players that limit MSEs to the development of very peculiar activities in the value chain. However, sectors such as services sometimes

have the characteristic of being more decentralized, thus opening up greater possibilities for MSEs (Sebrae, 2006).

The main barriers in negotiation among countries include in language, context, ways of doing business, economic system, relationships, political system, geographic distance, regulatory system, market maturity, consumer expectations (Rocha, 2004).

For Urbasch (2004), developing international business allows access to new markets, compensates for economic cycles in Brazil, leverages Brazilian cost competitiveness, increases sales and production volume, thus reducing idleness, allows revenue in a strong currency, Advantages in the positioning in the domestic market, etc.

In emerging markets, due to the institutional reality that is uncertain and biased in favor of large corporations, the challenges of MSEs in the internationalization process has promoted an increasing interest in research. According to the Uppsala model, the saturation of the domestic market and the gradual process of acquiring knowledge of the foreign market, together with the opportunities that have emerged, is the reason for the internationalization of the company. (Wright et al., 2005; Buckley et al., 2007; Zhu; Hitt; Tihanyi, 2007; Nguyen; Le; Bryant, 2013; Silva et al 2015).

Studies carried out in emerging countries regarding the internationalization of MSEs demonstrate that national policies on the subject are beneficial for strengthening structural deficiencies such as lack of financial resources and information on the foreign market, lack of inputs, among other factors (Smallbone, et al. Todd and Javalgi, 2007, Campos et al., 2011).

Balestrin and Verschoore (2008) point out that through cooperative strategies, MSEs exchange experiences, share information and may even offer differentiated products in the market, which allows a change of posture to provide an effective accumulation of knowledge towards competitors. This type of strategic alliance becomes widely used in encouraging the internationalization of MSEs in Brazil. It should be noted that strategic alliance consists of interorganizational collaboration, with a vision that guides its management and evolution, develop collective knowledge, acting in a coordinated way to search for results (Lacombe, Heliborn, 2003, Aaker, 2009).

In this context, the Export Promotion Agency (APEX) created the export consortium in Brazil in 2001 and started to prioritize this model to encourage MSEs to start their internationalization process (Bonelli, Motta Veiga, 2004)

Therefore, SEBRAE, in partnership with other institutions and with the Federal Government, develops programs and projects to encourage and support the internationalization of MSEs.

## **Methods**

This study adopts a qualitative research approach. The methodology used involves a case study with data collection based on documental and bibliographic research. The data collected were extracted from reports, studies and research published by SEBRAE, as well as information from periodicals specialized in the subject in question.

For the data collection, initially, used bibliographic research, such as books, periodicals, magazines, newspapers and internet, as well as dissertations and theses, with the intention of deepening the knowledge regarding the researched subject. Documentary research was also carried out, including execution projects and management reports that were made available by SEBRAE, the institution that was part of the study.

The primary data were obtained through semi-structured interviews conducted with two entrepreneurs who participate in SEBRAE actions for the internationalization of MSEs and who already export their products.



The selection of the interviewees in the study was randomly defined from the SEBRAE-MG database, based on accessibility and respecting their availability. Two interviews were conducted with entrepreneurs from different municipalities and sectors.

The issues addressed in the semi-structured script dealt with the following items: 1) Motivation to act in the external market; 2) Formation of Strategic alliances; 3) Investments in Internationalization; 4) Institutions that supported the internationalization process; 5) The way the SEBRAE internationalization project influenced the company; And 6) relevant points to be highlighted by the entrepreneur in the internationalization process.

We used the technique of content analysis in the treatment of interview data. The content analysis was conducted following the basic steps proposed by Bardin (2004): pre-analysis, material exploration and treatment of results and interpretation.

It will also be used the Content Thematic Analysis that according to Minayo (2007), unfolds in the steps of pre-analysis, exploration of the material or codification and treatment of the obtained results / interpretation. In this analysis, the researcher seeks to find categories that are expressions or meaningful words according to which the content of a speech will be organized.

## **Findings**

### **SEBRAE IN THE PROCESS OF INTERNATIONALIZATION**

SEBRAE developed a study in which it shows that the distribution of exports of MSEs according to value ranges has gradually evolved in favor of the companies allocated in the higher strata in the period from 1998 to 2014. The research also shows that among the microenterprises, the participation of those who More than US \$ 60,000 each year went from 13.8% in 1998 to 20.5% in 2014, and its share in the total value exported by the micro companies increased from 43.3% to 64.3% in the period (Sebrae , 2015). The research shows that, in the same period, the distribution of exports of MSEs according to value bands gradually evolved in favor of the companies allocated in the higher strata. The study also highlights that from 13.8% in 1998 to 20.5% in 2014 the participation of micro-enterprises that export more than US \$ 60 thousand each year. The share of microenterprises in the total value exported also rose, from 43.3% in 1998 to about 64.3% in 2014.

Small companies that export more than US \$ 600,000 each year rose from 9.6% To 16.7% and its share in the exported value went from 38.5% to 58.3% (Sebrae, 2015).

In exports of MSEs, the share of manufactures products in exports has always been significant, with 75% of participation in sales of small companies and 80% of microenterprises (Sebrae, 2015).

The MSEs are very concentrated in the states of São Paulo, Minas Gerais, Paraná, Santa Catarina and Rio Grande do Sul. These five states accounted for 55.3% of total sales in 2014, compared to about 75% of the MSEs. Regarding exports, São Paulo was responsible for 22.8%, Minas Gerais for 13.1%, Rio Grande do Sul for 8.3%, Paraná for 7.2% and Santa Catarina for 4.0%. Rio de Janeiro, which accounted for 10.1% of exports (benefiting strongly from oil sales), the state of Mato Grosso, responsible for 6.6%, Pará, 6.4%, and Espírito Santo, with 5.7% of the total (Sebrae, 2015).

It is worth mentioning that in Brazil the exports of MSEs are concentrated in low technology goods. It can highlight food, wood products and iron and steel products, food, clothing, footwear and textiles. Regarding the medium-high technology goods, stand out different types of machinery and equipment, auto parts and chemicals. Low and medium technology goods accounted for about 64% of total exports of MSEs (Sebrae, 2015).

With the activities of the World Trade Organization (WTO), barriers to free trade were gradually eliminated. As a result, a single market was created today as a global market.

Some of the positives of globalization may be its importance in fighting inflation by facilitating the entry of imported products and also increasing the export of products (Minervini, 2008). This made it possible for companies to become more competitive in the market, the consumer had access to imported goods that were often of better quality and cheaper than those produced in their own country, enabling better relations with other countries and favoring technological development (Sales et al., 2014).

Some elements can be highlighted as explanatory factors for the internationalization movement of Brazilian companies. According to Hiratuka and Sarti (2011: 34):

The creation and enhancement of productive, technological and commercial assets have generated increasing competitiveness of Brazilian multinationals, particularly in traditional sectors of commodities, earning synergy with location advantages in new markets.

The authors also present three factors that help in understanding the process of internationalization in Brazil, the first being a significant improvement in the financial condition of Brazilian companies. Then, the process of valorization of the national currency, which in one way may have reduced the competitiveness and profitability of exports, meanwhile allowed assets located abroad to become more attractive in the Brazilian currency. Finally, the support policy promoted by the Brazilian government to the internationalization process (Hiratuka and Sarti, 2011).

To enter the international market, there are some alternatives, which according to Rossi and Sacchi (2006: 112), consists of: a) direct and indirect export and import; B) licensing; C) franchise; D) manufacturing contract; E) management contracts; F) shareholding, total or partial; Eg) joint venture.

Exporting is only the first step in business operations abroad, since there is still the so-called "aspirator" effect that emerges for products when there is a consolidated local presence (Urbasch, 2004; Oliveira et al., 2010).

## Discussion and Implications

The case study was carried out in two companies located in the southern region of Minas Gerais of different sectors. Firstly, an interview was made with the legal representative of a company that until 2014 worked through an Association of coffee producers located in the municipality of Poços de Caldas, which markets its products based on Fair Trade production and marketing standards To which the association is certified. This association is one of the fifteen associations of Brazilian producers [Fair Trade Certified](#) participating in the project Responsible Sourcing Partnership (RSP) designed to improve the quality of Brazilian coffee, increase market linkages and production capacity. Participation as an associate enabled the entrepreneur to gain experience and *know-how* to go to an independent role in the global market. According to the businessman, the participation of SEBRAE in the development of the association was fundamental for the product internationalization project to be carried out.

It is worth mentioning that since 2007, Sebrae has partnered with Fair Trade USA, the American Agency for International Development and Walmart to increase certification, develop and consolidate sales in the global market. The institution invested approximately US \$ 1.9 million in infrastructure, technical assistance in production, product processing and training for producers in Minas Gerais, São Paulo and Espírito Santo, by the end of 2010, of which 90% were destined to actions for the benefit of the producers of the state of Minas Gerais.

In the company in question, which will be called in this research with the fictitious codename "Empresa Alfa" and its representative as "Interviewee A (ENT. A)", which produces and markets raw coffee beans, reaching 18 employees hired in period Has approximately 60% of its production destined to the foreign market, having as clients other entrepreneurs in the following destinations: USA, Switzerland and Germany.

The motive presented by the entrepreneur to leave Fair Trade production, marketed and exported through the Association was the fact of the restriction as to be a family producer, because it is not possible to

hire employees and keep Fairtrade. Due to this fact and with the possibility and expansion in the market, the entrepreneur chose to focus his efforts in the search and expansion of markets.

Of the most significant actions developed by SEBRAE that allowed the internationalization of the company's businesses, the entrepreneur pointed out that training in management, training of the workforce, instruction in principles of cooperativism and associativism, missions to access national and International companies to expand marketing and specialized consulting, were the actions that contributed most to the development of your business.

The second company surveyed is located in the municipality of Santa Rita do Sapucaí, also located in the southern region of the state of Minas Gerais. The region that the company is located is known as Vale da Eletrônica and the company is considered small. The company that will be called in this research with the fictitious code name "Enterprise Beta" and its representative as "Interviewed B (ENT. B)" was founded in 2001 and produces automotive safety equipment and has 36 people working directly in the company. Since 2011 the company exports its products, and currently 30% of its production is destined for foreign markets. The main destination of its products are the Mercosur countries, and Argentina is the country that is intended the largest export volume.

As the exposed interviews in Table 1 fragments, it will be presented elements related to the process of internationalization of companies, considering the themes or categories defined in the purpose of this study and according to the theoretical framework set up. It is noteworthy that there were six issues / defined categories of analysis are: Motivation to act in the foreign market; Training Strategic alliances; Investments in internationalization; Support Institutions; SEBRAE internationalization project; Relevance in the internationalization process.

Table 1 shows some fragments of interviews with entrepreneurs.

Table 1: Repertoire Interpretive

Categories	Illustrative fragments
Motivation to work in the foreign market	(ENT. A): [...] Expand the market of action (ENT B): [...] Opportunity to offer a more developed product at a lower cost.
Building Strategic Alliances	(ENT): In association, in addition to joining to sell abroad, we improve the product and the way of handling, increase the quality and stop mistreating our land with pesticides. (FAIR TRADE) (ENT B): Export Consortium
Investments in internationalization	(ENT): [...] For the next 6 years I intend to invest in the company to expand the business, above all, the international business, also offering the Gourment finished product. (ENT B): [...] seek new trade representatives and expand to Central America
Supporting Institutions	(ENT. A): ASSODANTAS and SEBRAE (ENT B): SINDVEL, Industrial Association of Santa Rita do Sapucaí and SEBRAE
SEBRAE Internationalization Project	(ENT): With SEBRAE's training and consulting, I realized that I lacked technology in my production process and that was compromising both quality and productivity. I have changed my consciousness to conduct commerce and business in general. (ENT B): [...] has demonstrated the possibility of being a company without frontiers. [...] the capacities made realize the need not only for the quality product but for a professional management to achieve internal and external market.
Relevance in the internationalization process	(ENT A): [...] The difficulties in finding new international markets, due to the lack of information on these markets and also issues related to communication. Finding an articulator abroad is also complex because there are many cases of favoring a specific group of companies, the ones that give better returns to this articulator. (ENT B): [...] to train more on international trade laws and also on taxation of products. I am having great difficulty finding an accounting professional with specific experience and knowledge in foreign trade, currently one of the limitations of the business.

Source: Prepared by the author

It is observed that when asked about motivation to act in the foreign market, the respondent "A", which operates in the coffee market, a product which it is a commodity, your answer is straightforward when you point to increase its market. It is worth considering that in the case of Alpha company, at the beginning of its internationalization process it operated through the Association in the Fair Trade model. However, when glimpsing an opportunity to expand the market and due to restriction of the Fair Trade model for hiring employees, the entrepreneur chose to go his own way and it was found that the association with its operating model in foreign trade served as a springboard for that Alfa company had access and better opportunities in foreign markets.

When asked the same question, the respondent "B" Beta company, demonstrates a higher level of information to operations in foreign markets. It was pointed out during the interview that was conducted market research on potential possible locations for export of their products. With the help of SEBRAE and Union of Industries of Electric, Electronic and Similar Electronics Valley (Sindvel) through the existing export consortium that productive group. The fact of acting through a consortium brings the advantage of companies sell their products to other countries allowing the reduction of export costs, since the consortium administrative and logistical costs are shared with the other consortium members (Vendramin, Teixeira, 2014).

When asked about the topic Strategic Alliances established, it is noteworthy that the respondent "A" emphasized the importance of the Association at the beginning of the internationalization process, as well the collective learning related to product export processes, the "A" respondent points out *know How* acquired in the production and quality of products. The actions developed by SEBRAE in the Association, management training has also been working intensively with the producers, we can say that contributed to the businessman to improve their knowledge and management skills, a fact raised when asked about the participation of the internationalization project SEBRAE. Bueno and Domingues (2011) has highlighted the need for companies to develop their management capacity enables them to carry out the planning of their strategies contemplating the internationalization of its business.

While on the subject Strategic Alliance, the entrepreneur "B" when asked reinforces the relevance of the Export Consortium. Soares (2004) points out that the main advantage of the consortia is the use of specialized intermediaries in foreign trade to make viable operations with limited financial and learning costs.

Concerning the topic of investments for the internationalization, the respondent "A" company points out that Alfa plans to invest in internationalization and start production of a Gourmet Coffee, already industrialized. Interviewee "B", the Beta company, says it plans to seek new international representatives to expand the market for Central America. Note that as already highlighted by Urbasch (2004), developing international business leverage competitiveness and provides access to new markets.

The theme support institutions that helped and gave support to MSEs to internationalize their business, both highlighted the SEBRAE as a key institution for this process, followed by the Coffee Growers Association, for Alfa and the Union company of Electrical Appliance Industries, Electronics Similar and Electronics Vale to Beta company. According to Sebrae (2015), internationalization is no longer an option for companies, but one of competitiveness and survival strategy.

Concerning the theme SEBRAE International Project, the respondent "A", the Alfa company, emphasizes the importance of consulting in business management received by the institution to improve the quality, productivity and ability to perform general business. Interviewee "B", the Beta company, emphasizes the importance of training for professional management. It is observed in the speech of respondents who SEBRAE has been serving its purpose which is to act in the capacity of MSEs, stimulating entrepreneurship and sustainable development. It is noteworthy that the project developed by the institution "small business Internationalization: partnerships to export" which aims to service foreign markets through exports; ii) the establishment of strategic alliances; and iii) direct investment abroad, whether for the installation of commercial offices or for the implementation of facilities, guided the issues and questions used in the semi- structured interviews. The reason for the SEBRAE invest in training to entrepreneurs justified by the results of research in which points out that the lack of planning and management training are the main causes of the high number of enterprises who can not access to international markets (Sebrae, 2015).

The last topic discussed in the interview, with respect to any material fact in the internationalization process that had not been contemplated in the interview and the respondent would like to highlight, the respondent "A" Alfa company pointed out that communication was a great limiter. As another important element was highlighted the difficulty of a sales representative, or articulator, which does not favor other business groups that offer greater benefits. For the respondent "B", the Beta company, the relevant points concerning the taxation of products, international laws, and an accounting professional with experience and knowledge in international trade are the main hindering. Rocha (2004), had already pointed out that the language, the ways of doing business the regulatory system, the maturity on the market in other aspects were considered the main barriers to trade between countries in a global marketing context.

### **Concluding Observations**

The research described in this article highlighted the perception that there is a broad field of study to explore what is the MSEs of internationalization in Brazil, because its characteristics, financial constraints, lack of knowledge to act in the foreign market, become matters a lot peculiar of this size business reality. Moreover, it investigate the strategies that MSEs are to enter the international market, even in a way sometimes disabled.

It was found that the language is still a barrier for the negotiation of MSEs, even though there are technological tools that assist in communication. It was found that in some cases, despite the existing links between MSEs, collective learning gained from the participants, the consolidation of an association to represent the interests of entrepreneurs in the internationalization of its business, the model adopted, such as Fair Trade, It may not be favorable in environments where entrepreneurs have growth prospects and expansion of their businesses.

Regarding the care of the external market, it was observed that exports predominate as the first step towards the internationalization of MSEs. In general, companies start in this mode to market products internationally and after acquiring *know-how* at this point, seek to expand their negotiations, whether in opening branches abroad or seeking representatives to publicize and market the products in other countries. From the national point of view to export activity and create jobs, is an exchange mechanism between the countries, which favors the development of new technologies and improve the living standards of the population (Leonidou, et al., 2011). It is noted that in relation to foreign direct investment, these flows are still considered low of MSEs in Brazil compared to other countries and the size of the economy.

Regarding the Strategic Alliances, it is clear that because of the limitations of MSEs, the most viable way to start the internationalization takes place by this means. However, it is noteworthy that in many cases existing strategic alliances still prevails the spirit of competition among members, overlapping cooperative behavior which such structures require.

Regarding the project developed by Sebrae, "small business Internationalization: partnerships to export", it can be observed that many MSEs started their business internationalization experience through this initiative. Overall it is considered positive project results, as well as enabling the inclusion of MSEs in a global context, the actions taken, such as training, consulting management, cooperatives and associations, among others, contributed to the companies professionalizassem not only to act in the foreign market, it was also possible to acquire more knowledge to meet the internal market more effectively.

Finally, it is pointed out some limitations of the research. The restriction of entrepreneurs to report accurate data of billing the company and the volume of production / marketing does not make a deep analysis of the representativeness of exports in the company's financial results. Another limitation is about the size of the sample, which does not generalize results. For further research are recommended to expand the number of MSCs studied and perform a longitudinal analysis of a period which the company was participating in the SEBRAE project and the period in which the company was not bound.

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## **The SEBRAE's roles in the internationalization of the Brazilian Micro and Small Enterprises**

**Authors:** Thiago de Sousa Santos  
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### **Introduction**

Micro and small enterprises (MSEs) have been attracting the attention of economic analysts, because of its potential for income and employment generation, as well as its entrepreneurial training capacity and hand labor

## Introduction

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Given this context, the Brazilian Support Service for Micro and Small Enterprises (SEBRAE), a private nonprofit organization, aims to promote the competitiveness and sustainable development of micro and small enterprises. Among the development projects of MSEs proposed by SEBRAE, one that stands out is the "small business Internationalization: partnerships for export."

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## Introduction

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The concept of internationalization of companies, in projects of this institution, involves three main bodies: i) the care of foreign markets through exports; ii) the establishment of strategic alliances; and iii) direct investment abroad, whether for the installation of commercial offices or for the implementation of production units.

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## The main theoretical issues covered

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- Internationalization of MSEs
- Relevance of MSEs in the Brazilian economy
- The role of SEBRAE in the development of MSEs

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## Search objective

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The aim of this study was to analyze the results of the project "Small Business Internationalization: partnerships to export" developed by the SEBRAE in order to promote access to MSEs international market are located only in Minas Gerais State - Brazil.

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## The methods

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This research has exploratory and study data were collected through desk research in SEBRAE files, characterized as survey of secondary sources.

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## Key findings

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- In Brazil the exports of MSEs are concentrated in low technology goods
- Regarding the care of the external market, it was observed that exports predominate as the first step towards the internationalization of MSEs
- The SEBRAE support made possible the internationalization of the MPEs participating in the project

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## The implications of the findings for policy and practice

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- It is necessary to strengthen the culture of cooperation among the MSEs so that the strategic alliances for internationalization are effective.
- The language, excessive bureaucracy and high taxation of the country make some MSEs unable to start the process of internationalization.

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## Future Research


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For further research are recommended to expand the number of MSEs studied and perform a longitudinal analysis of a period which the company was participating in the SEBRAE project and the period in which the company was not bound.

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**Thanks!**

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**Sub-theme 3:**  
**People, Networks and Social Aspects**



## **Female Entrepreneurship, Internationalisation and Sustainable Finances**

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Keywords: *Gender, Entrepreneurship, Internationalisation, Sustainable Finances*

### **Abstract**

The purpose of this paper is to analyze certain financial aspects of entrepreneurship in Europe. From a gender perspective and regarding issues of sustainable finance, such as job creation and funding new businesses, as well as the foundation for the internationalization of these activities.

With this aim, we used data from the Global Entrepreneurship Monitor, mainly those financial factors of entrepreneurship taking into account possible differences in gender, e.g. if previous employers have provided financial support and/or physical infrastructure at the start of the new business, the structure of ownership in its business from the capital contributed by their owners and the financial capacity to remunerate the jobs created (even to the owners themselves, in the case of self-employment). Furthermore, to analyze the returns generated which also provide funding to the business. In this work, we will consider the capacity to generate returns for business which were created 4 years ago; moreover, the capacity to fund other entrepreneurs. All these aspects can represent indicators of the consolidation of the activity and a starting point for possible internationalization. Thus, by means of a logistic regression we will try to determine the main finance factors which affect the internationalization of entrepreneurs.

### **Introduction**

The female segment, in their investments usually prioritize the social needs against other targets. In other words, their investments are socially responsible and are seen as important agents when funding other entrepreneurship ventures (Agier and Szafarz, 2013; Haile, Bock and Folmer, 2012) and, therefore, help to improve the average standard of living.

Furthermore, there is abundant literature which deals with female entrepreneurship, employment and self-employment (Berner et al. 2012; Lighthelm, 2005; Neck, Brush and Allen, 2009; Pathak and Gyawali, 2012; Peredo and McLean, 2006; Seelos and Mair, 2005), together with the funding of female entrepreneurs (Hosseini, Bakhtiari and Lashgarara, 2012; Weber and Ahmad, 2014; Puhorit, 2000) and sustainable finances (Sanfeliu, Royo and Clemente, 2013; Cervelló-Royo, Moya-Clemente and Ribes-Giner, 2015; Garikipati, 2008; Goetz and Gupta, 1996; Hashemi, Schuler and Riley, 1996; Kabeer, 2001; Karlan and Valdivia, 2011; Ngo and Wahhaj, 2012). However, despite the several studies carried out so far, there are no signs about which factors contribute to the success and internationalization of female entrepreneurship

and its relationship with sustainable finances. That is the reason we consider it would be of interest to go in depth in this relation.

Thus, the purpose of this paper is to analyze certain financial aspects of entrepreneurship in Europe. From a gender perspective and regarding issues of sustainable finance, such as job creation and funding new businesses, as well as the foundation for the internationalization of these activities.

With this aim, we used data from the Global Entrepreneurship Monitor, mainly those financial factors of entrepreneurship taking into account possible differences in gender, e.g. if previous employers have provided financial support and/or physical infrastructure at the start of the new business, the structure of ownership in its business from the capital contributed by their owners and the financial capacity to remunerate the jobs created (even to the owners themselves, in the case of self-employment). Furthermore, to analyze the returns generated which also provide funding to the business. In this work, we will consider the capacity to generate returns for business which were created 4 years ago; moreover, the capacity to fund other entrepreneurs. All these aspects can represent indicators of the consolidation of the activity and a starting point for possible internationalization. This work is part of a global project focused on female entrepreneurship.

## Literature Review

Entrepreneurial ventures (Agier and Szafarz, 2013; Haile, Bock and Folmer, 2012; Peña-Legazkuei; Guerrero, González-Pernia, 2013), internationalization, competitive strategies and innovation continue to focus on academic and business interests ( Baumol, 1990; Vila and Kuster, 2007; Hernández-Perlines, Moreno-García and Yañez-Araque, 2016).

When analyzing entrepreneurship literature, it can be checked that most of the academics deal with entrepreneurs in general. Most of them recognize entrepreneurship as a key driver of economic growth (Acs, Audretsch, and Strom, 2009; Acs, Desai and Hessels, 2008; Audretsch, 2007a, 2007b; Audretsch and Acs, 1988; Baumol, 1990; Berner et al. 2012; Chavis, Klapper and Love, 2011; Cumming et al. 2014; Fairlie and Chatterji, 2013; Klapper and Love, 2011; Marcotte, 2012; McMullen, 2011; Naude, 2010; Stam and Wennberg, 2009; Thurik, Carree, van Stel, and Audretsch, 2008, among others). In this vein, worldwide government bodies have sought ways to stimulate growth through entrepreneurship, including access to entrepreneurial finance (Bonini, Alkan, & Salvi, 2012; Cumming et al. 2014; Fossen, 2011; Nahata, 2008; Wang & Wang, 2012) together with appropriate governance and legal protections for creditors, contracts and shareholders (Acemoglu & Johnson, 2005; Fan & White, 2003; Klapper, Laeven, & Rajan, 2006; Peng et al. 2010; among others). For example, many government bodies around the world have implemented direct investment pro-grams to finance entrepreneurs through incubation centers and government venture capital funds (Cumming et al. 2014; Cumming & Fischer, 2012). On the other hand, Governments have likewise implemented tax policies to stimulate entrepreneurial activity (World Bank, 2004). Prior work is highly consistent with the view that these policies are important for stimulating entrepreneurship (Keuschnigg & Nielsen, 2003, 2004) and internationalization or innovations considering gender factor (Brush, Bruin and Welter, 2009; Kobeissi, 2010; Clark Muntean, 2013; Max and Ballereau, 2013; de la Cruz Sánchez-Escobedo *et al.*, 2014; Henry, Foss and Ahl, 2015; Poggesi, Mari and De Vita, 2015, 2016). Particularly, it has been found that female entrepreneurs are less likely to export and to participate in research and technology (Nissan, Carrasco and Castaño, 2012).

During last decades, researchers have tried to explain export behaviour (as a part of the internationalization behavior) on the basis of a wide variety of managerial characteristics, such as demographic, psychological and attitudinal traits of the key decision-maker/s in the firm. However, although managerial influences are one of the most widely studied, they are one of the least conclusive areas of exporting research (Welch, Welch and Hewardine, 2008). That is, not that much differences have been found in terms of international success between entrepreneurs with different profiles.

When narrowing the scope from export managers to international entrepreneur, managerial characteristics appear to have higher direct influence (Welch, Welch and Hewardine, 2008). However, although gender as a possible factor affecting international entrepreneurship is being considered in previous studies, it seems that it is not the primary determinant of internationalization and that the problems faced by female-

owned firms were very much those of any similarly sized firm seeking to internationalise (Welch, Welch and Hewerdine, 2008).

While empirical data are rare, it would appear that women-owned enterprises are less likely to export than their male counterparts. Yet the limited studies undertaken on the topic have not found gender to be a statistically significant variable for explaining export behaviour. (Welch, Welch and Hewerdine, 2008; Nissan, Carrasco and Castaño, 2012a, 2012b).

It is important to note that exporting is a straightforward internationalization initiative widely used by SMEs (Fernández-Mesa and Alegre, 2015). Reviewing the internationalization entrepreneurial literature, there are two main concepts defining this issue: international new ventures, and born global.

On the one hand, international new ventures are defined as “business organizations that, from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries”. This corresponds to a more conventional internationalization point of view. In contrast, “born global” entrepreneur firms, are those which are “young, entrepreneurial start-ups that initiate international business (typically exporting) soon after their conception”. They seek to derive a substantial proportion of their revenue from the sale of products in international markets (Tamer Cavusgil and Knight, 2015).

Born global firms, although relatively small in scale and limited in tangible resources, are usually endowed with distinctive intangible resources and capabilities. (Tamer Cavusgil and Knight, 2015). Given their limited resources, they tend to favour exporting as their primary entry mode. (Tamer Cavusgil and Knight, 2015). Therefore, founders of born global firms, view the world as their market- place. This represents a challenge to the conventional pattern of gradual, incremental internationalization view, typically present in larger and more traditional firms (Tamer Cavusgil and Knight, 2015).

Enhanced in part by technologies, the cost of internationalization no longer seemed to hinder foreign expansion of smaller, under-resourced companies, such is the case of entrepreneurial ones (Tamer Cavusgil and Knight, 2015).

Within this paper, exporting is analyzed as an internationalization initiative. Moreover, the scope of this study has been narrowed to Early Stage Entrepreneurs, analyzing the share of them which are born globals. International entrepreneurship is understood as a combination of innovative, proactive, and risk-seeking behaviour that crosses national borders and is intended to create value in organizations (Oviatt and McDougall, 2005). Innovation can be defined as the successful implementation of new ideas, including novelty and usability as two indispensable conditions (Fernández-Mesa and Alegre, 2015).

Going through the existing literature, some previous studies have found that innovation increases export performance of SMEs and particularly entrepreneur initiatives (Fernández-Mesa and Alegre, 2015). Entrepreneurs who choose to innovate are more likely to internationalize their activity (M. S. Castaño, Méndez and Galindo, 2016). The influence of innovation (in terms of investments in R&D) are moderated by gender such that men-operated businesses are more likely to export than female-operated businesses (Orser, Spence and Riding, 2010). Despite the existence of some pieces of research analyzing the relationship between international entrepreneurship and innovation, the moderate effect of gender has not been analyzed in detail to date within this context. Considering the gender factor in international entrepreneurship orientation, there are just a few papers that include it. The most relevant ones are Welch et al. (2008) and Orser et al. (2010).

The present study tries to respond to Poggese et al (Poggese, Mari and De Vita, 2015) call for more research on international entrepreneurial orientation.

## Objectives

We study export orientation and its relationship with aspects related to finance and gender. Thus, the main aim of this paper is to provide more insights on Spanish entrepreneurs with international presence by considering two perspectives. On the one hand, the gender factor of entrepreneurs. On the other hand, mainly those financial factors of entrepreneurship e.g. if previous employers have provided financial support and/or physical infrastructure at the start of the new business, the structure of ownership in its business from the capital contributed by their owners and the financial capacity to remunerate the jobs created (even to the owners themselves, in the case of self-employment). Furthermore, the capacity to generate returns for business.

## Methods

To develop this piece of research, data from the Global Entrepreneurship Monitor related to Spain has been exploited.

Thus, the study of entrepreneurship from a gender perspective developed in this study is based on the following sources of information. Data and documentation from the project Global Entrepreneurship Monitor (GEM) which is based on surveys of the adult population aged 18 to 64 years old. Within this group, we have selected data corresponding to Spain, and the data of people involved in business creation, according to the definition of the rate of entrepreneurial activity, acronym, TEA. The sample size obtained after this filter is 1,086 people. The technical specifications of the study are detailed in Table 1.

**Table 1. Technical specifications**

Area	Spain
Sample	Adult population whose age is comprised between 18-64 years, they come from Spain and are involved in the creations of business according to the TEA definition
Methodology	Survey carried out by the Global Entrepreneurship Monitor (GEM) in the year 2012
Size of the sample	1,086 people
Trust level	95.5%

Source: Authors' own elaboration

Spain has been chosen as being a developed European country, however, its current economic situation has led to a new scenario in which there is a special need for further research on the international profile of the entrepreneurs. With this purpose, we have carried out a logistic regression in which the internationalization factor measured by export intensity is considered in the variable TEAEXP; therefore, variables related with finances were considered with the purpose of measuring their effect on the export orientation and if they increase or decrease the probability of companies' internationalization. Since we were dependent on the database configuration and in order to have the greater number of variables we consider the two blocks that GEM differentiates: Nascent-Entrepreneurs and Owner-Managers. By combining the two blocks, we obtained a greater sample of data which comprised a total of 1,086 data for the dependent variable related to internationalization. Finances variables gave response to questions like: If the entrepreneur had, in the past three years, personally provided funds for a new business started by someone else (excluding any purchases of stocks or mutual funds?), if he owned part or all the business, how many people were owners, if it had financial collaborators, if he had provided funds to other business, etc. Since the study is carried out from a gender standpoint, we also want to measure the effect of gender; that is the reason we also include the gender explanatory variable.

Thus, our question to answer will be to find which finance factors increase or decrease the export orientation (internationalization) of companies.

Despite the original idea and since not all variables had a representative number of cases, we had to delete them. In Table 1 we can see all the variables that were considered initially to carry out the regression and how they were measured.

**Table 2. Variables considered in the logistic regression**

<b>Variables</b>	<b>Description</b>	<b>Answers</b>
<b>Internationalization</b> (TEAEXP)	Do you export	Yes 1, No 0
<b>Gender</b>		Female 1, Male 0
<b>Finance</b>		
SuOmown	Do/Will you own all, part, or none of this business?	All 2, part 1, None 0
SuOowners_DIC	How many people, including yourself , will/both own this business	Yes 1, No 0
Subreff _Ombrslnw	Are you/Is your business working together with others about how to make your new business effective?	Yes 1, No 0
Barel_R	What was your relationship with the person that received your most recent personal investment?	Family 0, Friend 1, Other 2

Source: authors' own elaboration from GEM database

## RESULTS

Results from the regression are summarized as follows:

Table 3. shows the case processing summary; as we have previously commented and as we can check in Table 3, the “BAREL” variable should not be included in the model as an explanatory variable since there are only 63 cases for a total of 1086 cases in the dependent variable (TEAEXP). Furthermore, it can be seen that there are no differences in the percentages of columns; that is to say, the independent variables do not discriminate if it exports or not.

**Table 3. Case processing summary**

		TEAExport					
		Total		Non exports		Exports	
		Recount	N % of the column	Recount	N % of the column	Recount	N % of the column
<b>Q4A. Have you, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stocks or mutual funds?</b>	<b>Total</b>	1080	100,0%	819	100,0%	261	100,0%
	<b>No</b>	1013	93,8%	771	94,1%	242	92,7%
	<b>Yes</b>	67	6,2%	48	5,9%	19	7,3%
<b>A. What is your gender?</b>	<b>Total</b>	1086	100,0%	825	100,0%	261	100,0%
	<b>Male</b>	672	61,9%	501	60,7%	171	65,5%
	<b>Female</b>	414	38,1%	324	39,3%	90	34,5%
<b>SUOMOWN</b>	<b>Total</b>	1005	100,0%	770	100,0%	235	100,0%
	<b>None</b>	579	57,6%	447	58,1%	132	56,2%
	<b>Part</b>	426	42,4%	323	41,9%	103	43,8%
<b>SUOMOWNERS_DIC</b>	<b>Total</b>	996	100,0%	762	100,0%	234	100,0%
	<b>2 or less</b>	827	83,0%	642	84,3%	185	79,1%
	<b>More than 2</b>	169	17,0%	120	15,7%	49	20,9%

subreff_ombrslnw	<b>Total</b>	997	100,0%	763	100,0%	234	100,0%
	<b>No</b>	277	27,8%	180	23,6%	97	41,5%
	<b>Yes</b>	720	72,2%	583	76,4%	137	58,5%
BAREL_R	<b>Total</b>	63	100,0%	47	100,0%	16	100,0%
	<b>FAMILY</b>	29	46,0%	22	46,8%	7	43,8%
	<b>FRIENDS</b>	28	44,4%	21	44,7%	7	43,8%
	<b>Other</b>	6	9,5%	4	8,5%	2	12,5%

Source: authors' own elaboration

Then, we proceed to encode the variables, Table 4 shows the categorical variables coding table. The codification of the dependent variable and the explanatory variables.

**Table 4. Variables encoding for model. Categorical Variables coding table.**

TEAEXP Dependent variable codification	
Original Value	Internal Value
Non-exports	0
Exports	1

		Frequency	Parameter codification
			(1)
A. What is your gender?	Male	588	,000
	Female	386	1,000
SUOMOWNERS_DIC	2 or less	811	,000
	More than 2	163	1,000
subreff_ombrslnw	No	271	,000
	Yes	703	1,000
Q4A. Have you, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stocks or mutual funds?	No	919	,000
	Yes	55	1,000
SUOMOWN	None	568	,000
	Part	406	1,000

Source: authors' own elaboration

As we have previously commented, we will use the Logistic regression as a methodology to obtain the probability of internationalization of companies by means of variables related to finance.

Since the study was carried out from a gender standpoint, we also wanted to measure the effect of gender on the internationalization (export intensity); that is the reason, we decided to cross it with the rest of the explanatory variables. Once we had combined all the explanatory variables with the gender one, we applied all the possible backward and forward methods (conditional, LR and Wald) but the obtained results were not the most desirable ones. The best of the methods was the "forward: conditional" one and as we can see in classification table (Table 5), only one of the explanatory variables was included in the end.

**Table 5. Classification Table and Variables in the Equation**

Variables in the equation		B	E.T.	Wald	gl	Sig.	Exp(B)
Step 9 <sup>a</sup>	subreff_ombrslnw(1)	-,813	,160	25,924	1	,000	,443
	Constante	-,633	,128	24,589	1	,000	,531

Variable(s) introduced(s) in step 1: SUOMOWN, SUOMOWNERS\_DIC, subreff\_ombrslnw, busang, gender, SUOMOWN \* gender, SUOMOWNERS\_DIC \* gender, subreff\_ombrslnw \* gender, busang \* gender.

Source: authors' own elaboration

The main conclusion we can get from this result is that working together with other people with the purpose of selling your product or services to new customers increases the export intensity and therefore, the probability of internationalization of entrepreneurs in 0,443.

Since results were worse than expected and as we have previously commented, this study belongs to a wider global project focused on female entrepreneurship; we think it might be interesting to include variables related with innovation like: level of technology, productive sector, product, markets, etc. and to check if they have an effect on the internationalization.

## CONCLUSIONS

There is abundant literature which deals with female entrepreneurship, employment and self-employment; together with the funding of female entrepreneurs and sustainable finances. Despite all these studies carried out so far, there are no signs about which factors contribute to the success and internationalization of female entrepreneurship and its relationship with sustainable finances. With this in mind, we decided it would be of interest to go in depth in the analysis of this relation.

With this aim, we retrieved data from the Global Entrepreneurship Monitor related to Spain. We carried out a logistic regression in which we tried to get the probability of the internationalization factor measured by export intensity. Several variables related with finances were considered with the purpose of measuring their effect on the export orientation and if they increase or decrease the probability of companies' internationalization. Since we were dependent on the database configuration and in order to have the greater number of variables we consider the two blocks that GEM differentiates: Nascent-Entrepreneurs and Owner-Managers. Since the study was carried out from a gender standpoint, we also wanted to measure the effect of gender on the internationalization (export intensity); that is the reason, we decided to cross it with the rest of the explanatory variables. Thus, by means of a logistic regression model we applied all the possible methods. However, the obtained results were not the most desirable ones. The best of the methods was the "forward: conditional" one and only one explanatory variable was included. The variable included was the one that measures if entrepreneurs are working together with others to sell their products or services to new customers and, therefore, make their business more effective. In case it is affirmative, the probability of business to be international increases.

In this vein and for future research, since results were worse than expected, it might be interesting to include variables related with innovation like: level of technology, productive sector, product, markets, etc. and to check if they can explain internationalization; moreover, it would be interesting to check if this innovation variables might have also an explanatory power when crossing them with the explanatory variable gender.

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## Female Entrepreneurship, Internationalisation and Sustainable Finances

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### AIMS

To analyze certain financial aspects of entrepreneurship in Europe. From a gender perspective and regarding issues of sustainable finance, such as job creation and funding new businesses, as well as the foundation for the internationalization of these activities.

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## Literature Review

- There is abundant literature which deals with female entrepreneurship and sustainable finances (Bartual-Sanfeliu, Cervelló-Royo and Moya-Clemente, 2013; Cervelló-Royo, Moya-Clemente and Ribes-Giner, 2015; Garikipati, 2008; Goetz and Gupta, 1996; Hashemi, Schuler and Riley, 1996; Kabeer, 2001; Karlan and Valdivia, 2011; Ngo and Wahhaj, 2012).
- However, despite the several studies carried out so far, there are no signs about which factors contribute to the success and internationalization of female entrepreneurship and its relationship with sustainable finances. That is the reason we consider it would be of interest to go in depth in this relation.
- Exporting is a straightforward internationalization initiative widely used by SMEs (Fernández-Mesa & Alegre, 2015).

## AIMS

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## Methods

Area	Spain
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Size of the sample	1,086 people
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## Methods II

<i>Variables</i>	<i>Description</i>	<i>Answers</i>
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<b>Finance</b>		
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<b>SuOmowners_DIC</b>	How many people, including yourself, will/both own this business	Yes 1, No 0
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<b>Barel_R</b>	What was your relationship with the person that received your most recent personal investment?	Family 0, Friend 1, Other 2



## Results

	TEAExport						
	Total		Non exports		Exports		
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	FAMILY	29	46,0%	22	46,8%	7	43,8%
	FRIENDS	28	44,4%	21	44,7%	7	43,8%
	Other	6	9,5%	4	8,5%	2	12,5%

"BAREL" variable was not included in the model as an explanatory variable since there were only 63 cases for a total of 1086 cases in the dependent variable (TEAExport). Then, we proceeded to encode the variables.

Dependent variable codification

Original Value	Internal Value
Non-exports	0
Exports	1

		Frequency	Parameter codification (1)
A. What is your gender?	Male	588	,000
	Female	386	1,000
	2 o menos	811	,000
SUOWOWNERS_DIC	más de 2	163	1,000
	No	271	,000
subreff_ombrslnw	Yes	703	1,000
	No	919	,000
Q4A. Have you, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stocks or mutual funds?	No	919	,000
	Yes	55	1,000
SUOWOWN	None	568	,000
	Part	406	1,000

We used the Logistic regression as a methodology to obtain the probability of internationalization of entrepreneur by means of variables related to finance.

Since the study was carried out from a gender standpoint, we also wanted to measure the effect of gender on the internationalization (export intensity); that is the reason, we decided to cross it with the rest of the explanatory variables.

Variables in the equation

		B	C.T.	Wald	df	Sig.	Exp(B)
Step 9 <sup>a</sup>	subreff_ombrslnw(1)	-.813	.160	25,924	1	.000	.443
	Constante	-.633	.128	24,589	1	.000	.531

Variable(s) introduced(s) in step 1: SUOMOWN, SUOMOWNERS\_DIC, subreff\_ombrslnw, busang, gender, SUOMOWN \* gender, SUOMOWNERS\_DIC \* gender, subreff\_ombrslnw \* gender, busang \* gender.

Only one of the explanatory variables (subreff\_ombrslnw) was included in the end. Thus, "working together with other people with the purpose of selling your product or services to new customers" increases the export intensity and therefore, the probability of internationalization of the company in 0.443.

Since results were worse than expected, we think it might be interesting to include variables related with innovation like: level of technology, productive sector, product, markets, etc. and to check if they have an effect on the internationalization.



## Conclusions

- We carried out a logistic regression in which we tried to get the probability of the internationalization factor measured by export intensity. Several variables related with finances were considered with the purpose of measuring their effect on the export orientation and if they increase or decrease the probability of companies' internationalization.
- There are no signs about which factors contribute to the success and internationalization of female entrepreneurship and its relationship with sustainable finances. With this in mind, we decided it would be of interest to go in depth in the analysis of this relation.
- The variable included was the one that measures if entrepreneurs are working together with others to sell their products or services to new customers and, therefore, make their business more effective. In case it is affirmative, the probability of business to be international increases.



## Conclusions

- Since results were more poor than expected, we think it might be interesting to include variables related with innovation like: level of technology, productive sector, product, markets, etc. and to check if they have an effect on the internationalization. (see the paper in this conference: Gender influence on innovative and international entrepreneurship, Ribes et al. 2016.)





## **Social Entrepreneurship: A Systematic Review of the Definition using a Descriptive Definition Framework**

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*Keywords: Descriptive Definition, Social Enterprise, Social Entrepreneurship, Social Entrepreneur, Definiens, Definiendum, Copula, Genus, Differentia.*

### **Abstract**

Social entrepreneurship research has been identified as lacking a coherent research approach with no clear definition of what the term actually means. The challenges around the definition and conceptual approaches are not unique to social entrepreneurship, and can also be found in the related field of entrepreneurship research.

This paper adopts a systematic approach to reviewing the literature on the definition of social entrepreneurship. It limits the analysis of definitions to highly cited papers in the top five entrepreneurship journals. A total of 42 unique definitions are analysed using a definition framework that is made up of a definiens, copula and definiendum.

The analysis identifies the characteristics of the social entrepreneur, the activities of the social entrepreneurship process and business practices employed in a social enterprise as the areas with divergent views. Definitions for a social entrepreneur, a social enterprise and social entrepreneurship are proposed.

### **Introduction**

Social entrepreneurship research has been described as lacking a coherent research approach with no clear definition of what the term actually means (Light, 2009; Nicholls, 2010; Short, Moss, & Lumpkin, 2009). While considered simple, the term has varied and complex meanings (Lepoutre, Justo, Terjesen, & Bosma, 2013; Trexler, 2008) and the absence of a unified definition has impeded the advancement of social entrepreneurship research (Zahra, Gedajlovic, Neubaum, & Shulman, 2009).

Social entrepreneurship, as a research area, is a contested concept with numerous competing definitions and no framework that seeks to unify these differences (Choi & Majumdar, 2014). The challenges around the definition and conceptual approaches is not unique to social entrepreneurship, and can also be found in the related field of entrepreneurship research (Pantea, 2015).

While there seems to be acknowledgement about the complexity and ambiguity of the term social entrepreneurship, there is limited evidence that suggests an effort to come up with an all-inclusive definition that can be accepted by the social entrepreneurship research and practice communities.

Instead of seeking to clarify the definition of social entrepreneurship, the area that seems to be of interest to researchers is the personality, or the characteristics of social entrepreneurship or a social entrepreneur. Bacq and Janssen (2011) for example, while attempting to define social entrepreneurship, end up discussing visionary or innovative approaches, the importance of ethics, ability to identify opportunities, and the drive to make a difference.

## Purpose

This paper adopts a systematic approach to review the literature on the definition of social entrepreneurship. The objectives of the study are to discover the scale of the differences in defining social entrepreneurship, identify common themes from literature using a framework for descriptive definitions, and propose an all encompassing definition.

## Methodology

The paper does the review in a systematic manner that entails a number of steps. Firstly, the review is limited to the top-five, peer-reviewed journals, according to a composite ranking of entrepreneurship journals by (Stewart & Cotton, 2013). Ranking of journals can be a subjective matter, especially for researchers. Although unavoidable, the rankings can result in rigid research standards, a focus on number of articles as opposed to contribution to the research field, and can be to the detriment of specialised research that can be accommodated in newer journals (Van Fleet, McWilliams, & Siegel, 2000)

Two ways of ranking journals are either through surveying academics about how they perceive the quality of journals in their field, or through citations analysis. Most journal rankings utilise the citation approach (Stewart & Cotton, 2013) because of the sampling and perceptual biases inherent in surveys. The citation approach, however, also has its limitations. A paper may be cited purely because it is easily available, or cited because it draws a lot of criticism (Gorman, 2008). Journal paper citations can also be influenced by snowballing which is when a citation by a prominent scholar results in other scholars citing the same paper (Aldrich, Fowler, Liou, & Marsh, 1994)

Despite the shortcomings of the citation approach, numerous indices have been developed and used to rank journals. These include the Social Sciences Citation Index (SSCI), the Journal Impact Factor (JIF) and Scopus. Scopus has two evaluation measures, the Scimago Journal Rank (SJR), which assigns a higher weighting to citations from prestigious sources, and Source Normalised Impact per Paper (SNIP) which weighs citations on the total number of citations per subject field (Stewart & Cotton, 2013)

Google Scholar can also be used to search for academic publications, and has functionalities that allow for searching to be done by journal, author, date range and ranking by prominence of the author(s), citation count and previous papers by an author(s). Harzing's Publish or Perish (PoP) is able to utilise the journals from Google Scholar and come up with statistics on journal impact.

The myriad of citation indices invariably leads to a debate about which one is best, and questions the usefulness ranking journals in some research fields. One way of overcoming this debate and criticism is to utilise as many indices as possible. This approach of using many indices was used by Stewart and Cotton (2013) to rank 59 entrepreneurship journals, using the following six citations measures: two and five year measures for JIF, two and five year measures of average citations for PoP, SNIP and SJR. The top five ranked papers in descending order are the Journal of Business Venturing, Entrepreneurship Theory and Practice, Family Business Review, Journal of Small Business Management and Small Business Economics. These five top ranked journals formed the basis for this systematic literature review on the definition of social entrepreneurship.

A separate query was done for each of the five journals on 26<sup>th</sup> August 2015, using the search phrase (“social enterprise” OR “social entrepreneurship” OR “social entrepreneur”) AND (define OR definition) on PoP. Only papers with 50 or more citations were considered for the analysis. The reason for introducing the exclusion criteria was to limit the number of papers to be analysed, and focus on papers that one could argue are seminal. Although there is no minimum number of citations for a paper to be considered seminal, a paper that has been cited at least 50 times can be seen as having made a contribution to the research field it belongs to. The table below details the search results per journal.

**Table 1: Search results per journal on Harzing's Publish or Perish**

Name of Journal	Total Number of Papers	Total Number of Citations	Average Number of Citations per Paper	Number of Papers with 50 Citations or more
Journal of Business Venturing	30	3,096	103,2	13
Entrepreneurship Theory and Practice	69	8,014	116,1	33
Family Business Review	3	170	56,7	1
Journal of Small Business Management	23	939	40,8	7
Small Business Economics	23	453	19,7	3
<b>Total</b>	<b>148</b>	<b>12,673</b>	<b>85,6</b>	<b>57</b>

The results from the search do not completely correlate with the overall journal rankings by Stewart and Cotton (2013). While the third, fourth and fifth journals, from a citation per paper analysis agree with the rankings, Entrepreneurship Theory and Practice ranks first on number of citations per paper, and also on the overall number of papers published but ranks lower than the Journal of Business Venturing on the Stewart and Cotton (2013) ranking. This can be caused by a number of things, such as the research interests of the journal and ease of access to papers published in the journal.

The analysis of the 57 papers for full, descriptive definitions revealed that only 22 papers actually contained definitions of social entrepreneurship, a social entrepreneur or social enterprise. The 35 papers not containing definitions were rescanned to confirm this and to understand why they had shown up in the PoP query results. The papers contained definitions of other constructs such as entrepreneurship, sustainable entrepreneurship and environmental entrepreneurship and also mentioned social entrepreneurship. The 35 papers were not considered for the coding stage of the literature review, limiting the number of papers for further analysis to 22.

The 22 papers were analysed for full, descriptive definitions using Atlas.ti software. Definitions can be either full (explicit) or partial (implicit) (Hansson, 2010; Marciszewski, 1994). Explicit or full definitions have three components, the definiendum (word being defined), the definiens (that which does the defining) and a copula, which is the verb or phrase connecting the definiendum and the definiens (Burek, 2004; Kublikowski, 2009; Sager & L'Homme, 1994). The definiens is further broken down into a differentia and genus (Smith, 1995). Genus talks to the general group or class the definiendum belongs to and differentia are the differences that distinguish the definiendum from the genus it belongs to.

A total of 52 definitions were found in the 22 papers. Most papers cited a few definitions, and some went further to analyse these definitions within the context of social entrepreneurship as a contested concept and attempted to come up with their own definition. One notable paper is Zahra et al. (2009). The paper cited 20 definitions from various sources such as academic journals, books, business schools and organisations involved in social entrepreneurship before coming up with its own definition. It is worth noting that approximately one third of the definitions were from the 2005 to 2007 period. It appears that there was concerted effort during this period to come up with a common definition. The period after 2008 is dominated by the view and to an extent consensus that social entrepreneurship is a contested research area. Three definitions were cited more than once, a total of thirteen times. The ten duplicate definitions were eliminated, which resulted in 42 unique definitions. The papers whose definitions were cited in more than one paper are (Austin, Stevenson, & Wei-Skillern, 2006) with three citations, Mair and Marti (2006) with seven citations and (Reis & Clohesy, 1999) with three citations.

Most of the definitions, in particular the ones cited in more than one paper and the definitions used to come up with new definitions, originate from journals from the broader field of management such as Journal of World Business, Harvard Business Review and Business Strategy and Review. This is despite the fact

that the five entrepreneurship journals used for the review have been in existence for a long period. The Journal of Business Venturing for example, published its first volume in 1985 and the Family Business Review in 1988. While this could be an indication of the broad interesting in social entrepreneurship research, it can also be seen as a barometer of how entrepreneurship researchers have fared in coming up with commonly used definitions of social entrepreneurship.

## Analysis

The 42 unique definitions were categorised as social enterprises/ventures, social entrepreneurship or social entrepreneur, which are the definiens and each category coded separately for copula and definiendum. The definiendum was broken down into genus and differentia). The codes per definition are tabled next.

**Table 1: Definitions for social entrepreneurship, social enterprise and social entrepreneur**  
Key

**Definiens is bolded.**

**Copula is shaded**

**Genus is underlined**

**Differentia is italicised**

Definition	Author
Social entrepreneurship definitions	
Under the narrow definition, <b>social entrepreneurship</b> typically refers to the <u>phenomenon of applying business expertise and market-based skills in the non-profit sector such as when non-profit organizations develop innovative approaches to earn income</u>	(Reis & Clohesy, 1999)
<b>Social entrepreneurship</b> refers to <u>innovative activity with a social objective in either the for-profit sector, such as in social-purpose commercial ventures or in corporate social entrepreneurship; or in the non-profit sector, or across sectors, such as hybrid structural forms which mix for-profit and non-profit approaches</u>	(Austin et al., 2006; Dees, 1998; Dees & Anderson, 2006; Emerson & Twersky, 1996)
<b>Social entrepreneurship</b> in Germany, France, Belgium, and Ireland refers to <u>third sector (économie solidaire) non-profit ventures in the field of social services, financed and regulated by public bodies.</u>	(Salomon, Sokolowski, & List, 2003)
Nordic countries use the concept of <b>social entrepreneurship</b> with reference to worker co-operatives in the childcare and healthcare sectors	(Pestoff, 2004)
In Spain, Italy, and Portugal <b>social entrepreneurship</b> refers to <u>multi-stakeholder work integration programs for groups typically excluded from the labour market.</u>	(Borzaga & Spear, 2004)
<b>Social entrepreneurship</b> is proposed to be <u>the creation of an organization that results in a sustained social equilibrium</u>	(McMullen, 2011)
<b>Social entrepreneurship</b> focuses on <u>addressing unmet societal needs and seeks to primarily generate social value.</u>	(Brooks, 2008; Mair & Marti, 2006; Nicholls, 2006)
<b>Social entrepreneurship</b> focuses on <u>the identification, evaluation, and exploitation of opportunities that yield a social return.</u>	(Alvord, Brown, & Letts, 2004; Austin et al., 2006; Dees, 1998)
<b>Social entrepreneurship</b> is <u>a process equally possible in the non-profit, public, and private sectors</u>	(Bornstein, 2007)
<b>Social entrepreneurship</b> is defined as <u>entrepreneurial activity with the explicit objective to address societal pains.</u>	(Brooks, 2009; Seelos & Mair, 2005)

Definition	Author
<b>Social entrepreneurship</b> is often defined as <u>innovation that leads to positive social change regardless of the mechanisms through which it is achieved</u> (i.e., through earned income and/or contributed income).	(Tracey & Jarvis, 2007)
<b>Social entrepreneurship</b> encompasses <u>the activities and processes undertaken to discover, define, and exploit opportunities in order to enhance social wealth by creating new ventures or managing existing organizations in an innovative manner.</u>	(Zahra et al., 2009)
<b>Social entrepreneurship</b> is the use of <u>entrepreneurial behaviour for social ends rather than for profit objectives, or alternatively, that the profits generated from market activities are used for the benefit of a specific disadvantaged group.</u>	(Leadbeater, 1997)
<b>Social entrepreneurship</b> is the creation of <u>viable socio-economic structures, relations, institutions, organizations and practices that yield and sustain social benefits.</u>	(Fowler, 2000)
<b>Social entrepreneurship</b> is exercised where <u>some person or group...aim(s) at creating social value...shows a capacity to recognize and take advantage of opportunities...employ innovation...accept an above average degree of risk...and are unusually resourceful... in pursuing their social venture</u>	(Peredo & McLean, 2006)
<b>Social entrepreneurship</b> is the: 1) <u>identification a stable yet unjust equilibrium which the excludes, marginalizes or causes suffering to a group which lacks the means to transform the equilibrium;</u> 2) <u>identification of an opportunity and developing a new social value proposition to challenge the equilibrium, and</u> 3) <u>forging a new, stable equilibrium to alleviate the suffering of the targeted group through imitation and creation of a stable ecosystem around the new equilibrium to ensure a better future for the group and society.</u>	(Martin & Osberg, 2007)
<b>Social entrepreneurship</b> is “a <u>set of institutional practices combining the pursuit of financial objectives with the pursuit and promotion of substantive and terminal values.</u> ”	(Cho, 2006)
<b>Social entrepreneurship</b> is a <u>multi-dimensional construct involving the expression of entrepreneurially virtuous behaviour to achieve the social mission....the ability to recognise social value creating opportunities and key decision-making characteristics of innovation, proactiveness and risk-taking.</u>	(Mort, Weerawardena, & Carnegie, 2003)
<b>Social entrepreneurship</b> is <u>the work of community, voluntary and public organisations as well as private firms working for social rather than only for profit objectives.</u>	(Shaw, 2004)
<b>Social entrepreneurship</b> is a <u>professional, innovative and sustainable approach to systematic change that resolves social market failures and grasps opportunities.</u>	(Said Business School, 2015)
<b>Social entrepreneurship</b> is <u>the art of simultaneously pursuing both a financial and a social return on interment (the double bottom line)</u>	(The Fuqua School of Business, 2015)
<b>Social entrepreneurship</b> is <u>applying practical, innovative and sustainable approaches to benefit society in general, with an emphasis on those who are marginalised and poor.</u>	(Schwab Foundation for Social Entrepreneurship, 2015)
<b>Social entrepreneurship</b> is <u>the process of using entrepreneurial and business skills to create innovative approaches to social problems. These non-profit and for profit ventures pursue the double bottom line of social impact and self-sustainability or profitability.</u>	(New York University, 2016)
<b>Social entrepreneurship</b> is <u>the process whereby the creation new business enterprise leads to social wealth enhancement so that both society and the entrepreneur benefit.</u>	(Wharton School, 2016)

Definition	Author
Social enterprise definitions	
The United Kingdom defines <b>social enterprises</b> as independent sector for-profit or non-profit ventures that use quasi-market mechanisms to increase efficiency in service provision.	(Salamon, Sokolowski, & List, 2003)
United States <b>social ventures</b> occur in a diverse array of organizational forms, from non-profit organizations that involve some kind of earned income activity, to for-profit companies that have a social purpose.	(Short et al., 2009)
In Latin America, Asia, and Africa, <b>social enterprises</b> encompass nongovernmental organizations with few earned-income options, to for-profit start-up ventures with a social mission.	(Austin et al., 2007; Bornstein, 2007; Seelos & Mair, 2005)
<b>Social enterprises</b> seek to attain a particular social objective or set of objectives through the sale of products and/or services, and in doing so aim to achieve financial sustainability independent of government and other donors. <b>Social enterprises</b> thus share the pursuit of revenue generation with organizations in the private sector as well as the achievement of social (and environmental) goals of non-profit organizations.	(Di Domenico, Haugh, & Tracey, 2010)
“The main purpose of a <b>social venture</b> is not the maximization of profit but the pursuit of economic, social, or environmental goals, or a combination of these, to alleviate social exclusion and unemployment”	(Organisation for Economic Co-operation and Development, 1999)
<b>Non-profit organizations</b> surface as a separate organizational form to serve the needs of society that are unmet by government and private companies. Organizations classified as non-profits share two commonalities: they are formed with the intent of fulfilling a social purpose, and they do not distribute revenues as profits.	(Boris & Steuerle, 2006)
The <b>social enterprise</b> spectrum consists of different kinds of organization on a continuum from “purely philanthropic” to “purely commercial.”	(Dees, 1998)
<b>Social enterprises</b> make profits in the face of risk with the involvement of a segment of society and where all or part of the benefits accrue to that same segment of society.	(Tan, Williams, & Tan, 2005)
Social entrepreneur definitions	
<b>The social entrepreneur</b> is someone who is able to actively contribute to social change with the creativeness and innovative-orientation typical of the classical entrepreneurial process.	(Perrini & Vurro, 2006)
Similarly, <b>social entrepreneurs</b> identify opportunities to address an underserved social market or to provide services in a different and/or more efficient manner to affect a community in a positive way.	(Miller, Wesley, & Curtis, 2010)
<b>Social entrepreneurs</b> develop products and services that “cater directly to basic human needs that remain unsatisfied by current economic or social institutions’.	(Seelos & Mair, 2005)
<b>Social enterprises</b> deliver targeted social or community benefits using traditional business principles.	(ACT Government, 2016 )
<b>Social entrepreneurs</b> are driven by a desire for social justice. They seek a direct link between their actions and an improvement in the quality of life for the people with whom they work and those that they seek to serve. They aim to produce solutions, which are sustainable financially, organizationally, socially and environmentally.	(Thake & Zadek, 1997)
<b>Social entrepreneurs</b> play a role as change agents in the social sector by: 1) adopting a mission to create and sustain social value (not just private value), 2) recognising and relentlessly pursuing new opportunities to serve that mission, 3) engaging in a process of continuous innovation, adaptation and learning, 4) acting boldly without being limited to the resources in hand, and 5) exhibiting heightened accountability to the constituencies served and for the outcomes created.	(Dees, 1998)

Definition	Author
<b>Social entrepreneurs</b> are individuals constantly looking for new ways to serve their constituencies and add value to existing services.	(Brinckerhoff, 2000)
<b>Social entrepreneur</b> is a major change agent, one whose core values centre on identifying, addressing and solving societal problems.	(Drayton, 2002)
<b>Social entrepreneur</b> creates innovative solutions to immediate social problems and mobilises the ideas, capacities, resources and social arrangements required for social transformation.	(Alvord et al., 2004)
<b>Social entrepreneurs</b> are motivated by social objectives to instigate some form of new activity or venture.	(Harding, 2004)

## Findings and Recommendations

Although there are varied definitions of what social entrepreneurship is, with some country and region specific definitions, an analysis of the genus from the codes in the table suggests that it is a multi-dimensional process in newly established and existing businesses. The dimensions or activities within the process would differ based on the environment where the process unfolds. The following definition is proposed:

Social entrepreneurship is a process of complementary activities in new or existing businesses that seek to achieve a particular social goal or social objectives.

Regarding the social enterprise definitions, the genus focuses on the organisational form and the business practices used in social enterprises, and the differentia talks to the mission or goal of social enterprises. The goal and mission are what makes social enterprises distinct from other business forms. The business practices as well as the mission and goal will differ from one social enterprise to the next. These aspects of the definition i.e. the business practices and mission, it is proposed, should be left open and added upon as more research is done. The following definition is therefore proposed:

A social enterprise is a for-profit or non-profit organisation that utilises business practices to achieve a social goal or set of social objectives. The business practices include, but are not limited to, product and service provision, increasing efficiency and pursuing innovation.

The social entrepreneur genus looks at the characteristics of a social entrepreneur as well as the delivery of sustainable products and services. The differentia is similar to that of the social enterprise as it also looks at the social goal or objectives the social entrepreneur seeks to achieve. The characteristics of a social entrepreneur, like those of an entrepreneur, are forever changing with new ones added as the operating environment for the social entrepreneur changes. The following definition is therefore proposed:

A social entrepreneur utilises a set of appropriate entrepreneurial skills to deliver sustainable solutions that seek to achieve a particular social goal or social objectives.

## Conclusion

Using the definiens, copula and definiendum (genus and differentia) approach to analyse social entrepreneur, social enterprise and social entrepreneurship definitions, there is general agreement in some areas of the definition, particularly the definiens, copula and differentia. The area with varying views is the genus. Rather than see this as a contested terrain, it should be left open to continuous improvement as new characteristics of a social entrepreneur, entrepreneurial processes in social entrepreneurship and business practices in social enterprises emerge.




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**Social Entrepreneurship: A Systematic Review of the Definition using a Descriptive Definition Framework**

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## Content Layout

- Main theoretical issues
- Objectives
- Research methods
- Key findings
- Implications for policy and practice.
- Areas for future research

## Main theoretical issues

- Paper is part of PhD research on how external funders influence social entrepreneurship processes, using causation and effectuation as theoretical lenses.
- Prompted by the general comments on the definition of social entrepreneurship while conducting literature review, for example:
  - There is no clear definition of that the term actually means (Light, 2009; Nicholls, 2010; Short, Moss, & Lumpkin, 2009).
  - The term has varied and complex meanings (Lepoutre, Justo, Terjesen, & Bosma, 2013; Trexler, 2008).
  - Absence of a unified definition has impeded the advancement of social entrepreneurship research (Zahra, Gedajlovic, Neubaum, & Shulman, 2009).
  - Social entrepreneurship, as a research area, is a contested concept with numerous competing definitions and no framework that seeks to unify these differences (Choi & Majumdar, 2014).
  - The challenges around the definition of social entrepreneurship can also be found in the related field of entrepreneurship research (Pantea, 2015).

## Objectives

- This paper adopts a systematic approach to review the literature on the definition of social entrepreneurship.
- The objectives of the study are to:
  - Discover the scale of the differences in defining social entrepreneurship,
  - Identify common themes from literature using a framework for descriptive definitions, and
  - Propose an all encompassing definition.

## Research methods

- Systematic literature review approach was utilised for the study.
- Firstly, the top five ranked entrepreneurship journals from Stewart and Cotton (2013), namely the Journal of Business Venturing, Entrepreneurship Theory and Practice, Family Business Review, Journal of Small Business Management and Small Business Economics were used for the study.
- A separate query was done for each of the five journals on Harzing's Publish or Perish using the search query (("social enterprise" OR "social entrepreneurship" OR "social entrepreneur") AND (define OR definition)) on 26 August 2015.
- Results limited to papers with 50 or more citations.
- Papers analysed for full, descriptive definitions, 52 unique definitions identified.
- Duplicate definitions removed resulting in 42 definitions for analysis.

## Research methods

- Atlas.ti used to code the definitions using a definition framework from Burek (2004), Kublikowski (2009), Sager and L'Homme (1994) and Smith (1995).
- The framework is made up of the the definiendum (word being defined), the definiens (that which does the defining) and a copula, which is the verb or phrase connecting the definiendum and the definiens.
- The definiens can be further broken down into a genus (the general group or class the definiendum belongs to) and differentia (the differences that distinguish the definiendum from the genus it belongs to).
- Example: A ram (definiendum) is (copula) a male(differentia) sheep (genus).



## Key Findings and recommendations

- Despite the varied definitions, there is consensus that social entrepreneurship is a multi-dimensional process and that the dimensions or activities within the process differ based on the environment (country, lifecycle, sector, etc.) where the process unfolds.
- On the social enterprise definition, the goal and mission are what make social enterprises distinct from other business processes. These differ from one social enterprise to the next.
- The social entrepreneur seeks to achieve a social goal or carry out certain objectives, and in the process displays dynamic characteristics.
- Rather than being a contested area, it appears that researchers expect social entrepreneurship processes to be uniform across all social enterprises, and social entrepreneurs to have similar characteristics.

## Key Findings and recommendations

- Based on the analysis of definitions, the following definitions are proposed:
  - **Social entrepreneurship** is a process of complementary activities in new or existing businesses that seek to achieve a particular social goal or social objectives.
  - A **social enterprise** is a for-profit or non-profit organisation that utilises business practices to achieve a social goal or set of social objectives. The business practices include, but are not limited to, product and service provision, increasing efficiency and pursuing innovation.
  - A **social entrepreneur** utilises a set of appropriate entrepreneurial skills to deliver sustainable solutions that seek to achieve a particular social goal or social objectives.
- The characteristics of a social entrepreneur, the entrepreneurial activities in social entrepreneurship and the business practices in social enterprises must be allowed to evolve through some flexibility.

## Implications for policy and practice

- Research and practice should not stick to rigid definitions that could constrain the dynamism one expects to find in social entrepreneurship.
- The framework for full, descriptive definitions that was used in this paper can be utilised in other areas with definitional challenges.

## Areas for future research

- One of area of research is identifying the characteristics of a social entrepreneur, the entrepreneurial activities in social entrepreneurship and the business practices in social enterprises.
- From the above identification, qualitative research can be determine which characteristics, activities or practices are most common, how the characteristics, activities or practices have an impact on the realisation of the social goal, etc.



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## **Gender influence on innovative and international entrepreneurship**

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### **Abstract**

When referring to a firm's wealth, internationalization and innovation play a significant role. On the other hand, entrepreneurship, has become very popular nowadays as it represents a topic of interest of many people such as academics, business people and government, among others. For this reason, the link between these concepts represents a field of research that has increased the number of studies in the last years. Most of them deal with entrepreneurs in general, however, there are some authors that analyze this link considering gender factor. Particularly, it has been found that female entrepreneurs are less likely to export and to participate in research and technology.

Literature regarding international comparisons of female entrepreneurship practices remains limited and becomes even more limited when exploring such practices beyond the developed countries context, with the majority of the studies focused on developing countries.

All in all, the main aim of this paper is to provide more insights on Spanish entrepreneurs with international presence by considering two perspectives. On the one hand, the demographic profile of entrepreneurs has been analysed considering the following variables: age of the entrepreneurs, their education level, their family circumstances, and the city and region where they live. On the other hand, innovation variables for Spanish entrepreneurs with international presence have been discussed. In both perspectives gender factor has been considered in order to obtain conclusions

To develop this piece of research, data from the Global Entrepreneurship Monitor related to Spain has been exploited. Spain has been chosen as being a developed European country, however, its current economic situation has led to a new scenario in which there is a special need for further research on the international and innovative profile of the.

### **Introduction**

In recent years, entrepreneurial orientation (Peña-Legazkue, Iñaki; Guerrero, Maribel; González-Pernia, 2013), internationalization, competitive strategies and innovation are issues quite commonly present among academic and business interests (Castaño, Méndez, & Galindo, 2016; Fernández-Mesa & Alegre,

2015; Hernández-Perlines, Moreno-García, & Yañez-Araque, 2016; Nissan, Carrasco, & Castaño, 2012; Vila & Kuster, 2007).

When analyzing entrepreneurship literature, it has been seen that most of the academics deal with entrepreneurs in general, without analyzing gender differences. However, there are some authors that analyze the link between entrepreneurship and internationalization or innovations considering gender factor (Brush, Bruin, & Welter, 2009; Clark Muntean, 2013; de la Cruz Sánchez-Escobedo, Díaz-Casero, Díaz-Aunión, & Hernández-Mogollón, 2014; Henry, Foss, & Ahl, 2015; Kobeissi, 2010; Max & Ballereau, 2013; Poggesi, Mari, & De Vita, 2015). Particularly, it has been found that female entrepreneurs are less likely to export and to participate in research and technology (Nissan, Carrasco, & Castaño, 2012).

Literature regarding international comparisons of female entrepreneurship practices remains limited and becomes even more limited when exploring such practices beyond the developed countries context (Kobeissi, 2010), with the majority of the studies focused on developing countries (Jain, Nair, & Ahlstrom, 2015; Leff, 1978; Lingelbach, Vina, & Asel, 2005; Tambunan, 2009). However, although there are some studies focused on developed countries, there is still room for further analysis.

Particularly, this paper has a twofold aim: first to measure the effect of gender and innovation on internationalization Entrepreneurs, and secondly to analyse the demographic profile of Spanish entrepreneurs.

## Literature Review

Since the 1960s, researchers have tried to explain export behaviour (as a part of the internationalization behavior) on the basis of a wide variety of managerial characteristics, such as demographic, psychological and attitudinal traits of the key decision-maker/s in the firm. However, although managerial influences are one of the most widely studied, they are one of the least conclusive areas of exporting research (Welch, Welch, & Hewardine, 2008). That is, not that much differences have been found in terms of international success between entrepreneurs with different profiles. Noguera et. al (2013 & 2015) show, on one hand, how formal aspects such as level of education, family background and income level, have a significant influence on the female capacity. While, on the other hand, informal aspects such as perception of entrepreneurial skills, social networks and family role, are most relevant in the creation of businesses by women.

When narrowing the scope from export managers to international entrepreneur, managerial characteristics appear to have higher direct influence (Welch et al., 2008). However, although gender as a possible factor affecting international entrepreneurship is being considered in previous studies, it seems that it is not the primary determinant of internationalization and that the problems faced by female-owned firms were very much those of any similarly sized firm seeking to internationalize (Welch et al., 2008).

While empirical data are rare, it would appear that women-owned enterprises are less likely to export than their male counterparts. Yet the limited studies undertaken on the topic have not found gender to be a statistically significant variable for explaining export behavior. (Nissan et al., 2012; Welch et al., 2008).

It is important to note that exporting is a straightforward internationalization initiative widely used by SMEs (Fernández-Mesa & Alegre, 2015). Reviewing the internationalization entrepreneurial literature, there are two main concepts defining this issue: international new ventures, and born global.

On the one hand, international new ventures are defined as “business organizations that, from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries”. This corresponds to a more conventional internationalization point of view. In contrast, “born global” entrepreneur firms, are those which are “young, entrepreneurial start-ups that initiate international business (typically exporting) soon after their conception”. They seek to derive a substantial proportion of their revenue from the sale of products in international markets (Tamer Cavusgil & Knight, 2015).

Born global firms, although relatively small in scale and limited in tangible resources, are usually endowed with distinctive intangible resources and capabilities. (Tamer Cavusgil & Knight, 2015). Given their limited resources, they tend to favour exporting as their primary entry mode. (Tamer Cavusgil & Knight, 2015).

Therefore, founders of born global firms, view the world as their market- place. This represents a challenge to the conventional pattern of gradual, incremental internationalization view, typically present in larger and more traditional firms (Tamer Cavusgil & Knight, 2015). Enhanced in part by technologies, the cost of internationalization no longer seemed to hinder foreign expansion of smaller, under-resourced companies, such is the case of entrepreneurial ones (Tamer Cavusgil & Knight, 2015).

Within this paper, exporting is analyzed as an internationalization initiative. Moreover, the scope of this is study has been narrowed to Early Stage Entrepreneurs, analyzing the share of them which are born globals. International entrepreneurship is understood as a combination of innovative, proactive, and risk-seeking behaviour that crosses national borders and is intended to create value in organizations (Oviatt & McDougall, 2005).

Innovation can be defined as the successful implementation of new ideas, including novelty and usability as two indispensable conditions (Fernández-Mesa & Alegre, 2015). Going through the existing literature, some previous studies have found that innovation increases export performance of SMEs and particularly entrepreneur initiatives (Fernández-Mesa & Alegre, 2015). Entrepreneurs who choose to innovate are more likely to internationalize their activity (Castaño et al., 2016).

The influence of innovation (in terms of investments in R&D) are moderated by gender such that men-operated businesses are more likely to export than female-operated businesses (Orser, Spence, & Riding, 2010). Considering the gender factor in international entrepreneurship orientation, there are just a few papers that include it. The most relevant ones are Welch et al. (2008) and Orser et al. (2010).

Despite the existence of some pieces of research analyzing the relationship between international entrepreneurship and innovation, the moderate effect of gender has not been analyzed in detail to date within this context. This study tries to respond to Poggesi et al (2015) call for more research on international entrepreneurial orientation and innovation.

## Objectives

We study owner attributes (as entrepreneurs) according to export orientation and in relationship with innovation. All in all, the main aim of this paper is to provide more insights on Spanish entrepreneurs with international presence by considering two perspectives. On the one hand, the demographic profile of entrepreneurs has been analysed considering the following variables: age of the entrepreneurs, their education level, their family circumstances, and the city and region where they live. On the other hand, innovation variables for Spanish entrepreneurs with international presence have been discussed. In both perspectives gender factor has been considered in order to obtain conclusions

## Methods

To develop this piece of research, data from the Global Entrepreneurship Monitor related to Spain has been exploited. Thus, the study of entrepreneurship from a gender perspective developed in this study is based on the following sources of information. Data and documentation from the project Global Entrepreneurship Monitor (GEM) which is based on surveys of the adult population aged 18 to 64 years old. Within this group, we have selected data corresponding to Spain, and the data of people involved in business creation, according to the definition of the rate of entrepreneurial activity, acronym, TEAEXP. The sample size obtained after this filter is 1,086 people. The technical specifications of the study are detailed in Table 1.

**Table 2. Technical specifications**

Area	Spain
Sample	Adult population whose age is comprised between 18-64 years, they come from Spain and are involved in the creations of business according to the TEA definition
Methodology	Survey carried out by the Global Entrepreneurship Monitor (GEM) in the year 2012
Size of the sample	1,086 people
Trust level	95.5%

Source. Authors' own elaboration

Spain has been chosen as being a developed European country; however, its current economic situation has led to a new scenario in which there is a special need for further research on the international profile of the entrepreneurs. With this purpose, we have carried out a logistic regression in which the internationalization factor measured by export intensity is considered in the variable TEAEXP; therefore, variables related with innovation were considered with the purpose of measuring their effect on the export orientation and if they increase or decrease the probability of companies' internationalization. We obtained a greater sample of data which comprised a total of 1,086 data for the dependent variable related to internationalization. Innovation variables gave response to questions like: the number of businesses which offer the same products, if the technologies or procedures were available more than a year ago, the technology applied in some sector, etc. Since the study is carried out from a gender standpoint, we also want to measure the effect of gender; that is the reason we also include the gender variable.

Thus, our question to answer will be to find which innovation factors crossed with gender will increase or decrease the export orientation (internationalization) of companies.

In Table 2 we can see all the variables that were considered initially to carry out the regression and how they were measured.

**Table 2. Variables considered in the logistic regression**

<i>Variables</i>	<i>Description</i>	<i>Answers</i>
<i>Internationalization (TEAEXP)</i>	Do you export	Yes 1, No 0
<i>Gender</i>		Female 1, Male 0
<i>Innovation</i>		
TEACOMP	TEA: How many businesses offer the same products	Many 2, Few 1, None 0
TEATECH	TEA: Were the technologies or procedures available more than a year ago?	No New Technology 0, New Technology 1, Very Latest Technology 2
TEAyyNTC	TEA: new technology	Indication 1, No Indication 0
TEANEWPR	TEA: product is new to all or some customers	Yes 1, No 0
TEAyyTEC	TEA: Technology sector	Medium or high-tech sector 1, No/Low Technology Sector 0

Source: authors' own elaboration from GEM database

On the other hand, in order to carry out the demographic profile analysis and determine whether the variables analyzed, have a significant effect on the gender of the entrepreneurs or not, a chi squared test has been carried out. This analysis determines whether two variables are related or not. In our case study, we will consider whether each one of the analysed variables are related to the gender of the entrepreneur or not. Furthermore, we introduce a combination of a descriptive study with an exploratory study. The descriptive study aims to explain the properties and characteristics of the analyzed phenomenon. Therefore, the main purpose is to measure, assess or collect information about different concepts, aspects, dimensions or components under study, in order to make a description (Mirón-Canelo, J. A., Alonso-Sardón, M., Iglesias-de-Sena, H., Lorenzo Gómez, M. F., Marcos Martín, M., Martín Rodero, H., ... & Albaladejo Martínez, 2016)

## RESULTS

### A. The effect of gender and innovation on internationalization Entrepreneurs,

Results from the regression are summarized as follows. We proceed to encode the variables. Table 3 shows the categorical variables coding table. The codification of the dependent variable and the explanatory variables.

**Table 3. Variables encoding for model. Categorical Variables coding table.**

Categorical variables codification

		Frequency	Parameters codificaton	
			(1)	(2)
TEA: How many businesses offer the same products?	Many	543	1.000	.000
	Few	418	.000	1.000
	None	125	.000	.000
TEA: Were the technologies or procedures available more than a year ago?	Very latest technology (newer than one year)	134	1.000	.000
	New technology (one to 5 years)	218	.000	1.000
	No new technology (more than 5 years)	734	.000	.000
TEA: new technology	No indication	952	.000	
	Indication	134	1.000	
TEA: product is new to all or some customers	No	670	.000	
	Yes	416	1.000	
TEA: Technology sector	No/low technology sector	996	.000	
	Medium or high tech sector	90	1.000	
TEA: new market (few/no businesses offer the same product)	No	543	.000	
	Yes	543	1.000	
A. What is your gender?	Male	672	.000	
	Female	414	1.000	

Source: authors' own elaboration

As we have previously commented, we will use the Logistic regression as a methodology to obtain the probability of internationalization of companies by means of variables related to finance.

Since the study was carried out from a gender standpoint, we also wanted to measure the effect of gender on the internationalization (export intensity); that is the reason, we decided to cross it with the rest of the explanatory variables. Once we had combined all the explanatory variables with the gender one, we applied all the possible backward and forward methods (conditional, LR and Wald) but the obtained results were not the most desirable ones. The best of the methods was the "forward: conditional" one and as we can see in the Classification and Variables in the Equation (Table 4).

**Table 4. Classification and Variables in the Equation**

	Observed		TEAExport		Forecasted
			Not exports	Exports	Corrected Percentage
Step 1	TEAEXP	Not exports	825	0	100.0
		Exports	261	0	.0
		Global percentage			76.0
Step 2	TEAEXP	Not exports	825	0	100.0
		Exports	261	0	.0
		Global percentage			76.0
Step 3	TEAEXP	Not exports	825	0	100.0
		Exports	261	0	.0
		Global percentage			76.0

Variables in the equation

		B	E.T.	Wald	df	Sig.	Exp(B)	I.C. 95% forEXP(B)	
								Lower	Upper
Step 1	TEANEWPR(1)	.461	.144	10.267	1	.001	1.585	1.196	2.101
	Constante	-1.340	.095	197.893	1	.000	.262		
Step 2	TEANEWPR(1)	.472	.145	10.520	1	.001	1.603	1.205	2.132
	TEATECH * gender			8.553	2	.014			
	TEATECH(1) by gender(1)	.906	.319	8.090	1	.004	2.474	1.325	4.619
	TEATECH(2) by gender(1)	.229	.267	.736	1	.391	1.257	.745	2.122
	Constante	-1.406	.099	199.662	1	.000	.245		
Step 3	gender(1)	-.489	.180	7.434	1	.006	.613	.431	.871
	TEANEWPR(1)	.456	.146	9.733	1	.002	1.577	1.185	2.100
	TEATECH * gender			14.594	2	.001			
	TEATECH(1) by gender(1)	1.259	.346	13.256	1	.000	3.522	1.788	6.935
	TEATECH(2) by gender(1)	.587	.300	3.841	1	.050	1.799	1.000	3.238
	Constante	-1.265	.110	132.219	1	.000	.282		

**Table 5. TEATECH variable crossed with gender in the equation**

TEATECH(1) =Very latest technology (newer than one year)  
TEATECH(2)= New technology (one to 5 years)

TEA: Were the technologies or procedures available more than a year ago?													
		Very latest technology (newer than one year)				New technology (one to 5 years)				No new technology (more than 5 years)			
		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
		Recoun t	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column
TEAEXP	No	66	73.3%	26	59.1%	101	71.1%	54	71.1%	334	75.9%	244	83.0%
	Exporta	24	26.7%	18	40.9%	41	28.9%	22	28.9%	106	24.1%	50	17.0%

Source: authors' own elaboration

As we can see, we can obtain descriptive support from the logistic regression. It can be observed (table 5) that when the technology level is high, the incidence of female entrepreneur exporters is higher than the incidence of the male entrepreneur exporters (%Female=40.9% vs. Male%=26.7%) while if the level of



technology is low, male entrepreneurs export more than women entrepreneurs (%Female=17.0%% vs. Male=24.1%). For future research, we think it might be interesting to include variables related with finances like: if previous employers have provided financial support and/or physical infrastructure at the start of the new business, the structure of ownership in its business from the capital contributed by their owners and the financial capacity to remunerate the jobs created.

### B. The demographic profile of Spanish entrepreneurs.

In order to build the socio-demographic profile of the Spanish female entrepreneurs, the studied variables were, age, educational level, family members and income. All the data has been retrieved from 2012 GEM data base.

In the light of the findings in Table 6, it is observed that there are only significant differences between the specific training in entrepreneurship and gender; and the distribution of income and gender, in both cases the level of significance obtained is equal to 0.016 (<0.05).

Table 6. Chi Squared test of **socio-demographic profile and gender**

<b>Age ranges</b>	<b>Value</b>	<b>df</b>	<b>Asymptotic Sig. (2 faces)</b>		
Pearson Chi-squared	7,381 <sup>a</sup>	4	,117		
Likelihood ratio	7,635	4	,106		
Linear-by-linear association	,796	1	,372		
N of valid cases	1119				
a. 0 boxes (0,0%) have expected a count lower than 5. The minimum expected count in 28,30.					
<b>Educational level</b>	<b>Value</b>	<b>df</b>	<b>Asymptotic Sig. (2 faces)</b>		
Pearson Chi-squared	4,743 <sup>a</sup>	4	,315		
Likelihood ratio	5,777	4	,216		
Linear-by-linear association	,118	1	,732		
N of valid cases	1108				
a. 2 boxes (20,0%) have expected a count lower than 5. The minimum expected count in 1,14.					
<b>Formación específica en emprendimiento</b>	<b>Value</b>	<b>df</b>	<b>Asymptotic Sig. (2 faces)</b>	<b>Exact significance (2 faces)</b>	<b>Exact significance (1 face)</b>
Pearson Chi-squared	5,780 <sup>a</sup>	1	,016		
Correction by continuity <sup>b</sup>	5,308	1	,021		
Likelihood ratio	5,649	1	,017		
Fisher's exact test				,021	,011
Linear-by-linear association	5,775	1	,016		
N of valid cases	1109				
a. 0 boxes (0,0%) have expected a count lower than 5. The minimum expected count in 45,01.					
b. Only calculated for a 2x2 table					
<b>Distribución de la renta</b>	<b>Value</b>	<b>df</b>	<b>Asymptotic Sig. (2 faces)</b>		
Pearson Chi-squared	8,310 <sup>a</sup>	2	,016		
Likelihood ratio	8,245	2	,016		
Linear-by-linear association	8,279	1	,004		

N of valid cases	767
a. 0 boxes (0,0%) have expected a count lower than 5. The minimum expected count in 30,63.	

Fuente. Elaboración propia

## CONCLUSIONS

One of the main conclusions of the present study is that, in reference to the influence of gender and innovation on internationalization, when the technological level is high, the incidence of export women is higher than their counterparts. The opposite is the case when the technological level is low, in that case, men perform better than women in terms of export.

As far as the socio-demographic profile, the first variable analysed is the age range. In this case, men and women show similar results. It highlights the fact that the highest share of entrepreneurs is within the 35-44 years old range; followed by 25-34 years old strata and 45-54 years old respectively. However, in terms of formal training, there are clear differences men and women. In the case of women, they have a level of secondary and higher education in almost identical magnitudes, which differentiates them from men, who have a lower level of higher education. This is not the case in the case of specific training and education in entrepreneurship, and it is that both men and women have a very high degree of training in this regard. The Chi Square test reveals that there are statistically significant differences between gender and specific training in entrepreneurship, and between gender and the level of income

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## Gender influence on innovative and international entrepreneurship

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### AIMS

- **O1: To measure the effect of gender and innovation on internationalization Entrepreneurs.**
- **O2: To analyse the demographic profile of Spanish entrepreneurs.**

## Literature Review

- Entrepreneurial orientation (Peña-Legazkue, Iñaki; Guerrero, Maribel; González-Pernia, 2013), internationalization, competitive strategies and innovation are issues quite commonly present among academic and business interests (Castaño, Méndez, & Galindo, 2016; Fernández-Mesa & Alegre, 2015; Hernández-Perlines, Moreno-García, & Yañez-Araque, 2016; Nissan, Carrasco, & Castaño, 2012; Vila & Kuster, 2007) .
- Link between entrepreneurship and internationalization or innovations considering gender factor (Brush, Bruin, & Welter, 2009; Clark Muntean, 2013; de la Cruz Sánchez-Escobedo, Díaz-Casero, Díaz-Aunión, & Hernández-Mogollón, 2014; Henry, Foss, & Ahl, 2015; Kobeissi, 2010; Max & Ballereau, 2013; Poggesi, Mari, & De Vita, 2015).
- That female entrepreneurs are less likely to export and to participate in research and technology (Nissan, Carrasco, & Castaño, 2012).
- This study tries to respond to Poggesi et al (2015) call for more research on international entrepreneurial orientation and innovation.

## Methods

Area	Spain
Sample	Adult population whose age is comprised between 18-64 years, they come from Spain and are involved in the creations of business according to the TEA definition
Methodology	Survey carried out by the Global Entrepreneurship Monitor (GEM) in the year 2012
Size of the sample	1,086 people
Trust level	95.5%

## Methods II

Variables considered in the logistic regression

Variables	Description	Answers
Internationalization (TEAEXP)	Do you export	Yes 1, No 0
Gender		Female 1, Male 0
<b>Innovation</b>		
TEACOMP	TEA: How many businesses offer the same products	Many 2, Few 1, None 0
TEATECH	TEA: Were the technologies or procedures available more than a year ago?	No New Technology 0, New Technology 1, Very Latest Technology 2
TEAyyNTC	TEA: new technology	Indication 1, No Indication 0
TEANEWPR	TEA: product is new to all or some customers	Yes 1, No 0
TEAyyTEC	TEA: Technology sector	Medium or high-tech sector 1, No/Low Technology Sector 0

## Results O1



Variables in the equation

		B	E.T.	Wald	df	Sig.	Exp(B)	I.C. 95% for EXP(B)	
								Lower	Upper
Step 1	TEANEWPR(1)	-.461	-.144	10.267	1	.001	1.585	1.196	2.101
	Constante	-1.340	.095	197.893	1	.000	.262		
Step 2	TEANEWPR(1)	-.472	-.145	10.520	1	.001	1.603	1.205	2.132
	TEATECH * gender			8.553	2	.014			
	TEATECH(1) by gender(1)	-.906	-.319	8.090	1	.004	2.474	1.325	4.619
	TEATECH(2) by gender(1)	.229	.267	.736	1	.391	1.257	.745	2.122
	Constante	-1.406	.099	199.662	1	.000	.245		
Step 3	gender(1)	-.489	-.180	7.434	1	.006	.613	.431	.871
	TEANEWPR(1)	-.456	-.146	9.733	1	.002	1.577	1.185	2.100
	TEATECH * gender			14.594	2	.001			
	TEATECH(1) by gender(1)	1.259	.346	13.256	1	.000	3.522	1.788	6.935
	TEATECH(2) by gender(1)	.587	.300	3.841	1	.050	1.799	1.000	3.238
	Constante	-1.265	-.110	132.219	1	.000	.282		

TEA: Were the technologies or procedures available more than a year ago?

		Very latest technology (newer than one year)				New technology (one to 5 years)				No new technology (more than 5 years)			
		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?		A. What is your gender?	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
		Recount	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column	Recount	% N of the column
	Not Export	66	73.3%	26	59.1%	101	71.1%	54	71.1%	334	75.9%	244	83.0%
TEAEXP	Export	24	26.7%	18	40.9%	41	28.9%	22	28.9%	106	24.1%	50	17.0%

When the technology level is high, the incidence of female entrepreneur exporters is higher than the incidence of the male entrepreneur exporters (%Female=40.9% vs. Male%=26.7%) while if the level of technology is low, male entrepreneurs export more than women entrepreneurs (%Female=17.0% vs. Male=24.1%)

## Results O2

Chi Squared test of socio-demographic profile and gender.

The socio-demographic profile, the first variable analysed is the age range. In this case, men and women show similar results. It highlights the fact that the highest share of entrepreneurs is within the 35-44 years old range; followed by 25-34 years old strata and 45-54 years old respectively

There are only significant differences between the specific training in entrepreneurship and gender; and the distribution of income and gender, in both cases the level of significance obtained is equal to 0.016 (<0.05).



## Conclusions

- One of the main conclusions of the present study is that, in reference to the influence of gender and innovation on internationalization, **when the technological level is high, the incidence of export women is higher** than their counterparts. The opposite is the case when the **technological level is low, in that case, men perform better than women in terms of export.**
- The demographic profile of Spanish entrepreneurs: the Chi Square test reveals that there are statistically **significant differences between gender and specific training in entrepreneurship, and between gender and the level of income**



## **Sharing Economy Startups: A new wave of networked business models in the changing world**

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**Keywords:** *Innovative Business Model, Sharing Economy, Start-up*

### **Abstract**

A relatively new phenomenon called sharing economy, or collaborative consumption, is best known from companies like Airbnb and Uber. These companies use mobile apps and web platforms to match people willing to share a room or a car with others who need a ride or a place to stay. The peer-to-peer economy has disrupted traditional business models and upset the regulatory status quo (Shueh, 2014). The sharing economy has challenged mature industries, such as hotels, restaurants, and cars, by providing consumers with convenient and effective access to resources without the financial, emotional, or social burdens of ownership. In that sense, the sharing economy is also an access economy (Eckhardt, Bardhi, 2015).

There are many new startups springing up and joining the sharing economy movement. Companies are inventing new ways of integrating customers into their value creation processes in order to enhance the success of new service concepts.

In this study, sharing economy is defined as a set of practices and business models based on horizontal networks and the participation of a community (Ouishare; Ismail, 2014). The aim of this study is to increase understanding of how the new networked startups operate and how they create value to their customers. We especially look at the role of platforms, the innovations in organizing the business, and the role of the networks and communities. Data is collected from a Finnish sharing economy startup operating in the restaurant industry (lunch leftovers). The early stage of this startup's business model is compared to the leading startups in the sharing economy.

The data is collected by interviewing the entrepreneurs, drawing the customer journeys, and visualizing the elements of their business models. Case study is used as the method because the study aims to explain what kind of business model sharing economy startups use and what is the role of the different elements in their success, e.g., partnerships, resources, customer relationships, communities, etc. Case study is relevant when the study requires an extensive and in-depth description of the phenomenon (Yin, 2014).

As a result, this study will provide insights into how the new sharing economy startups organize their businesses to create unique value for their customers. This article will contribute to the increasing interest in enhancing customer experience and raises some key elements of success factors for the sharing economy. In addition, the study will highlight the possibilities of digital platforms in enhancing the growth and internationalization of startups.

## 1. Introduction

The rapid growth of the sharing economy originates from the financial crisis of 2008. Many people couldn't afford to own a car any more. Instead, they wanted to use it as a service. Additionally, there was a change in customer behaviour. Sharing is preferred when one doesn't need, for example, a car or an apartment all the time. Digitalization and smart phones has enabled matching those who need services with those who have idle assets to rent, borrow, share, or sell.

Peer-to-peer businesses like eBay allow anyone to become a retailer, sharing sites let individuals act as ad hoc taxi services, car-hire firms, or boutique hotel as and when it suits them. The model works for items that are expensive to buy and are widely owned by people who do not make full use of them. (The Economist, 2013). This opens new opportunities for innovative new startups and new business models.

There is more and more interest inside the business and academic communities to increase understanding of how sharing economy businesses and business models are different than traditional ones and how the platforms are enabling fast internationalisation with relatively small resources. This paper addresses the role of the business model in creating a sustainable competitive advantage and, at the same time, unique value for customers. The present paper further highlights the unique characteristics of the sharing economy business model and contributes to the discussion of the power of platforms.

This paper firstly outlines what that sharing economy is and, in particular, what are the drivers behind the growth of this trend. Secondly, it illustrates the role of business models in creating unique value as well as characteristics of successful sharing economy business models. Next, it describes and analyses a chosen sharing economy startup's organization model and its operations, and compares it against the leading edge business models in the sharing economy. The paper concludes with the contributions to the sharing economy and business model research, together with suggestions for future research opportunities for business model innovation research.

## 2. Objectives of the study

The purpose of this study is to increase understanding of how networked startups operate in the sharing economy and how they create value for their customers. As a result, this study illustrates a list of characteristics of successful sharing economy business models, and analyses the business model of an early-phase startups against those elements.

This article aims to contribute to the increasing interest in enhancing customer experience and raises some key success factor elements for sharing economy startups.

## 3. Literature review: sharing economy and new business models

Sharing economy can be defined as an emergent ecosystem that monetizes underutilized assets in favour of borrowing, renting, or serving up microskills in exchange for access or money (Pwc, 2015). Sharing economy is also defined as an economical model where technology enables people to get what they need from each other rather than from centralized institutions (Owyang, 2015, Maycotte, 2015). Societal, economic, and technological forces are firmly in place to drive the collaborative or sharing economy, as people are continuing to discover the benefits of peer-to-peer exchanges of goods and services (Maycotte, 2015)

Einav et al. (2015) argued that peer-to-peer markets allow small suppliers to compete with traditional providers of goods and services. They view the primary function of these markets as making it easy for buyers to find sellers and engage in convenient, trustworthy transactions.

Sharing economy businesses and platforms can be organized into three types: product service systems, redistribution markets and collaborative lifestyles. Product service systems enable companies to offer goods as a service rather than sell them as products (e.g. peer-to-peer car sharing). In redistribution markets, used or preowned goods are moved from somewhere they are not needed to somewhere they are (e.g., peer-to-peer online flea market). In collaborative lifestyles, people with similar needs or interests

band together to share and exchange assets such as food, meals, space, and skills (Botsman, Rogers, 2010). Figure 1 shows six types of sharing economy startups and some examples of each.

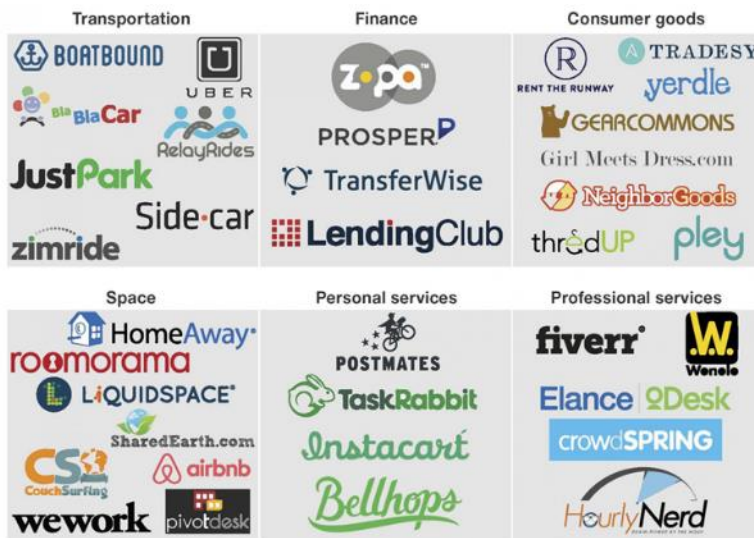


Figure 1. Types of sharing economy startups: Transportation, Finance, Consumer goods, Space, Personal services, and Professional services (Source: Forrester Research, Inc., 2015).

Eckhardt and Bardhi (2015) argued that companies that emphasize convenience and price over the ability to foster connections will have a competitive advantage in a sharing, or access, economy, as they want to call it. Consumers are not as connected to the brands as they are in traditional businesses. For example, people can drive a BMW one day and a Toyota Prius the next day, and they don't feel that one brand is more "them" than another. Consumers are not looking for social value out of rental exchanges with strangers. The advantages are convenient and cost-effective access to valued resources, flexibility, and freedom from the financial, social, and emotional obligation embedded in ownership.

The sharing economy excels at the customer experience, and that is what inspires customer love and loyalty. Sharing economy firms use digital platforms to deliver their products and services friction-free and smoothly. Sharing economy companies may appear to be technology firms, but they are primarily in the business of connecting people with each other. The best ones enable human connections that are emotionally fulfilling. Customer feedback is the lifeblood of sharing economy brands, in fact. In some cases, listening to customers has prompted sharing economy companies to change their service or business model. In the sharing economy, service is provided by contractors, not employees, and customers often shape the experience as much as the providers do. Companies must work harder to ensure the people involved with their businesses share the same values (Yohn, 2015).

The biggest challenge from a customer's perspective is the lack of trust in online activities and transactions. Companies are trying to develop measures to boost confidence, like peer-to-peer rating systems and ID checks. Companies in the sharing economy allow consumers to fulfil new roles and tasks that were normally conducted by businesses (The Sharing Economy, 2013). The development of online platforms is led by social dynamics, such as enjoyment and self-marketing of a community. The firms that own and operate the platforms do not control the sharing at all (Hamari, Sjökin, & Ukkonen, 2015). At the moment, the leading companies, e.g., BlaBlaCar and Airbnb, offer identification tools in order to increase trust in peer-to-peer transactions.

### 2.1. New business models to create unique value

The business model has become an important competitive advantage for any company. Gaining sustainable advantage and creating added value for customers happens through business model innovations, not with new products and service offerings.

Although the business model has been of significant interest from the 1990s onwards, there are no commonly agreed upon definitions. First, it was used in an internet context and was mainly focused on figuring out the revenue models of new ecommerce and online businesses. In recent years, the business model concept has been used to explain how a business works and how a firm is interacting with suppliers, customers, and partners (Magretta, 2002; Zott & Amit, 2003). The business model answers critical questions such as who is the customer? What does the customer value? How do we make money in this business? How can we deliver value to customers at an appropriate cost? (Magretta, 2002).

Various definitions of business models are listed in Table 1 below.

Table 1. Definitions of business models.

<b>Authors</b>	<b>Definition</b>
<b>Amit and Zott (2001, 2007)</b>	A business model depicts the content, structure and governance of transactions designed so as to create value through the exploitation of business opportunities. A business model elucidates how an organization is linked to external stakeholders and how it engages in economic exchanges with them to create value for all exchange partners.
<b>Chesbrough and Rosenbloom (2002)</b>	Business model is a construct that mediates the value creation process.
<b>Osterwalder et al. (2005)</b>	A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a firm.
<b>Chesbrough (2007)</b>	The business model performs two important functions: value creation and value capture.
<b>Mason and Spring (2011)</b>	Three key elements of a business model are technology, market offering (incl. revenue model), and network architecture.
<b>Shafer, Smith, and Linder (2005)</b>	Business model components are: strategic choices, value network, creating value, and capturing value.
<b>Teece (2010)</b>	A business model defines the way the company generates value (value creation) and how it captures some of this value as profit (value capture).

Some common elements and similarities can be identified from the different definitions of business model in literature (Nenonen & Storbacka, 2010; Zott, Amit, & Massa, 2011). Customer value creation is one of the core elements in all of them. Also, the revenue model, the value network, and the firm's resources and capabilities and strategic choices or decisions are discussed in various definitions of the business model. As an example, Nespresso is one of the most successful business model innovations in recent years. The basic idea of the Nespresso concept is customization. Nespresso's success is based on a unique, difficult to imitate, and internally consistent business model. It also builds on a unique, sustainable position that meets long-term trends in the market (convenience, espresso culture, digitalization in the distribution system). The idea to sell capsules has now been copied many times, but what is hard to copy is the entire system – the business model. This non-duplicable business model provides the foundation for sustained success (Matzler et al., 2013).

The peer-to-peer business model works on the premise of playing matchmaker between individuals with a service to offer and others who could use that service. A startup can provide the platform, rules and regulations, and payment methods to facilitate community-based business (Marshak, 2013). It can also be a business-to-peer model where the company provides, for example, car sharing services.

Customer experience can be defined as a customer's end-to-end journey with a company. Customer experience is the cumulative impact of multiple touchpoints over time, which result in a real relationship feeling, or lack of it (Zwilling, 2014). Sharing economy excels at customer experience, and that is what inspires customer love and loyalty. Thus, sharing economy companies are in the business of connecting people with each other (Yohn, 2015).

Airbnb's success can be explained by its compelling experience value proposition: Live like a local, easy access, and a trusted marketplace through engagement and community and the power of the network. However, they are dependent on the residents who rent out their homes (Oskam, Boswijk, 2016).

Companies are inventing new ways of integrating consumers into their value creation processes to enhance the success of new products and services. At the same time, consumers are creating new and novel ways of satisfying their needs, which often include collaboration with fellow consumers (Blättel-Mink, 2014). There is a strong trend demonstrating that access is more valued than ownership, especially when it comes to commodities such as cars (Birdshall, 2014).

The most widespread business model deployed by sharing economy companies features an online marketplace through which the demand for certain assets or services amongst peers is matched with the ownership of those assets and services by other peers. Differentiation strategies are based on the mechanism that drives that matchmaking, either being demand-driven, supply-driven, or a combination of both (The Sharing Economy, 2013).

A key determinant in the success and adoption rate of peer-to-peer business models is the culture and features of the local markets. As almost all peer-to-peer platforms are somewhat different compared to established practices, customer acceptance is particularly challenging to acquire (Business Innovation Observatory, 2013). Platform-based business models seek to leverage the assets of third parties and, in the process, extend the value of economic activity to customers in ways that engage and benefit them (Shaughnessy, 2016).

Platform is argued to be the best business model in the digital age. Creatively designed, it has the potential to disrupt established markets and promote almost invincible competitive advantage. A successful platform-based business model such as Uber, Airbnb, and Facebook takes the lead in markets and acquires astonishing growth statistics, as clearly huge opportunities do exist. (Shaughnessy, 2016). However, for a team to execute such a strategy quickly and seamlessly, it must first thoroughly understand the components of such a business model and how they interact to produce unique customer value and sustainable competitive advantage.

In the digital era, many firms have focused on technology as the source of disruptive innovation. However, with the arrival of the platform age, the source of disruptive innovation is the organizational form—in other words, the business model. Platforms go hand-in-hand with digital ecosystems, linking suppliers, marketers, and consumers. This can be described as the local network and the network effect, where companies achieve exponential growth through the interaction of user networks (Shaughnessy, 2016).

Being successful in the sharing economy means building a business model that's based on trust, authenticity, and transparency with your customers. In addition, understanding the core values behind sharing is crucial. People share mainly due to four reasons: social (to meet new people), economic (to save money), practical (to save time), and sustainable (to protect the environment). It is important to acknowledge these values and make sure that people achieve at least some of them when using a sharing economy service. However, in order to share, both parties must be trustworthy. For example, Airbnb is using the power of technology to build trust among strangers. Trust is the most important factor in attracting more people to the service, getting them to interact with each other, and, if everything works out right, creating a fellowship around the service. People no longer simply want to buy a product, but rather an experience and relationship with other people (Rude, 2015).

## *2.2. BlaBlaCar – Trusted ridesharing*

The fast-growing French startup BlaBlaCar is connecting people who need to travel with drivers who have empty seats. Over 2 million members travel with BlaBlaCar every month. The company has 10 million members in 14 countries. The online company is a pioneer in connecting drivers with passengers to cover the costs of long-distance trips. The difference between Uber and BlaBlaCar is that BlaBlaCar focuses on long-distance trips, and does not operate inside cities (Clifford, 2014). BlaBlaCar is drawing big funding from venture backers while showing a drive to go global.

BlaBlaCar was born when a young student (the founder) wanted to go home to his family for Christmas, but he had no car. The trains were full and the roads were full of people driving home, alone in their car. It occurred to him that he should try and find one of the drivers going his way and offer to share petrol costs in exchange for use of an empty seat. He thought he could do it online, but no such site existed. That was the starting point of a new ridesharing startup. The owners highlight that to make your innovation into a real business, you have to think it, build it, and use it.

BlaBlaCar actively discourages drivers from looking to turn a profit because this could subject them to stricter regulation under rules for professional drivers. BlaBlaCar charges a 10% commission from the drivers. In addition, BlaBlaCar aims eventually to charge a small commission from passengers for connecting them to drivers. A gross merchandise value of payments circulating via BlaBlaCar's system is set to reach more than USD \$500 million in 2014. In 2015, the company aims to expand beyond Europe to India and Latin America.

BlaBlaCar puts a lot of effort in trust, safety, and professional moderation of their platform. Members have to use their real names and photos, and phone numbers and emails are verified. They offer Facebook connections as well so that members can link their BlaBlaCar profile to their existing social network. On BlaBlaCar, every time two members meet in a real life, they publicly rate each other, allowing the members to build up a trusted community reputation. If a member has been declared trustworthy by several people in the past, the new customer can also trust them. The passenger and the driver can both choose who to travel with. Co-travellers contact car owners of their choice, and, in turn, car owners can quickly accept or decline requests. BlaBlaCar provides valuable information about each member's recent activity and experience level.

With dedicated customer service, a state-of-the-art website and mobile platform, and a fast growing community of users, BlaBlaCar is making travel social, cost-saving, and more efficient for millions of members. BlaBlaCar has over 120 employees with their headquarters based in Paris and international teams in Madrid, Milan, Warsaw, Hamburg, Moscow, Istanbul, and New Delhi. People are joining them because they share the same values, they want to join the adventure, and because it is meaningful for them.

## *2.3. Task Rabbit – We Do Chores. You Live Life.*

TaskRabbit is a two-sided marketplace that connects "TaskPosters", people who need help, with "TaskRabbits", a network of pre-approved and background-checked individuals who have the time and skills needed to complete the listed task. The service allows people to outsource small jobs and tasks to others in their neighbourhood. TaskRabbit was founded in 2008 when the founder needed some food for her dog on a cold stormy night. She thought of a platform where people could outsource small tasks to others and save on time. Built on the principles of community building, it has become a revolutionary platform that brings neighbours closer and extends a helping hand for a price people in need want to pay. TaskRabbit has over 50 full-time employees working in the San Francisco office and about 50,000 runners signed up on the platform. It is available in 18 cities in USA and in London, which is the first international location for now. It was first called RunMyErrand, and later changed its name to TaskRabbit in 2010. TaskRabbit has raised around \$38 million in funding as of July 2015. In the previous business model, Taskers would bid for a job, but since 2014 Taskers are automatically assigned a job that they can either accept or reject. There is a review and rating system to the service and the Taskdoers doing the work. Currently, TaskRabbit has about 2 million users online. TaskRabbit's business model is visualized in Figure 2.





Figure 2. TaskRabbit Business Model Canvas (Deep, 2015).

TaskRabbit's value proposition is based on saving time and getting errands done easily and trustworthily. TaskRabbit earns its revenue by taking a commission on every transaction that happens over the app.

A summary of the key elements of BlaBlaCar's and TaskRabbit's business models is shown in Table 2 below. The scale is Yes (+), Key success factor (+++), or Nonexisting (-).

Table 2. Characteristics and analysis on sharing economy business model.

Characteristics of the sharing economy business model	BlaBlaCar	TaskRabbit
Supply/demand driven or both	supply +++	demand + supply +
Local community and ecosystem	+++ local offices around the world	+++ key success factor, brings neighbours closer
Role of trust, authenticity and transparency	+++ very important and lots of effort on this	+ trust, peer-to-peer review, loyalty
Drivers: Social reasons (to meet new people)	+++ challenge in trust and transparency	+++ love your neighbourhood
Economic reasons (to save money)	+++ share the ride	+
Practical reasons (to save time)	+	+++ somebody can do it better and faster, save time for your family, friends, etc.
Sustainable reasons (to protect the environment)	+++	+ you don't have to buy and own the tools and equipment ~product-service systems

#### 4. Methods

This study has a qualitative approach and the case study method was used to gather the data. Case study is relevant when the study requires an extensive and in-depth description of the phenomenon (Yin, 2014). This study aims to explain what kind of business models sharing economy startups use and what is the role of the different elements in their success. Moreover, sharing economy is a relatively new phenomenon, and there is still a lot of confusion and different definitions surrounding it (e.g., platform, access, on demand, peer-to-peer economy, collaborative consumption).

Lunchie was chosen as the case company because the researchers have a good relationship with the founders and have been following their development. Moreover, we have been running a project on the sharing economy where we also looked at the examples of new sharing economy startups. Lunchie is one of the promising sharing economy startups in Helsinki, Finland.

Lunchie's CEO was interviewed twice between October–November, 2016. First, Lunchie's business model was discussed and the discussion was structured according to the Business Model Canvas's nine elements. Then, we agreed on the next meeting and in the meanwhile we made a business model visualization using the online software tool Strategizer (<https://strategizer.com/canvas/business-model-canvas>). In the second meeting, we walked through the business model, discussed the business's current situation, and also the business's future visions. The Lunchie business model was reflected and analysed against the characteristics of the successful sharing economy startups TaskRabbit and BlaBlaCar.

#### 5. Case company: Lunchie.fi - A new sharing economy startup targeting international markets

First, we present a short description of how the company started. The idea of an application that sells leftovers from lunch services was born in the spring of 2015. As young professionals in the creative field, the founders worked hard and long days. Eating was a problem and there was little to eat besides fast food because of their working hours. Yet, from time to time they made large amounts of borscht for themselves at the office and friends came over to grab a delicious bowl of soup. One of those nights, they got the idea for a food-sharing application. In July 2015, the founders were able to convince investors about their mission to make the service easy to use for all users and thus encourage people to eat better while reducing food waste. Finally, after intensive development work, Lunchie was launched in March 2016 (<https://b2b.lunchie.fi/en/meista>). The company colors (red and white) were inspired by the borscht they would make that inspired the idea for Lunchie: borscht red and sour cream white.

Lunchie is a two-sided lunch leftover marketplace. They use the terms 'service concept' and 'digital platform'. Both demand and supply sides are important in this business model. If there is no supply, then there are no lunches available, and consumers lose their interest in the application. For restaurants, it is also an easy tool that saves resources and brings new customers. In addition, restaurants get an ecological image and possibility of additional sales. On the consumer side, they save time and money can use local restaurants and get variation in their everyday meals while at the same time feeling good because of the small ecological action. The sharing element here is a more effective use of resources and reduced food waste. At the moment, the Lunchie application is for lunch portions only. However, they are testing it with some additional products from small local producers. They have a challenge in keeping the restaurants active and posting the leftover lunches.

Lunchie's key customer segments are students, couples without children, families with kids under 18 years, and people living or working in the neighbourhood of particular lunch restaurant. The application takes care of payments and the customers just need to tell what they want to eat. However, customers do have to pick up the food from the restaurant, usually on their way home.

The application is free to download for the customers, and the participating restaurants pay a 25% commission for all the transactions. Lunchie has 200 restaurants in Helsinki and is soon launching in Amsterdam. Lunchie is putting a lot of effort now into building the local communities to increase the number of active restaurants and to get frequent loyal customers. They are also looking for some local agents to promote the application and tell stories of how convenient and easy it is to use Lunchie.

Lunchie's business model is described and visualized in Figure 3.

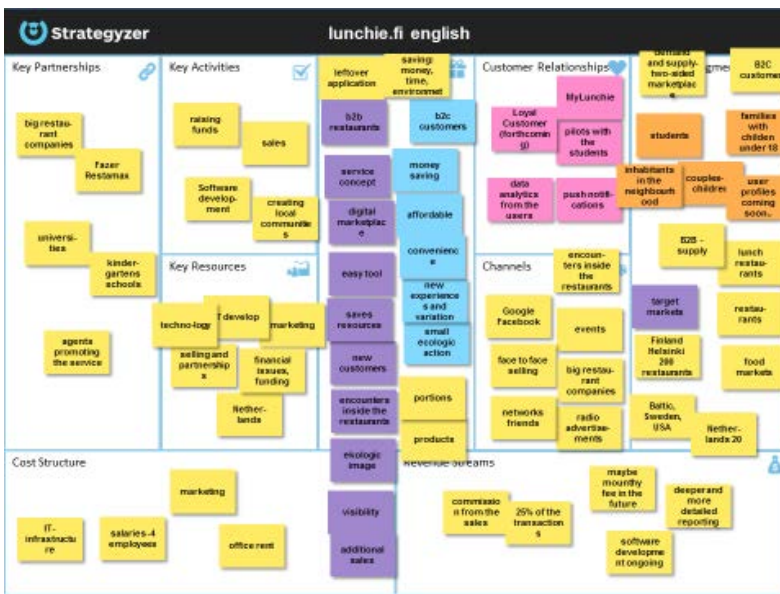


Figure 3. Lunchie.fi business model.

In Table 3 below, Lunchie's business model is reflected and analysed against the characteristics of successful sharing economy business models.

The scale is Yes (+), Key success factor (+++), or Nonexisting (-)

Table 3. Key elements of Lunchie's business model.

Characteristics of the sharing economy business model	Lunchie.fi
Supply/demand driven or both	supply +++
Local community and ecosystem	next step, in progress
Role of trust, authenticity, and transparency	+ excellent food with affordable price
Drivers: Social reasons (to meet new people)	+ for restaurants this is important
Economic reasons (to save money)	+++ students, local inhabitants
Practical reasons (to save time)	+++ important for busy families
Sustainable reasons (to protect the environment)	+++ small eco action/eco image

Lunchie's business model is clearly supply driven. If the restaurants don't actively post the lunch leftover portions to the service, people lose their interest in using it. For BlaBlaCar and TaskRabbit, one key success factor is their strong local communities that promote their businesses. Thus, they are able to build trust and transparency. Lunchie just started to build local networks, hubs of restaurants, local participants, university students, and workers in the neighbourhood, and therefore they have work to do to build their trust and transparency and their strong local communities.

To meet new people is not an important factor for Lunchie customers. But for restaurants, Lunchie is a possibility to get new customers. When people come and pick up their Lunchie portions, they get to know the restaurant. In addition, it reduces the barrier to use the restaurant later as a regular customer.

Lunchie's value proposition for the restaurants is based on getting an ecological image by reducing food waste, getting new customers, and building sales and visibility. Benefits for the customer include saving money and time, getting easy and convenient access to excellent local food, and the possibility to do good by making a small ecologic action.

When we compare Lunchie's business model to the older and bigger startups in the market, it still has work to do in order to find a sustainable business model that enables them increase their cash flow and make it scalable for international markets. Lunchie is still in the early phase and is struggling with getting loyal and active customers, creating and promoting local Lunchie communities, increasing the cash flow, and creating a sustainable business model. The early stage startups often have to work quite a while with the customer side of the business model, and this is the case also with Lunchie.

## **6. Discussion**

The aim of this article was to increase understanding of how networked startups work in the sharing economy and identify the characteristics of successful sharing economy business models. The sharing economy phenomenon is relatively new, and it has brought along with it a booming new wave of startups.

As mentioned, being successful in the sharing economy means building a business model that is based on trust, authenticity, and transparency with customers. In addition, understanding the core values behind sharing is crucial. People share mainly because of four reasons: social (to meet new people), economic (to save money), practical (to save time), and sustainable (to protect the environment). Companies in the sharing economy allow consumers to fulfil new roles and tasks that were normally conducted by businesses. Sharing economy businesses are powered by people, which makes them unique. In addition, a two-sided marketplace requires the company to have both sides, demand and supply, on board.

## **7. Conclusions and Future Research**

This study highlighted the differences between the traditional and sharing economy business models. Consumer behaviour is changing and there is a tendency towards platform-based and people-powered services. Sharing economy startups provide consumers with convenient and effective access to resources without the burdens of ownership.

The next step is to get more early phase startup cases and compare their strategies and business models, and also to look at the customer journey and experience more closely. The identified characteristics of the sharing economy business models presented in this paper increases understanding of the unique value proposition of sharing economy services.

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Zwilling, M



## ***Sharing Economy Startups: New wave of networked business models in the changing world***

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15th International Entrepreneurship Forum Conference, Venice, 14-16  
December 2016



### **Objective and main theoretical issues**

- Objectives of the study: increase understanding of how networked startups operate in sharing economy and how they create value to their customers
- As a result, this study illustrates a list of characteristics of successful sharing economy business models, and analyses an early phase startups business model against those elements



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## Framework: Sharing Economy and Business Models

### Sharing Economy definitions:

1. emergent ecosystem that monetizes underutilized assets, in favour of borrowing, renting or serving up microskills in exchange for access or money
2. economical model where technology enable people to get what they need from each other

### Business Model definition:

1. performs two important functions: value creation and value capture
2. explains how business works and how a firm is interacting with suppliers, customers and partners



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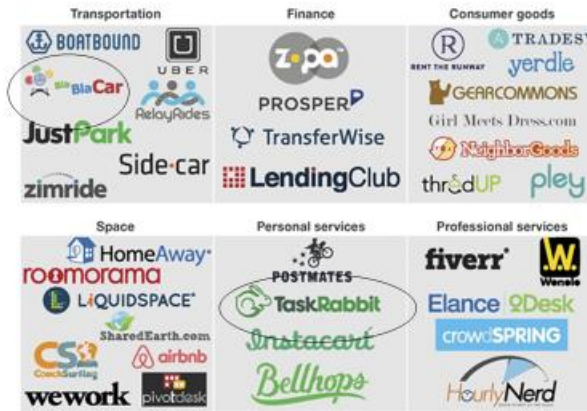
## Sharing economy business models

- online market place through which the demand for certain assets or services amongst peers is matched with the ownership of those assets and services by other peers
- are somewhat different compared to established practices, and customer acceptance is particularly challenging to acquire
- success factors:
  - trust, authenticity and transparency
  - understanding the core values behind sharing is crucial: social reasons (to meet new people), economic reasons (to save money), practical reasons (to save time) and sustainable reasons (to protect the environment)



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## Types of Sharing Economy Startups



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## Definitions of Business Models

Authors	Definition
Amit and Zott, (2001, 2007)	A business model depicts the content, structure and governance of transactions designed so as to create value through the exploitation of business opportunities.  A business model elucidates how an organization is linked to external stakeholders, and how it engages in economic exchanges with them to create value for all exchange partners.
Chesbrough and Rosenbloom (2002)	Business model is a construct that mediates the value creation process.
Osterwalder et al., (2005)	A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a firm.
Chesbrough (2007)	The business model performs two important functions: value creation and value capture.
Mason and Spring (2011)	Three key elements of a business model are technology, market offering (incl. revenue model) and network architecture.
Shafer, Smith & Linder (2005)	Business model components are: strategic choices, value network, creating value and capturing value.
Teece (2010)	A business mode defines the way the company generates value (value creation) and how it captures some of this value as profit (value capture)

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## Characteristics and analysis on sharing economy business model – TaskRabbit and BlaBlaCar

Characteristics of the sharing economy business model	BlaBlaCar	TaskRabbit
Supply/demand driven or both	supply +++	demand + supply +
Local community and ecosystem	+++ local offices around the world	+++ key success factor, brings neighbours closer
Trust, ethical, authenticity and transparency	+++ very important and take a effort on this	+ trust, peer to peer review, loyalty
Drivers: Social reasons (to meet new people)	+++ challenge in trust and transparency	+++ love your neighbourhood
Economic reasons (to save money)	+++ share the ride	+
Practical reasons (to save time)	+	+++ somebody can do it better and faster, save time for your family, friends etc.
Sustainable reasons (to protect the environment)	+++	+ you don't have to buy and own the tools and equipment - product-service systems

## Methods

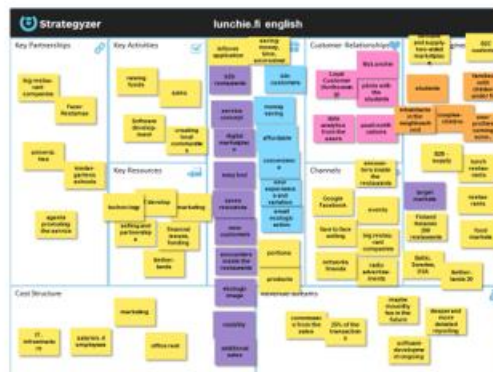
- this study has a qualitative approach and case study method was used to gather the data
- case company: lunchie – a new sharing economy startup targeting international markets
- business model canvas was used to visualize the business model
- 2 interviews with the CEO

## Key Findings

- Lunchie is a two sided lunch leftover marketplace and a startup
- Lunchie is still in the early phase and struggling with getting loyal and active customers, creating and promoting Lunchie communities, increasing the cash flow and creating a sustainable business model
- the aim of this study was to introduce the key elements and characteristics of sharing economy business models and to increase understanding of the success factors of sharing economy startups

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## Lunchie business model



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Characteristics of the sharing economy business model	Lunchie.fi
Supply/demand driven or both	supply +++
Local community and accountability	not at all, in progress
Role of trust, authenticity and transparency	+ excellent food with affordable prices
Drivers: Social reasons (to eat with people)	+ for restaurants this is important
Economic reasons (to save money)	+++ students, local professionals
Practical reasons (to save time)	+++ important for busy families
Sustainable reasons (to protect the environment)	+++ small eco action/local impact

## A summary of the key elements In Lunchie's business model



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## Implications of the findings – policy/practice

- this study highlights the difference between the traditional and sharing economy business models
- consumer behaviour is changing and there is a tendency towards platform based and people power services
- sharing economy startups provide consumers convenient and effective access to resources without the burdens of ownership



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## Future Research Topics

- Next step is to get more early phase startup cases and compare their strategies and business models
- we are also looking at existing companies and how they integrate sharing economy activities into their business models

## **The new French National Student Entrepreneur Status: first results and lessons of an innovative approach to promote entrepreneurship in Universities**

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Keywords: *Entrepreneurship Education, University, Student, Education Policy*

### **1. Abstract**

In 2014, in France, was launched at the national level, by the French Ministry of Higher Education, a new student status, called in French “Statut national étudiant entrepreneur” (SNEE), in English Student Entrepreneur. This status was inspired by the status of students who are high-level athlete, and devoted to students who want to create companies while they are still students or just after having finishing their studies. The SNEE open new rights for students such as:

- validating their mandatory internship in their new or not yet born company,
- education or courses scheduling arrangements in order to develop their business while they are still student,
- special training programs especially for scientific or engineering students but also for all kind of students,
- two coaches per student, - one professor, and one entrepreneur -,
- a free access to coworking spaces inside the campus, and



- a social protection, for student that have just finishing their studies and therefore do not have yet social rights since they are not anymore students, neither employees.

The aim of this paper is to present and share the details and first results and lessons of this innovative experimentation, developed at the national French level. It is a descriptive paper about the first results of a French national policy for student entrepreneurship. It is not a research paper since it does not try to develop a model or test a research question. However, it leads to some questions about entrepreneurship training and education in Universities, aims, methods, acceptance, and results. More than 1500 students already are involved in that status, that was elaborate at Grenoble-Alpes University 15 years ago. We will present and discuss educational aspects, such as Curricula and non Curricula evaluation, training programs, the role of professionals and academics, the transformation rate of those student's projects into real and lasting companies, the resistance of some academics, the budgets, and the contribution to societal changes within the student population but also within the academic community. This new status has at minimum two big issues: the first one is about education, and especially entrepreneurship education, but not only; the second one is a question of economic development.

## 1. Introduction

Developing entrepreneurship amongst student population is today a shared purpose amongst most Universities in the world. Since a long time it is done through devoted programs in business schools. It has also been developed since a while in engineering schools, and in some establishment for graduate students' schools. By the way, entrepreneurship spirit is spreading all over the world, inside youngsters, and even more old ones. Society digitalization, leading to destroy intermediate business owners, profits to networks owners. Work organization changes, leading to individual small companies, as well as fast growing international companies which are dream examples for ambitious students. Entrepreneurship is not any more a wonderful exception but it is a significant (up to 15% of a student promotion in business schools) output of higher education. In 2014, the French Ministry of Higher Education launched a new national program in order to stimulate, promote, and foster student entrepreneurship from Bachelor degree to PhD students, and even furthermore, also for students that have finish up their diploma. The program was set with two main measures:

- a new student status, called "Etudiant Entrepreneur" in French, Student Entrepreneur in English, inspired by the French high-level athlete student status
- Creation or labelling structures inside each academic territory (29 for France) devoted to student entrepreneurship for all kind of schools and universities in each academic territory, so 29 in France (see below). Those structures are called : « PEPITE – Pôle Etudiant Pour l'Innovation, le Transfert et l'Entrepreneuriat » , in english "Student Pole for Innovation, Transfer, and Entrepreneurship". Pepite in French also means (gold) nugget.

The aim of this paper is to describe this program and its first results, but also to discuss the questions that arise from such a wide national program such as:

- Methods for entrepreneurship education and training
- Curricula and not curricula evaluation
- Role of academics and professionals
- Role of the ecosystem for entrepreneurship in the very different territories
- Business models of those programs: who pays and what for ?
- Student profiles and demand

This paper has not the pretention to be a scientific paper, based on or leading to models, or trying to answer to a scientific question through experimental data. No, it is just about observation, experimentation, and operations of a national innovative program to stimulate real enterprises creation by students, mostly aged between 18 and 28 years old.

We will first describe the details of this national program, then have some look on the literature review about student entrepreneurship education, which is huge, then give some first results after two years of experimentation, give the findings and ask the questions that arise from it, discuss some points above, before conclusions.

## 2. The French national program for student entrepreneurship

Launched in 2014, after a public bidding process in 2013, it consists in:

- The creation of a national status “Etudiant Entrepreneur”, Student Entrepreneur
- The creation and/or labelling of one public structure belonging to an university inside each academic territory ; 29 at the end of the process.

This program was launched by the French Ministry of Higher Education, Geneviève Fioraso, under a socialist government. Our place, Grenoble Alpes University has had a prominent role in that process, since we created in 2002 “The house of student entrepreneurship”, in Grenoble, as a global partner for all Universities and Public Schools in Grenoble-Alps (7 at that time before some of them merged). Jean-Pierre Boissin, Professor of Management, (who cosigns this paper) was the founder and he since plays a role in the national spreading of those structures and methods. He is still now responsible for the national Mission for Student Entrepreneurship



What is the status of Student Entrepreneur?

It copy some aspects of high level athlete student status, and at least that analogy was politically used to established this status, at the French national level, with the agreement of all authorities and potential stakeholders.

It gives rights:

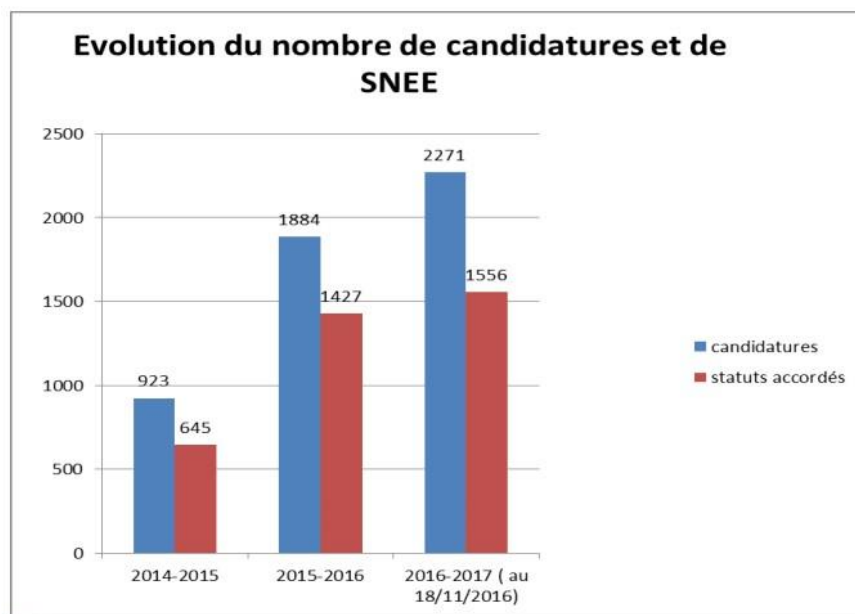
- Acknowledgment, since it is recognized as a national student status,
- Scheduling arrangements if necessary including for examinations,
- The project can be substitute to the mandatory internship, especially the last one, A free access to a devoted coworking space in the campus,
- A special training program for entrepreneurship, called D2E (diploma Etudiant Entrepreneur), operated by a public academic structure, and in Grenoble, a free access to all curses academic and nonacademic related to the project,
- Two coaches: one from academia, one entrepreneur,
- And a lasting social protection (social security) for the student that have finished their studies, until 28 years old,
- It is open to scholarship for students who are socially eligible.

The selection process is local, in each of the 29 PEPITE, after a national application. Jurys are mixed with 1/3 academic, 1/3 consultants, 1/3 entrepreneur. Evaluation criteria are motivation, ambition and realism of the project.

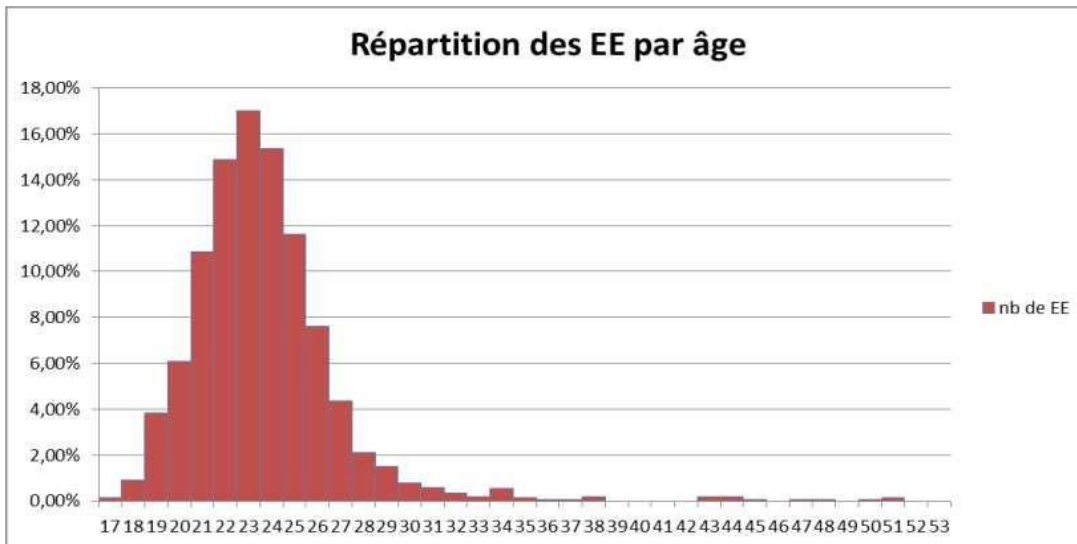
### 3. Findings and Results

The results after two years, in 2016

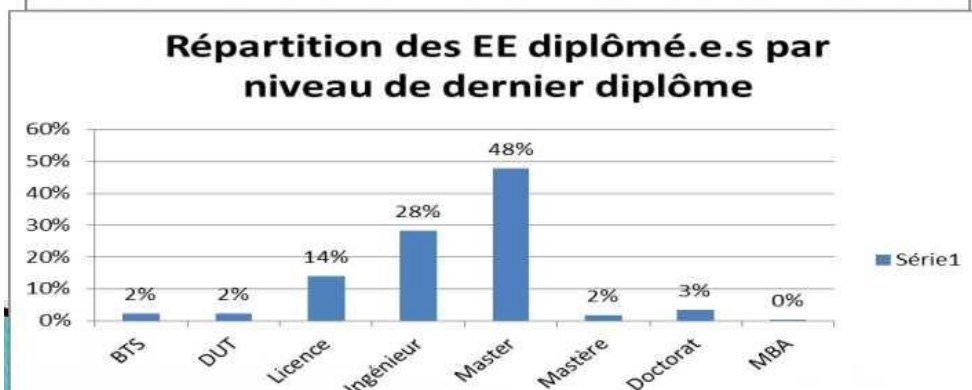
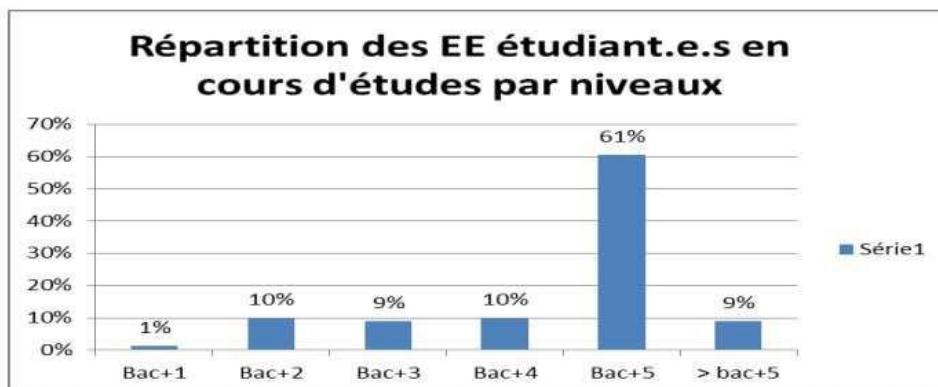
- A very quick growth, from 645 students, the first year to 1556 students, in November 2016



- More and more woman, from 21% initially, to 32% now
- More student having finishing up their diploma, from 28% to 39%
- 2/3 of the projects at early stage, before creation, which leads to the importance of the training and educational aspects of this program
- 54% are team conducted
- Most of the students are aged between 18 and 30, but they are few up to 51 years old, see below



- The level of student's diploma is at 80% Master or engineering degree, see below,
- In Grenoble, the company creation rate is 1/3 of the projects with the first 24 months, which seems to be the target one, and is already high, for this kind of early stage projects.



## The role of the PEPITE

Formally, it is labelling the students, giving them access to a coworking space, and organizing all the local processes and events, including coaches and access to the local entrepreneurship ecosystem. The size, budgets, and organization are quite variable amongst the 29 PEPITEs.

For example, In Grenoble Alps University, The PEPITE budget is around 500000 € and 6 persons for a 70000 students Academic territory. Of course, it is not the only structure devoted to entrepreneurship. They are a lot of other's ones, public or private, and we operate in networks. The more they are based on an old and solid structure, in a University with efficient valorization and tech transfer processes, a powerful entrepreneurship ecosystem, the more they are successful. This is the case for 6 over 29 PEPITEs in France, but the system is still young.

More information can be found by French readers on the government website <http://www.enseignementsup-recherche.gouv.fr/cid79926/statut-national-etudiant-entrepreneur.html>.

## 4. Literature review

They are hundred thousands of papers about entrepreneurship education and training. 579000 indexed in Google Scholar with “entrepreneurship education and training” keywords, and “only”

39100 papers since 2016! We did not read it all! Most of them seem describe experiences, based on some kind of learning by doing process. A lot of them describe some university entrepreneurship student center and its activities. Some of them question about methods and outcome measurements. We chose to reference 4 of them, all published in 2016. Since this paper has not scientific pretention, as we mentioned in introduction, we do not try to go further to describe the literature review, which could be an article or more by itself. But let us say that the huge amount of papers on those subjects, with some saying that there is a lack of research and evidence in that field, leads also to some remaining questions. Does entrepreneurship can be taught? How? By who? How is it effective? What knowledge, skills and entrepreneurship spirit can be transmitted? How to develop a network inside the University, in order to develop an entrepreneur project? And how explain that so many successful entrepreneurs did not learn entrepreneurship, neither have a university degree? At least Academics produce papers as an outcome of their activity, contributing to the ranking of their institutions. And this is also a entrepreneurship activity!

## 5. Discussion

This still ongoing experience shows some evidences, and leads to a lot of questions.

The evidence is the growing interest of students for entrepreneurship. They want not only training and education, but they want help inside their academic curricula, and more help even after, but still in the university environment.

What kind of help and whose help?

- Free environment services, such as coworking spaces, high speed network access, photocopies, nice business offices to meet clients and partners
- Expertise in number of fields, some ones in the classical fields of entrepreneurship such as business plans, marketing, sales, legal aspects, but also for specific purposes such logistics, prototyping, fablabs and livinglab access, design
- Coaching and mentoring, but on their owned projects, they want personalized education, training and coaching

What happens in real in this project?

First, it has to be mentioned the very effective results coming from putting those students together in the same place. They help each other's, especially if the place is filled with a lot of students with different curricula, including scientific, engineers, art and literature, management, economics, law, and all kind of project. That's like in biology. Diversity helps, as soon as we belong to the same species. In terms of business model, those early stage projects do pivot very frequently, in more than 50% of the cases. Being in such a rich environment helps them for the diagnosis and to find resources for the

pivot, with a minimum of costs, especially for the university. For them, it cost efforts. Not pocket money, but under-eyes puffiness.

Second, it leads to question of who can help them: academics? Volunteers entrepreneurs? Experts? And what is the business model for that help? Philanthropy ? Big budgets? Devoted coaches paid by the PEPITE? We don't have yet the answers. Or maybe all of them. But how is it possible to recognize the work of an academic coaching a student entrepreneur? How it is count, and should it be paid? The same for volunteers. And what happens when those people are not recognized by students for their expertise when they are not paid volunteers? Indeed, that raises the question of the business model of such university entrepreneurship center. One element is certain. The student is the client. All others dimensions of the Canvas can be questioned: activities, resources, partners, cost structure, customer relationship and segmentation, channels, revenues.

Another kind of question is the position of such a center in a network of universities and schools like our big educational and research ecosystem in Grenoble. In our city, one over five inhabitants is a student, an academic or a searcher, and there are at least two business schools, both of it having entrepreneurship at the center of its strategy. Student entrepreneurship is a flagship, and more and more an indicator for ranking. Who owns the students? We are convinced that they belong to themselves, but is it the opinion of the schools and universities that invest on them, and are awaiting results at least in terms of reputation. The track is narrow when you want critical mass, heterogeneity, mobility, and since being able to say, this project came out of my school. Only a work about shared academic identity, at the territorial level can overtake those interested behaviors.

Another question is about student's evaluation. As mentioned before, there is an optional diploma, called D2E. Evaluation is based on coaches' opinion about the efforts, knowledge, skills and results of the student. There is no written examination. But this leads to two main issues:

- How to evaluate entrepreneurship skills and knowledge, in a learning by doing process? Especially for early stage projects. (After, it could be the turnover, the growth rate, or the result for instance)
- How to motivate volunteers that are not paid for backoffice tasks, and be sure that they are done properly ; is it possible to delegate notation to nonacademic professional, with a low level of control of this process?

Last but not least, this questions the ability of academics to help students entrepreneurs. Some can because they have the practical expertise needed. Some others are involved in high level educational programs but with no experience of entrepreneurship, and dont' have the expertise needed and therefore cannot help. Some would like to do it. Some others prefers lecturing and do research. The academic recruitment and evaluation system is based on research skills and results. So at the end, we need the ones who can, who want, and who has interest to do it: a triple condition which is rare, but not impossible. This should lead academic responsables to better recognize this kind of work in the academic curricula.

What is the business model of such a place?

An almost totally publicly funded student entrepreneurship center? Yes, for ourselves and yet in France. But there are other models of incubators, and we are sure that creativity in business models can be applied to this subject. In Paris, there is place called NUMA, publicly funded for students from the schools that founded the place, and with a 200 € monthly toll for students from others institutions. The second ones run significantly faster than the first ones. Does it mean that the students should pay a little amount, even in publicly funded structures?

There is a review to be done; maybe we could call it science, for business models for early stage incubators, or university student entrepreneurship centers. It will be necessarily strongly related to the national academic and business ecosystem and regulation: Something between welfare state and struggle for life.

And this will be our conclusions.

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**Sub-theme 4:**  
**SMEs - Tools, Capabilities and Competencies**

## **Analysis of entrepreneurial perceptions of business school students**

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**Keywords:** *Entrepreneurship Orientation, Business School Graduates, University Curricula, Model, Quantitative Analysis*

### **Abstract**

The paper assesses the factors influencing business school students' careers choices concerning entrepreneurship. We start from the hypothesis, which was partly confirmed, that business administration programs develop, from the early years of study, an awareness concerning what an entrepreneur means, and stimulate freshmen to project themselves into this potential role. Further on, a more in-depth approach to Entrepreneurship, during the master studies, combined with examples from the students' own experience, will enrich their motivation to, finally, embrace this "career".

### **1. Literature review**

In a paper from 2004, Lazear examines the entrepreneurial behaviour of Stanford MBA alumni, finding out that the ones who became entrepreneurs tended to be generalists, in school, studying a more varied curricula than alumni having other career options. Still, he does not discuss the role of Entrepreneurship lectures and seminars. According to Liñán et al. (2011), entrepreneurship education has been considered one of the key factors in shaping entrepreneurial intentions (Ferris and Voia, 2012, Gómez-Haro et al., 2011). However, which exactly are the elements making the difference, in the creation of an entrepreneur, is not yet clear enough. Varblane and Mets (2010) discuss the issue of entrepreneurship education in post-communist European countries. It is a particularly sensitive matter, as communism has rejected private initiative and, thus, entrepreneurship. Both entrepreneurship and entrepreneurial education in universities lack a background, in the considered countries. Their findings suggest that Croatia and Slovenia teach entrepreneurship most intensely, followed by the Baltic countries, Czech Republic and Slovakia. Also, entrepreneurship lectures tend to be more present in newer colleges, while the link between theory and practice is still fragile.

A cross-cultural study regarding entrepreneurial intentions of students was conducted by Pruett et al. (2009). They found out, after surveying more than 1000 students from USA, Spain and China, that curricula should take into account the cultural background of the student, although entrepreneurship lectures are helpful in developing entrepreneurial intentions. A similar perspective was taken by Engle et al (2010), evaluating the entrepreneurial intent in 12 countries representing all the clusters in the GLOBE research, about 1800 students, in total. They used Ajzen's model of planned behavior, based on behavioral beliefs, normative beliefs and control beliefs to assess an individual's willingness to become an entrepreneur, depending on culture. The study revealed that the three components defined by Ajzen have different weights, depending on culture. Thus, the authors suggest an integration of specific classes dedicated to entrepreneurship, personal skills selection and role models promoted through visible social channels (e.g., government promoting successful entrepreneurs, to enforce the idea that their behaviour is the norm).

Mitra (2008) suggests the importance of developing entrepreneurship to stimulate economic development and employment based on previous studies that correlate entrepreneurship with economic growth (European Commission, 2003) and low level of unemployment (Audretsch 2002; Nolan 2003).

Few papers analyzed the effects of international entrepreneurial orientation, or the role of specific strategies correlated with this dimension on the foreign performance of such firms. Knight (2010) studied the role of entrepreneurship in the international success of the SME. Entrepreneurial orientation emphasizes innovation in the firm's offerings and processes, risk taking, and a generally proactive approach to business. The specific success factors that influence the international entrepreneurial orientation of SME could be: strategic competence, the role of proactive, international entrepreneurial orientation, the acquisition of appropriate technologies, and generally the adequate preparation to enter foreign markets as identified by Knight..

Entrepreneurship education has been considered one of the essential determinants to stimulate the entrepreneurial attitudes of both potential and nascent entrepreneurs. However, the factors that determine the individual's decision to start a business are still not completely defined (Linan et al, 2011). The personality characteristics or demographic issues or cognitive approaches are considered in relevant papers, but there is a need in the literature to specify exactly which elements have the most prominent role in taking the personal decision to initiate a business. This paper of Linan et al. (2011) is useful to understand the role education in developing attitudes and intentions towards entrepreneurship using an empirical data-based analysis and formulates relevant proposals concerning curricula and educational methods.

However, there is a lack of agreement on the variables that determine the individual's decision to start a venture. Among them, much attention has been paid to the entrepreneurial intention (Autio et al. 2001; Kolvereid 1996).

Other factors refer to personality characteristics or demographic elements or cognitive aspects (Mazzarol et al. 1999; Rauch and Frese 2007; Wagner and Sternberg 2004; Baron 2004; Krueger 2003). Thus, there is a necessity to identify which dimensions have the most influential role in shaping the personal decision to start a firm. This would allow the design of more effective education initiatives.

A study performed by Kolvereid and Moen (1997) on Norwegian business school graduates outlines that alumni having an entrepreneurship major are more likely to become entrepreneurs than the other graduates, so the effect of education is prevailing, as also proved by Koh (1996). Carter and Collinson (1999) are more involved with the perception of students regarding the quality of the entrepreneurial education they have received in university. They expressed the need for post-graduation entrepreneurship courses, which will have a different effect after their prospective students have gained some work experience.

In our curricular design, for business administration, students are provided with basic entrepreneurship notions in their first year of studies, and the domain is investigated in-depth at the master level, when they have, presumably, gained business experience. In the present research, we aim to discuss the efficiency of this curricular model, starting from the entrepreneurial preferences of the surveyed students.

## 2. Methodology

Our quantitative study aims to outline the way in which university graduates perceive entrepreneurship and make their choices accordingly. Thus, we may further identify the factors which constitute obstacles for their entrepreneurial choices and provide solutions for overcoming identified barriers. Also, an adjacent benefit of the research is the improvement of teaching activity, as to stimulate entrepreneurial behaviour.

We have used the 2012 and 2015 Entrepreneurship Eurobarometer, in correlation with *Doing Business Indicators 2013 & 2015* assessing the entrepreneurial climate, namely *starting a business*, *protecting investors*, *registering property* and *getting credit*.

According to the Eurobarometer, in 2012 Romania is among the three European countries where a majority of respondents say that self-employment is desirable: Bulgaria (58%), Romania (58%), and Latvia (55%). It may be seen that the situation is characteristic to recent members of the EU, compared with more economically advanced states, where entrepreneurship is not desirable (Germany – 78%, Sweden – 80%). Thus, we considered worth studying the situation of Romania, which ranks 68 across the 185 economies considered in the *Doing business* report, in terms of *ease of starting a business*, despite the easiness of

getting credit (ranks 12<sup>th</sup>). However, registering property (rank 72) and protecting investors (rank 49) are not so accessible components of the entrepreneurial dimension in Romania.

Our study is focused on the dynamics of the entrepreneurial behaviour, as well as on the changes in the business climate, across the economic crisis, through comparing the situation in 2009, 2012 and 2015. In 2015, according to the Eurobarometer, the percentage of the young people preferring self-employment decreases at 52.7, with Greece taking the lead with a 60.9 percent.

We have assessed, using Hierarchical Linear Modelling, the effects of *ease of starting a business*, *ease of getting credit*, *ease of registering property* and *effort made to protect investors*, on the entrepreneurial intentions and entrepreneurial choices of Romanian university graduates, treated as dependent variables. We have used repeated measures nested within countries, in 2009, 2012, and 2015, for 22 EU members (based on the availability of data): Austria, Belgium, Bulgaria, Cyprus, Czech Republic, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Sweden, UK. We have tested, through the model, whether the effects of the considered country-level variables are significant on individual decisions regarding entrepreneurship, or not. A study by Gnyawali and Fogel (1994) considers five pillars influencing entrepreneurship, namely policies, governmental procedures, socio-economic conditions, entrepreneurial and business skills, financial and non-financial assistance for new ventures. Our model is rather similar in conception, but based on more detailed variables reflecting their considered factors at the macro-level (policies, governmental procedures, socio-economic conditions and financial/ non-financial support), while deducting entrepreneurial skills from the selection of the sample (business university graduates).

### 3. Variables and Equations

We have used a mixed linear model with fixed effects, in order to test whether the considered country-level variables (ease of starting a business, getting credit, registering property, protecting investors) have a significant statistical effect on the intensity of entrepreneurial intention and, respectively, entrepreneurial choice, which are explicit at the individual level. In other words, if we may make an inference on the individual behavior, in terms of entrepreneurship, starting from the country-level variables. Given that individual-level data, at the European scale, are more difficult to obtain than country-level data, establishing a solid model will be helpful in estimating individual behaviors based on country-level data.

**Table 1**

**Type III Tests of Fixed Effects<sup>a</sup>**

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	28,309	781,59	,000

a. Dependent Variable: *entrepintent*

**Table 2**

**Estimates of Fixed Effects<sup>a</sup>**

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	3,609 659	,1291 15	28,3 09	27,9 57	,00 0	3,345 309	3,8740 09

a. Dependent Variable: entrepintent.

As **Tables 1 and 2** above illustrate, there is a statistically significant ( $\text{sig} < 0.05$ ) influence of the country-level variables on the entrepreneurial intentions of highly educated young people living in those respective countries. Entrepreneurial intentions are stimulated or chased away by the business climate in the country, as expressed in the *Doing business* report indicators. As much as these are subject to change, from 2009 to 2012, entrepreneurial intentions are also subject to change. In other words, if conditions are getting better, as evaluated by *Doing business*, more young people take into account starting their own business, while if the economic climate is contracting, less young people will consider entrepreneurship as a career. De la Cruz Sánchez-Escobedo et al. (2011) quote several studies (among which Genescá and Veciana, 1984 have researched the impact of social environment on business students intention to start a business) which outline the link between living in a certain country, under certain socio-economic conditions, and deciding to start a business, or not.

However, this is not true for entrepreneurial choice, which cannot be inferred from country-level variables, its significance level being, according to **Table 3**, well above the 0.05 threshold, that is, statistically irrelevant. Whereas most people would opt for an entrepreneur career in a country where things are economically sound, real entrepreneurial choices are more complicated than expressing intentions, and cannot be linked, in full correlation, to what is taking place at country level. Liñán et al. (2011) include in their model explaining the choice to become an entrepreneur individual perceptions, role models, risk-taking behavior. The regression model they use shows that individual-level variables are significant in the analysis, as well as country-level variables. This may explain the greater amount of entrepreneurs in countries where the business climate is not so friendly, as financial motivations may defeat institutional barriers. Bosma et al. (2008) say that people in developed countries are driven to become entrepreneurs by economic opportunities, while people in less developed countries are driven by economic necessity. In times of economic crisis, economic necessity may prevail to economic opportunities, which explains our findings. Barata Raposo et al. (2008) prove that entrepreneurial education has a significant effect on entrepreneurial intentions, but the choice to become entrepreneur is explained by a different set of factors (like having an entrepreneur in the family, or the perception of obstacles).

**Table 3**

**Estimates of Covariance Parameters<sup>a</sup>**

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	,552351	,160310	3,446	,001	,312729	,975576
entrepchoice [subject = subjid]	,007615	,011246	,677	,498	,000421	,137633

a. Dependent Variable: entrepintent.

Moreover, entrepreneurial choice is negatively correlated with entrepreneurial intentions (see **Table 4**), meaning that the more people wish to become entrepreneurs, the less they really become. At the European level, this may explain the low percentage of entrepreneurs in Western or Northern Europe regions, where economic conditions and health of the economic environment would encourage, in theory, entrepreneurship. Wennekers et al (2005) examine the relationship between economic development and new business creation, reaching the conclusion that entrepreneurship should be stimulated in developed economies, and already existing new businesses should be supported, in developing economies. In order to compare findings, our study should take into account the survival rate of new businesses in developing countries, exhibiting high rates of entrepreneurship choices. If people try unsystematically to start-up businesses that are likely to fail, lacking adequate policies for their support, then entrepreneurship, as Wennekers et al (2005) find out, is not likely to contribute to economic development.

**Table 4**

**Correlation Matrix for Estimates of Covariance Parameters<sup>a</sup>**

Parameter	Residual	entrepchoice [subject = subjid]
		Variance
Residual	1	-,528
entrepchoice [subject = subjid]	-,528	1

a. Dependent Variable: entrepintent.

Developed countries, as recommended in the same study, should promote entrepreneurial education, to stimulate the rate of growth of new businesses, in a healthy business climate. Walter and Dohse (2009)

prove that the impact of entrepreneurial education depends on the regional context, which should be taken into account when developing potential entrepreneurs. Thus, entrepreneurship orientation, as our study also acknowledges, is interplay between individual characteristics, more difficult to study, and country-level characteristics.

We have repeated the study for the level of the year 2015, as compared to 2012. The results are presented in the tables below.

**Table 5**

**Type III Tests of Fixed Effects<sup>a</sup>**

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	28,309	250.09	1.03

a. Dependent Variable: *entrepintent*

**Table 6**

**Estimates of Fixed Effects<sup>a</sup>**

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	8,8452	,0091	28,309	19,278	,07	7,4211	9,0708

a. Dependent Variable: *entrepintent*.

It may be seen that the relationship proven before is not valid, for 2015 data. As in the case of Greece, for example, the worse the economic climate in the country, the more entrepreneurial intent arises. The appearance of the so to call them *desperado* entrepreneurs may be a direct reaction to things getting worse in the economic climate of the country. Entrepreneurship is thus seen more as a last resort solution than a normal consequence of a healthy business climate.



**Table 7**

**Estimates of Covariance Parameters<sup>a</sup>**

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	,7658	,0324	1,446	,003	,4653	,8977
entrepchoice [subject = subjid] Variance	,007849	,011246	2,778	,000	,0029	,1223

a. Dependent Variable: entrepintent.

**Table 8**

**Correlation Matrix for Estimates of Covariance Parameters<sup>a</sup>**

Parameter	Residual	entrepchoice [subject = subjid]
		Variance
Residual	1	,00
entrepchoice [subject = subjid] Variance	,0004	

a. Dependent Variable: entrepintent.

It may be seen, from Tables 7 and 8, that, unlike the situation for the 2009-2012 interval, in the case of the 2015 there is a notable correlation between the entrepreneurial intent and the entrepreneurial choice. In other words, people tend to be more determined, and probably better informed in terms of what being an entrepreneur really means, in everyday practice. Even if the intent to be an entrepreneur declines, over the recent years, a larger percentage of those tempted by being an entrepreneur really become one, in the real market. Thus, we may infer that their decision is less influenced by the economic circumstances and more shaped by other parameters, as family role models, or economic shortage, or need for independence, etc. Our study doesn't take, for the moment, into account these other variables included in the Eurobarometer, and their close examining may be a valuable way of deepening our research, as certainly the focus is moving from economic variables, as such, to more inspirational variables.

**Conclusions**

Our study provides a model which tests the dependence of entrepreneurial intention on country-level characteristics, proving, in line with previous research, that there is a measurable impact of socio-economic variables on wishing to become an entrepreneur. We have used two time intervals, the 2009-2012 period,

soon after the economic crisis, and presumably conserving behavioral patterns of the previous interval, and the 2012-2015 period, with people becoming more pragmatic and taking attitude in the post-economic crisis context. Our analysis revealed changing patterns, with entrepreneurship intent being initially dependent upon economic evolutions in the country, while further becoming a counteraction to economic conditions getting worse, and with entrepreneurial intent and choice to become an entrepreneur initially uncorrelated, and then correlated, as young potential entrepreneurs become more pragmatic and informed.

Lee et al. (2009) proved that there should be a correlation between entrepreneurship education curricula and the country in which the business school graduates intend to start a business. Our study supports this idea, emphasizing the correlation between national characteristics, which are easier to assess on a large, comparative scale, and entrepreneurial intent, which has the features of a latent variable.

Another finding of the study is, as Lüthje and Franke (2003) also argued, that there is a difference between intending to become an entrepreneur and choosing to be an entrepreneur. More complex models, including risk-taking behaviour, individual characteristics, along with societal traits which were specified in our model, should be employed in order to simulate entrepreneurial choice, starting from entrepreneurial intention.

The inclusion of most countries members of the European Union, having attempted to align their educational systems, in the Bologna framework, and the assessment, starting from presumably similar higher education curricula, of the differences in entrepreneurial intention based on country characteristics constitutes the merit of the present approach. However, its limitations, as detailed above, call for a more in-depth modeling of the real-life entrepreneurial choices, which are linked to economic development and economic convergence in the EU.

Considering more variables that investigate the family climate, as well as personal traits, will better outline present day trends, which take distance from the economic conditions in a given business climate, to give more importance to personal talent and to family tradition.

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## Effect of Finance and Training on the Growth of Women Entrepreneurs: A Survey of Women Entrepreneurs in Leather Industry, Kano, Nigeria

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### Abstract

The growth of women entrepreneurs is greatly hindered by a lack of access to finance and entrepreneurial training especially in the leather work industry in Kano State. This is in spite of the enormous potential that women entrepreneurs have in promoting economic growth and development of the Nigerian economy. This study was therefore aimed at examining the effect of finance and training on the growth of women entrepreneurs. The study was quantitative in approach, and a sample survey was adopted. Primary data was gathered through the administration of the questionnaire. A total of 306 respondents were selected from 1500 leather work women entrepreneurs using simple random sampling technique. The findings of the study revealed that access to finance and entrepreneurial training were significant predictors of growth of women entrepreneurs, especially in the leather work industry. Specifically, it was found out that the need for collateral in getting a bank loan and high-interest rates, coupled with cultural barriers, limit women entrepreneurs' ability to access loans which subsequently affects the growth of their businesses. It was concluded that the issues of collateral security, high-interest rate and some cultural factors impede access to finance and subsequently the growth of women entrepreneurs. Thus, it is recommended that the requirements for accessing loans should be made less stringent for women to enable them to have easy access to such facilities.

### Introduction

The rising number of women entrepreneurs is a global phenomenon that draws the attention of researchers the world over. Some research conducted in many advanced countries showed that women own more than 25% of all businesses (Woldie & Adersua, 2004). Woman entrepreneur is a woman who takes risks and accepts the challenging role to meet her personal needs and become economically independent. A strong desire to do something positive and the drive to pursue it to its logical conclusion is an inbuilt quality of an entrepreneurial woman. An entrepreneurial woman is capable of contributing values in both family and social life. As a result, women entrepreneurs significantly contribute to the acceleration of the achievement of wider social and economic objectives, autonomy, poverty reduction and mobilization of entrepreneurial initiatives (Belwal & Singh, 2008). Also, not only does women entrepreneurship contributes to economic growth and employment creation, but it also enhances the diversity of entrepreneurship in any economic system (Verheul, Van Stel, & Thurik, 2006). According to OCCI (2006), women, all over the world, have demonstrated success in small-scale businesses, which in turn helps in meeting the needs of some large-scale industries and boosting innovation, commercial and industrial community, as well as the development of women.

However, in Africa in general and Nigeria in particular, finance is one of most difficult challenges women face because accessing debt finance for most women business start-ups is a source of failure and concern to women enterprises (Bruin, Brush, & Welter, 2007). Therefore, lack of access to finance is a problem to women entrepreneurship especially in Kano State, Nigeria. Without sufficient funds, women entrepreneurs

find it difficult to expand their business activities. Women entrepreneurs start their businesses with lower levels of overall capitalization and lower ratios of debt to finance than their male counterpart (Zivkovic, 2007). In addition, Carter and Kolvereid (1997) found that women had greater limitations in accessing personal savings given their more interrupted work histories and lower pattern of remuneration. This, to a large extent, affects their enterprise growth and performance, especially when compared with their male counterparts.

Similarly, another problem that hinders the growth of women entrepreneurship is lack of the training. Most women entrepreneurs in Kano lack the entrepreneurial skills, to a great extent, affect their performance. Literature confirms that vocational training and business education have a positive effect on enterprise performance (Akanji, 2006; Cheston & Kuhn, 2002; Kuzilwa, 2005). According to Shane (2003), the ability to exploit an opportunity is dependent on the entrepreneur's level of education, skills acquired through work experience, social network and a bank credit available (Mandipaka, 2014). However, many women entrepreneurs lack training and education both in developed and developing countries (Ibru, 2009).

Given the above, therefore, this study aims to examine the effect of access to finance and training on the growth of women entrepreneurs in Kano. Specifically, the focus of the study is on the women entrepreneurs in the Leather Industry in Kano State, Nigeria. The paper is structured into four parts: introduction, review of related literature, methodology and discussion of results.

### **Objectives of the Study**

The main aim of this paper was to find out the effect of access to finance and training on the growth of women entrepreneurs in Kano. Specifically, the paper sought to achieve the following objectives:

1. To determine the effect of access to finance on the growth of women entrepreneurs in the leather industry, specifically in Kano, Nigeria.
2. To ascertain the relationship between training and the growth of women entrepreneurs in the leather industry.

### **Literature Review**

Women Entrepreneurs have grown in large number across the world over the last decade and the entrepreneurial potentials of women have increasingly changed the rural economic fabric in many parts of the world. But this does not mean that the problems facing women entrepreneurs are totally resolved (Wube, 2010). In support of this The Centre for Women's Business Research in the United States as cited in UNECE (2004) and Mahbub (2000) identified the following factors that affect women entrepreneurs' performance.

#### **Access to Finance**

Access to finance is viewed as the biggest concern for women entrepreneurs. The challenge of accessing debt finance for most start-up women enterprises is a source of failure to women enterprises (Bruin, A., Brush, C. & Welter, F. (2007). Fielden and Davison, (2010) agreed that women most at times have limited opportunities than men in getting credit for various reasons. Some of the reasons include lack of collateral, unwillingness to accept household assets as collateral and negative perceptions about women entrepreneurs. Thus, the lack of adequate funds for starting enterprises is a serious problem for women entrepreneurs. Women seem to be left behind for lack of funds and as such do not have enough financial backing to start a business or sustain an existing one.

Access to finance is a key issue for women. Accessing credit, particularly for starting an enterprise, is one of the major constraints faced by women entrepreneurs. Women often have fewer opportunities than men to gain access to credit for various reasons, including lack of collateral, an unwillingness to accept household assets as collateral and negative perceptions of female entrepreneurs by loan officers (Mahbub, 2000).

Carter (2000) identified four areas of financing that previous researchers have noted were of serious concerns for women that were disadvantaged in their ability to raise start-up finance: guarantees required for external financing may be beyond the scope of most women's personal assets and credit track record. Once a business has been established, finance may be even more difficult for women entrepreneurs to raise than for their men counterparts, because of the greater difficulties women face in accessing informal

financial networks (Carter, 2000). Also, the relationship between women entrepreneurs and bankers may suffer from sexual stereotyping and discrimination. As a result, the majority of women business owners rely, to a large extent, on self-generated finance during the start-up period of their business.

Empirical evidence revealed that women entrepreneurs start with lower levels of overall capitalization and lower ratios of debt finance than their men counterparts (Bruin et al., 2007). Carter & Kolvereid (1997) found for example that women had greater limitations in accessing personal savings, given more punctuated and interrupted work histories and lower patterns of remuneration. Shaw, Carter, & Brierton, (2001) similarly are of the view that women are less likely to have generated a credit track record to establish formal creditworthiness than their men counterparts. Women entrepreneurial ventures also tend to be concentrated in service sectors that are usually cheaper and easier to start (Carter, Anderson, & Shaw, 2001) and both men and women entrepreneurs tend to tap mostly into savings and family support (Cosh & Hughes, 2000).

Women do have access to credit but it is usually in small amounts, and financial institutions do take into consideration whether this suits their needs or not. According to Das (2001) divergent access to credit may, of course, be a reflection of differences in the choice of the sector, educational level or the amount of loan requested. However, as sector choice and educational levels tend to be limited or influenced by gender, one could say that inconsistent access, based on this motive, is indirectly caused by gender perceptions. As already mentioned, Das (2001) agree to the fact that entrepreneurs usually require financial assistance of some kind to launch their ventures - be it a formal bank loan or money from a savings account. Women in developing nations have little access to funds, because they concentrate in rural communities with little opportunities to borrow money (Starcher, 1996).

According to Verheul & Thurik (2000), women entrepreneurs are likely to have less experience with financial management than male entrepreneurs because of vertical segregation of the labour market. This view is supported by Collette & Aubrey (1990) and Stevenson (1986) who found that financial management skills are an area of weakness often due to educational background. This means that most women entrepreneurs do not have experience in financial management and thus lack the skills to manage their business finances. This lack of financial management experience may result in women being unaware of whom they can contact for help and advice when it comes to the issue of financing. This puts some natural limitations on their chances of becoming successful women entrepreneurs.

### **Access to Training**

Women have limited access to vocational and technical training. In fact, women, on average, have less access to education than men, and technical and vocational skills can only be developed on a strong foundation. This is mostly because of some cultural and religious barriers, especially in the developing world. Literature confirms that skills training and business education have a positive effect on enterprise performance (Akanji, 2006; Cheston & Kuhn, 2002; Kuzilwa, 2005) not only on men entrepreneurs but also women entrepreneurs. According to Shane (2003) cited in Mandipaka (2014), it is acknowledged that the exploitation of entrepreneurial opportunity depends on the entrepreneur's level of education, skills or knowledge acquired through work experience, social network and credit. This implies that even women who are opportune to have a high level of education would be able to exploit opportunities successfully. Many women entrepreneurs lack training and education both in developed and developing countries (Ibru, 2009) and thus the need for training especially must be emphasized. Hadary (2004) argues that women also tend not to have the relevant education and experience in starting and managing a business and this in most cases affects their success. Acquiring the relevant skills and knowledge about managing a business venture can also be more difficult for women, simply because of domestic chores and other responsibilities. As a result, women tend to be educationally less well-equipped to manage some kinds of businesses.

Everywhere in the world, entrepreneurship is seen as one of the most important solutions to unemployment, poverty, and low economic growth. The creation of new ventures and growth of existing businesses are vital to the growth and development of any economy. An important way to enhance entrepreneurial activities in a country is to encourage training for both vocational and technical skills. Therefore, it is imperative to focus on the training of entrepreneurs and in particular on the development of previously disadvantaged individuals, specifically women entrepreneurs (Van der Merwe, 2002). Carter (2000) agrees and suggests that the only way to encourage larger numbers of women into self-employment

is to recognize that there is a clear need to widen access to business start-up and growth training and advice.

Although education is not mandatory for new venture creation, it provides entrepreneurs with the skills, contacts and opportunities vital for most successful businesses. Henry, Hill & Leitch (2003) are of the opinion that entrepreneurship training can complement the early stage awareness-raising function of entrepreneurship education, as it provides the most practical skills that entrepreneurs require when they are ready to set up their business. Ladzani & Van Vuuren (2002) agrees to a certain extent, stating that organizations wishing to develop entrepreneurship by education presuppose that the lack of training of entrepreneurs is the main reason for venture failure. Furthermore, Pretorius, Nieman & Van Vuuren (2005) add that the transfer of the requisite knowledge and skills is the easiest part of training and is incorporated in most training programmes. Changing the behaviour to engage in the start-up process and develop the risk-taking propensity is what matters and is what is lacking as a pronounced outcome of most programmes.

Women have limited access to vocational and technical training (Wube, 2010). In fact, women on average have less access to education than men, and technical and vocational skills can only be developed on a strong foundation of basic primary and secondary education. In support of this, Africa and South Asia are characterized by low enrolment among women in education, high dropout rates and poor quality of education (UNECE, 2004).

## Methods

The population of the study consisted of all registered leather industry women entrepreneurs who were operating in Kano State as at the time of the study. At the time, there were two hundred and fifty (250) associations of leather work women entrepreneurs who were registered with the Ministry of women affairs, Kano state as at May, 2015. Thus, there were about one thousand five hundred (1500) members of the (250) associations of leather industry women entrepreneurs with one national president. The sample of 306 members was drawn from the population using Krejcie and Morgan table as the basis. This means that 306 women entrepreneurs were given questionnaires to fill. Simple random sampling technique was adopted in drawing the sample size. Multiple regression analysis was the data analysis technique adopted using SPSS Version 16. Three variables were identified for the study. The dependent variable for the study is the growth of women entrepreneurs and the access to finance and training as the independent variables.

The measures adapted and used for the growth of women entrepreneurs were higher earnings, employing a larger number of workers, VAT registrations, sales and capital assets increases (Haber and Reichel 2005; Rodriquez et al. 2003; Davidsson et al. 2002; Orser and Hogarth-Scott 2002). Access to finance was measured by how women entrepreneurs could easily get access to financial institutions facilities. Entrepreneurial training was measured by women access to leather work training by relevant government agencies to both already in the business and new entrants. The measures were also adapted from the works of some scholars (Valla, 2001 & Jamali, 2009) in the areas of barriers facing women entrepreneurs.

## Discussion of Results

In this section, the results obtained from the data analysis were presented and analyzed. The summary of the reliability test results for both the dependent and independent variables are given below:

**Table 1.0 Summary of Reliability Test Results**

Variables	No. of items	Cronbach's alpha
<b>Dependent Variable:</b> Growth of women entrepreneurs	4	0.757
<b>Independent Variables:</b> Access to finance	4	0.751
Training	4	0.758

Source: Field Survey, (2015)

Table 1.0 shows that the Cronbach's alpha for the growth of women entrepreneurs is 0.757 which means that 75.7% of the items measure the construct. Also, the Cronbach's alpha for access to finance and training



are 0.751 and 0.758 respectively. It indicates that the items used on the scale to measure the independent variables for the study are good measures for the constructs considering the fact that their Cronbach's alpha coefficients fall within the acceptable range thresholds.

**Table 2.0 Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.319 <sup>a</sup>	.102	.095	2.07850	1.800

a. Predictors: (Constant), TRAINING, ACCESS

b. Dependent Variable: ENTGROWTH

From the table above, the  $R^2$  is 10.2% which indicates that access to finance and training have explained the variability in the growth of women enterprise by 10.2%. This implies that other factors account for the variance in the growth of women enterprise by 89.8%. The  $R^2$  value is low as it is common with cross-sectional data. This is supported by Giles (2013) who argued that the  $R^2$  is at the bottom of the list of priorities because the signs, magnitudes, and significance of the estimated parameters are of primary interest. He further argued that  $R^2$  is a statistic – a random variable that has a sampling distribution and that the form of this sampling distribution depends on the X data, and on the unknown beta and sigma parameters. He concluded that even if there is a very large sample of data,  $R^2$  converges in probability to a value *less than one*, regardless of the data values or the values of the unknown parameters. It is on the basis of the above argument that the  $R^2$  value was reported despite its being low. In addition, the Durbin-Watson value falls within the acceptable range of 1.5 -2.5. This means that the assumption of independence of error term has been met.

**Table 3.0 ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	129.410	2	64.705	14.977	.000 <sup>a</sup>
	Residual	1140.522	264	4.320		
	Total	1269.933	266			

a. Predictors: (Constant), TRAINING, ACCESS

b. Dependent Variable: ENTGROWTH

The above table shows that the model for the study is significant considering the Sig. F Change value ( $F(2, 264) = 14.977, p < .0005$ ). The level of significance is .000 which shows that the model is good and fit for the study.

## **Discussion of Findings and Implication**

The findings of the study indicate that access to finance was statistically significant and that the variable contributes in predicting the growth of women entrepreneurs. According to the results, the need for collateral in getting a bank loan and high-interest rates significantly affect women entrepreneurs' ability to access loans which subsequently affects the growth of women entrepreneurs. Furthermore, women are hindered from accessing loans from the bank especially due to some cultural and religious restrictions which often leads them to failure. This is in tandem with the findings of Bruin et al., (2007) that challenge of accessing debt finance for most women enterprises is a source of failure to women enterprise. This implies that unless government and other relevant stakeholders take appropriate measures in addressing the problems women encounter in accessing loans, their entrepreneurial growth would still be undermined.

Also, it was found out that entrepreneurial training was statistically significant at predicting the growth of women entrepreneurs. It shows that leather work training contributes significantly to women entrepreneurial growth. Thus, training as a whole has the potential to enhance the growth of women entrepreneurs. These findings support the view of some scholars (Akanji, 2006; Cheston & Kuhn, 2002; Kuzilwa, 2005) that skills training and business education have a positive effect on enterprise performance and growth. The implication of this is that if government at all levels – local, state and federal - would implement and sustain training programmes for women entrepreneurs especially those in the leather industry, there would be a tremendous growth of women entrepreneurs which will lead to economic development.

## **Conclusion and Recommendation**

It is concluded that access to finance remains an important variable in predicting the growth of women entrepreneurs. It is concluded that the issues of collateral security, high interest rate and some cultural and religious barriers pose great impediment to the growth of women entrepreneurs. These factors obstruct women from easy access to finance especially in Kano. Similarly, it is concluded from the findings of the study that training is a basic prerequisite for the growth of entrepreneurs, and that lack of training remains a great obstacle to women entrepreneurial growth. This shows that lack of entrepreneurial training by government on leather work businesses hinders the growth of women entrepreneurs. Thus, women entrepreneurs need adequate training more specifically with modern technology in the leather work industry. Thus, it is recommended that the requirements for accessing loans should be made less stringent for women to enable them to have easy access to such facilities. This action would contribute immensely in boosting the nation's economy. The government should ensure adequate and regular entrepreneurial training of women in the leather industry to develop their skills so they can contribute meaningfully to the economic development of the country.

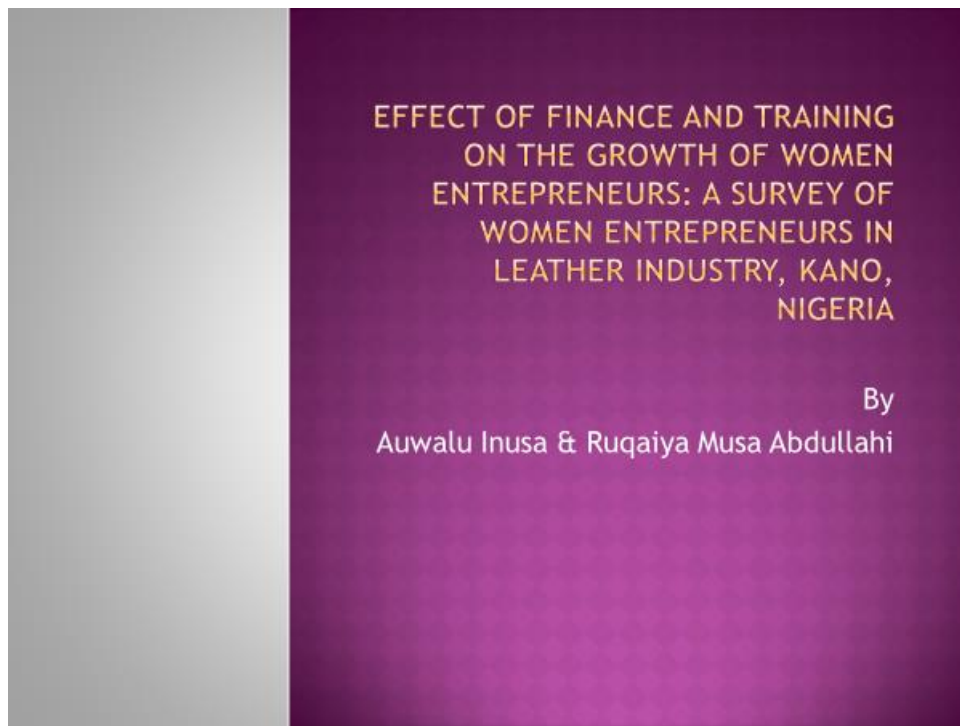
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## INTRODUCTION

- ◉ The rising number of women entrepreneurs is a global phenomenon that draws the attention of researchers the world over.
- ◉ Some research conducted in many advanced countries showed that women own more than 25% of all businesses (Woldie & Adersua, 2004).
- ◉ Thus, women entrepreneurship contributes to economic growth and employment creation

## CONT'....

- ◉ However, the growth of women entrepreneurs is greatly hindered by lack of access to finance and entrepreneurial training especially in the leather work industry in Kano State, Nigeria.
- ◉ This is in spite of the enormous potential that women entrepreneurs have in promoting economic growth and development of the Nigerian economy.
- ◉ Therefore, this study was aimed at examining the effect of access to finance and training on the growth of women entrepreneurs in Kano.

## METHODOLOGY

- ◉ A sample survey was adopted for the study
- ◉ A sample of 306 members was drawn from the population using Krejcie and Morgan table as the basis.
- ◉ Simple random sampling technique was adopted in drawing the sample size.
- ◉ Multiple regression analysis was used to analyse the data using SPSS Version 16.

## FINDINGS

- ◉ The findings of the study indicate that access to finance was statistically significant and that the variable contributes in predicting the growth of women entrepreneurs.
- ◉ The need for collateral in getting a bank loan and high-interest rates significantly affect women entrepreneurs' ability to access loans.
- ◉ In addition, women are hindered from accessing bank loans by some cultural and religious barriers.

## CONT'....

- ◉ Also, it was found out that entrepreneurial training was statistically significant at predicting the growth of women entrepreneurs.
- ◉ It shows that leather work training contributes significantly to women entrepreneurial growth.
- ◉ Thus, training as a whole has the potential to enhance the growth of women entrepreneurs.



## IMPLICATIONS

- ◉ This implies that unless government and other relevant stakeholders take appropriate measures in addressing the problems women encounter in accessing loans, their entrepreneurial growth would still be undermined.
- ◉ That if government at all levels - local, state and federal - would implement and sustain training programmes for women entrepreneurs especially those in the leather industry, there would be a tremendous growth of women entrepreneurs which will lead to economic development.

## CONCLUDING REMARKS

- ◉ Access to finance remains an important variable in predicting the growth of women entrepreneurs. That the issues of collateral security, high interest rate and some cultural and religious barriers pose great impediment to the growth of women entrepreneurs.
- ◉ That training is important for the growth of women entrepreneurs; that lack of it remains a great obstacle to women entrepreneurial growth.

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THE END

THANK YOU

## Effectuation; emerging theory of entrepreneurship – from nascent to intermediate stage of development

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### Abstract

Effectuation (Sarasvathy, 2001) is one of the most cited emerging theories of entrepreneurship. However, it has been under criticism due to the slow development progress and testability of the theory. Chandler, DeTienne, McKelvie and Mumford (2011) contributed by validating measures for effectuation and causation. Perry, Chandler and Markova (2012) introduced suggestions for future research in their effectuation review from the years 1998–2011. Since these two remarkable papers, there has been a substantial change in effectuation research. As effectuation literature has intensified and evolved, more empirical research has been introduced. Therefore it is justified to execute a follow up -literature review from the years 2012–2016. In this paper we highlight the progression of the effectuation theory. From the early year's conceptual, open ended and broad research questions to the recent empirical effectuation literature, characterized by specific, measurable research questions, addressing the stages of the development of the theory. Findings indicate that during this period, the research of effectuation has moved on from nascent to intermediate stage of development.

### Introduction

Effectuation (Sarasvathy, 2001) represents emerging theoretical perspective in entrepreneurship research (Perry, Chandler and Markova, 2012; Fisher, 2012). As interest in entrepreneurship has intensified, also new theoretical perspectives have emerged to explain the entrepreneurial behavior (Leitch, Hill and Neergaard, 2010; Fisher, 2012). Alternative theoretical perspectives for describing entrepreneurial action, such as effectuation (Sarasvathy, 2001), entrepreneurial bricolage (Baker and Nelson, 2005) and improvisation (Weick, 1998), suggest that entrepreneurs take various routes to identifying and exploiting opportunities. Effectuation is one of the most cited emerging theories of entrepreneurship (Fisher, 2012; Perry et al 2012). Since Perry et al (2012) review, there has popped out many new insights for effectuation theory, therefore it is justified to make up to date literature review. This review concentrates especially on years 2012-2016 where there has been a substantial development on the effectuation research.

This study is a follow up review for Perry et al (2012) large effectuation review. The objective is to determine whether the effectuation research has moved on from nascent to intermediate stage of development after Perry et al (2012) article. Perry et al (2012) estimated effectuation theory to be at the nascent stage of development and transitioning towards an intermediate stage, where empirical and field research begin to support the conceptual articles on the topic (Edmondson and McManus, 2007). Perry et al (2012) found 29 articles published between 1998 and 2011 in which effectuation was main topic, and only six of these were empirical studies. Their primary proposition for the lack of empirical studies was that no valid measures had been developed. Chandler et al (2011) developed and validate measures for causation and effectuation and since then there has been a substantial change in effectuation research.

Between years 1998 to 2011, effectuation articles were addressing the core definitional research questions, like how firms are created (Sarasvathy, 2001), what is effectuation (Dew and Sarasvathy, 2002), how do entrepreneurial opportunities come into being (Sarasvathy, Dew, Velamuri and Wenkatamaran,

2003), how do entrepreneurs act in uncertain situations (Wiltbank, Dew, Read and Sarasvathy, 2006), behaviour before establishing a company and how entrepreneurs successfully create companies (Dew, Read, Sarasvathy and Wiltbank, 2008).

While the effectuation literature has revived and intensified, the number of empirical field studies has increased. We found 47 articles written in years 2012-2016, where effectuation can be considered as main subject. Majority of these, 38 studies were empirical. Latest research trend seems to focus on relationships between effectuation and established constructs. The innovation and product development activities has been studied actively by Brettel, Mauer, Engelen and Küpper (2012), and Svensrud and Åsvoll (2012), internationalization perceived through the theoretical lens of effectuation by Kalinic, Sarasvathy and Forza (2014). Mthanti and Urban (2014) investigates empirically the influence of effectuation on entrepreneurial orientation (EO) and firm performance. One research stream diversifies the effectuation logic from the entrepreneurial level to the corporate context (Brettel et al 2012; Werhahn, Mauer, Flatten and Brettel, 2015; Kalinic et al 2014). Sarasvathy, Kumar, York and Bhagavatula (2014) integrate Uppsala model with effectuation theory in existing international case company.

In a framework proposed by Edmonson and McManus (2007), the state of the research program may be classified in to three different stages; nascent, intermediate and mature. Nascent stage is characterized by conceptual papers, qualitative empirical studies with open ended research questions and author's calls for theory development. Intermediate research programs are characterized by research questions between new and established constructs, using a mix of qualitative and quantitative methods and the development of the theory. Mature stage is characterized by focused, precise questions connected to existing constructs, mostly quantitative methods used in empirical studies, and studies that support examined theory (Edmonson and McManus, 2007).

Effectuation theory has been under criticism due to the slow development progress and testability of the theory (Arend, Sarooghi and Burkemper, 2015; Fischer and Reuber, 2011). When scrutinizing the years 1998 to 2011, this criticism may be partially appropriate and understandable. Perry et al (2012), on the other hand found, that it cannot be claimed slower than the other comparable emerging theories. In the following chapters we highlight the progression of the effectuation theory, from the first year's conceptual, open ended and broad research questions to the recent empirical effectuation literature, characterized by specific, measurable research questions, addressing the stages of the development of the theory.

Findings indicate that during the period of January 2012 to September 2016, the research of effectuation has moved on from nascent to intermediate stage of development. This research will contribute to effectuation literature by highlighting this change in a state of effectuation research, with demonstrating tables and comparisons.

## **Theoretical background**

Sarasvathy (2001) wanted to understand the process of decision-making in an uncertain operating environment or in a situation in which the market does not exist. Effectuation provides an explanation to why regular individuals end up building new business activities even when this has not been their initial goal when starting their operations. They take risks merely to the extent to which they are prepared to take losses and retain the possibility to stay adaptable to changes brought on by the environment. They take on new possibilities for business activities from these changes and learn by doing.

The logic of effectuation has been considered to flourish in an unstable and difficult-to-predict operating environment, as it allows reacting quickly to changes in the environment. Continuous learning is also a significant part of the effectuation logic, as changes in the operating environment also require the company to change and learn new operating methods in order to respond to the changing situations (Sarasvathy, 2001).

The goal of an entrepreneur is not fully known at the starting situation. Instead, the entrepreneur utilises the resources available and uses these to meet the demands of the market in a flexible manner. A good

example of effectuation is provided by a metaphor of a chef searching for ingredients in a pantry and using these as the basis for deciding which meal to cook, i.e., the outcome is formed by using the available materials. In an alternative version of this activity, the chef has a recipe (plan) which he or she follows by acquiring the ingredients (resources) and using these to achieve the end result set as the goal of the activity. This approach is called causation (Sarasvathy 2001; 2008).

**Table 1. Comparison of causation and effectuation, adapted from Sarasvathy (2001).**

Approach	Causation	Effectuation
Starting point	The goal has been determined, based on a continuation of the past.	The available resources have been determined.
Basis for decision-making	Selecting a goal offering the best possible return.	Affordable loss principle, investing only what one can afford to lose.
Basis for taking action	How to reach the set goal?	What can be accomplished with the available resources?
Expertise	Utilisation of previously acquired knowledge.	Readiness to adapt to the changes in the market.
Operating environment	Static, stable, and predictable.	Dynamic, unstable and unpredictable.
Approach to the future	The future can be controlled to the extent that it can be predicted.	Attempting to influence the future instead of predicting it.
Focus	Market share in the existing market acquired based on competitor analyses.	Strategic networking and building alliances with clients and competitors.

The causal school, which is perhaps better known as the rational planning school, is among the oldest in the strategic management sphere of thought, and contains widely cited theories such as those propounded by Ansoff (1965) and Porter (1980), which emphasise the importance of systematic analysis and integrative planning. The importance of comprehensive business planning for firm development and profitability (strategic planning) was particularly closely researched in the last two decades of the twentieth century (Armstrong, 1982, 1986; Pearce et al 1987; Boyd, 1991). Causation has also similarities with the discovery approach (Alvarez and Barney, 2007) and the classic approach (Shah and Tipsas, 2007).

Effectuation is based on the models by Knight (1921), Weick (1979), March (1982, 1991), March and Simon (1958) as well as Mintzberg (1978) and Mintzberg and McHugh (1985), which have questioned decision-making founded on systematic planning. While effectuation is at its best in unpredictable environment, causation is relevant in an easily predictable operating environment. It does not work particularly well in a turbulent operating environment and in a process of constant change (Sarasvathy, 2001; 2008). An essential feature of theory building is comparison of the emergent concepts, theory, or hypotheses with the extant literature. This involves asking what is this similar to, what does it contradict, and why. A key to this process is to consider a broad range of literature (Eisenhardt, 1989).

Effectuation theory seems to be at crossroads. It has many supporters, like Fisher (2012), who believes that effectuation is one of the few viable alternative theoretical perspectives describing entrepreneurial action, and Coviello and Joseph (2012), who sees effectuation as an explanation of success in new product development. There are also divergent research directions, like Fischer and Reuber (2011: 15) who have stated, that scholars have identified only one variable for justifying the use of the effectuation process;

expertise. Empirical results support the theory by Sarasvathy (2008) according to which experienced entrepreneurs are more likely to use effectuation than inexperienced entrepreneurs (Dew, Read, Wiltbank and Sarasvathy, 2009; Fiet, Norton and Van Clouse, 2012; Sarasvathy, 2008). Some of the criticism concerns the testability of the theory, researchers argue that effectuation has yet to be properly tested (Arend, Saroogh and Burkemper, 2015; Fischer and Reuber, 2011).

In their large effectuation research review Perry et al (2012) estimated effectuation theory to be at the nascent stage of development and transitioning towards an intermediate stage at which empirical and field research begin to support the conceptual articles on the topic (Edmondson and McManus, 2007). They discovered in total 29 articles published between 1998 and 2011 in which effectuation was main topic. Only six of these were empirical studies, four were based on qualitative data, and other two were quantitative studies. The primary proposition for the lack of quantitative studies was that no valid measures had been developed (Perry et al 2012). The other of these two quantitative papers, Chandler et al (2011) introduced and tested these measures of effectuation in their paper. This article appeared to be ground breaking for the development of the effectuation theory.

Between years 1998 and 2011, several conceptual effectuation articles were representing effectuation as a new paradigm. Most of them addressing the core definitional research questions of effectuation, like how firms are created (Sarasvathy, 2001), what is effectuation (Dew and Sarasvathy, 2002), how do entrepreneurial opportunities come into being (Sarasvathy, Dew, Velamuri and Wenkatamaran, 2003), how do entrepreneurs act in uncertain situations (Wiltbank, Dew, Read and Sarasvathy, 2006), entrepreneurs behaviour before establishing a company and how entrepreneurs successfully create companies (Dew, Read, Sarasvathy and Wiltbank, 2008). The contribution of the debate is described as presenting and defining the concept of effectuation and contrasting it to causation (Perry et al 2012). They also found criticism for the theory; the tendency to over-trust (Goel and Karri, 2006; Karri and Goel, 2008), and that effectuation is based on a Lachmannian view of institutions (Chiles, Gupta, and Bluedorn, 2008). Chiles et al (2007) find effectuation undefined and less original; and Baron (2009) argues that the basic principles described in effectuation cannot actually exist. Sarasvathy and Dew (2007; 2008) participated actively on this debate.

Effectuation theory has been under criticism of the slow development of the theory. Perry et al (2012) made an analysis of three other field of management theory, to compare whether the development of the effectuation theory is slower than in the comparison fields. Their findings indicate that theory development of effectuation follows the expected pattern. It cannot be claimed slower than the other theories. Paradigm shifts are described to be slower in fields, where there is less consensus regarding accepted paradigms, theories and models (Pfeffer, 1993). New ideas in these fields will be relatively slow to emerge. The theory, concepts and constructs must be sufficiently understood before they can be measured and tested (Perry et al 2012: 840).

When summarizing the early empirical effectuation articles, Perry et al (2012) found experimental papers identifying how entrepreneurs process risks and returns comparing to non-entrepreneurs (Dew, Read, Sarasvathy and Wiltbank, 2009; Read, Dew, Sarasvathy, Song and Wiltbank, 2009; Sarasvathy and Dew, 2005) and they vary in their use of effectual and causal logic. Wiltbank et al (2006) examined how entrepreneurs predict or influence uncertain future. Some of the articles can be consider as conceptual with a qualitative data. These are affiliated as qualitative papers.

Perry et al (2012) found five empirical field studies on effectuation. Dew, Read, Sarasvathy and Wiltbank (2008) examined whether experienced entrepreneurs use effectuation more often than novices. Read, Song and Smit (2009) tested in their qualitative article, whether there is a positive relationship between effectuation and new venture performance. Wiltbank et al (2009) examined how investors emphasized prediction (causation) or control (effectuation) related to their past investment success. Chandler, DeTienne, McKelvie and Mumford, (2011) developed and validate measures for causation and effectuation, which considered being as the first formal measures for subdimensions of effectuation. Chandler et al (2011) proposed that effectuation is a construct with three associated sub-dimensions (experimentation, affordable loss, and flexibility) and one dimension shared with the causation construct (pre-commitment). Wiltbank et al (2009) and Chandler et al (2011) were only quantitative articles of all 29 papers.

Perry et al (2012) classified the effectuation literature as nascent or moving towards intermediate stage of the development of theory. Their statement of the existing literature is, that it does not provide precise and clear information about the phenomenon. One reason for this is, that the sample sizes of the qualitative and even the quantitative studies are too small. Perry et al (2012) made a significant contribution by suggesting the appropriate research questions, describing the datatype to be collected and providing clear guidelines for data analysis methods. Since their paper, the research of effectuation has intensified and moved on from conceptual papers to field studies, from nascent to intermediate phase (Edmondson and McManus, 2007).

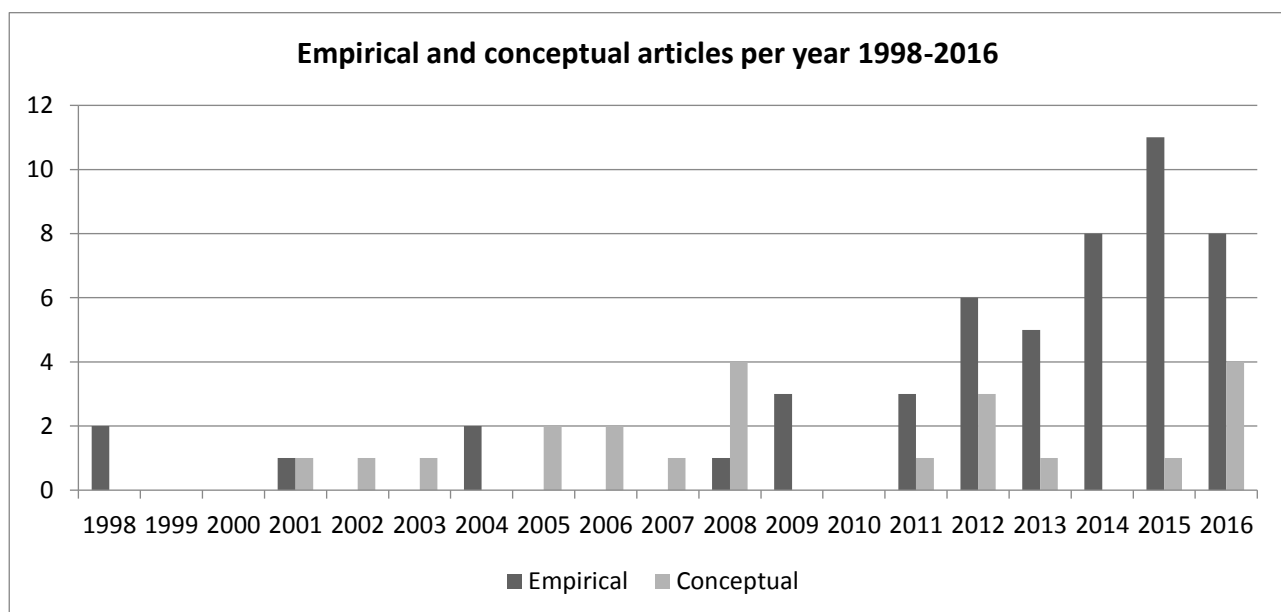
## Methods

### *Follow up review, years 2012-2016*

For this paper we first conducted large literature review from the year 1998 to 2016. When identifying the substantial change and development in the effectuation research from the year 2012, we deepen the investigation of the papers presented during and before the year 2012. The findings indicate that two papers, Chandler et al (2011) and Perry et al (2012) has given the needed boost for the theory of effectuation to evolve and flourish. Many new insights have come out in the time period of 1/2012–10/2016.

First we chose Scopus Elsevier to make a database search on social sciences and humanities articles. That search gave 217 articles. We found 64 articles, by using the same selection criteria as Perry et al (2012); word 'effectuation' was part of the title, abstract or keywords and citing Sarasvathy (2001). After discarding articles which were not concentrated on effectuation, the list was cut into 47 articles, where effectuation can be considered as main subject. We may therefore argue that an increasing number of articles have been written on the effectuation theory since the review by Perry et al (2012). They found 29 articles written in ten years, we found 47 articles written in five years, by using the same selection criteria. The number of empirical studies, whose importance was highlighted by Perry et al (2012), has also notably increased since 2012. Out of 47 articles, in total, 38 empirical studies were conducted on the topic of effectuation. Of these, 24 were qualitative; while a further 14 papers were quantitative. The number of conceptual articles had decreased, as only 9 had been published between years 2012 and 2016. (See figure 1. for empirical and conceptual articles)

**Figure 1. Empirical and conceptual articles per year between years 1998 and 2016.**





Between years 1998 and 2011 an average of articles per year is 1,8 (14 years/25 articles). After Perry et al (2012) review, the average of articles per year has notable increased to 9,2 articles per year (5 years/ 47 articles). Until 2011, there was only one quantitative study, from the year 2009. Chandler et al (2011) developed measures for subdimensions of effectuation. Since then, from the beginning of 2012, the number of quantitative studies has risen to 14. Between the years 1998 to 2011, there were in total 11 qualitative articles in 14 years. Between of 2012 and 2016, the number of qualitative articles has risen to 24 articles in five years. (See table 2. for total amount of articles between years 1998-2016)

Chandler et al (2011) who developed the measures, and Perry et al (2012) who summarized the existing literature, can be considered as remarkable contributors for effectuation literature. They raised the effectuation research to next level by inspiring researchers to make empirical field studies. Sarasvathy (2001; 2008) made a contribution with a new theory and address the first critical steps of the theory development, but Chandler et al (2011) and Perry et al (2012) have given wings to get it in the air.

**Table 2. Effectuation articles per year, between years 1998-2016.**

Year	Conceptual	Qualitative	Quantitative	Total
2016	4	3	5 (1*)	12
2015	1	8	3	12
2014		6	2	8
2013	1	4	1	6
2012	3	3	3 (1*)	9
2011		3	1	4
2009		2	1	3
2008	4	1		5
2007	1			1
2006	2			2
2005	2			2
2004		2		2
2003	1			1
2002	1			1
2001	1	1		2
1998		2		2

\* Article using mixed methods, both quantitative and qualitative methods.

Two of the articles were using mixed methods, both qualitative and quantitative methods. These articles were added to the quantitative group, because it can be said that the quantitative data was dominant data source. After reviewing the key elements of the effectuation literature between years 2012 and 2016, using tables to explain the case study data, two dominant line of effectuation research are identified. First, research on effectuation in established constructs, encouraged by Perry et al (2012). Second major line of the theory development is research on how effectuation and causation are working simultaneously. These two main research lines are to be discussed more detailed in following chapter.

## Findings

Perry et al (2012, 848) encouraged effectuation researchers to focus on relationships between effectuation and established constructs. After their paper, this line of the research has evolved in many areas. The innovation and product development activities has been studied actively by Brettel, Mauer, Engelen, Küpper, (2012) and Svensrud and Åsvoll, (2012). Customers have long been recognized as instrumental to new product development, with Penrose (1959) observing they provide the inside track to innovation. This is the essence of Sarasvathy (2001) original idea of effectuation.

Werhahn et al (2015) and Mthanti and Urban (2014) represent preliminary insights into a potential relationship among the dimensions of effectual orientation. Werhahn et al (2015) divides subdimensions of effectual orientation to the five dimensions; means orientation, partnership orientation, affordable loss orientation, contingency orientation and control orientation. Previous research on effectuation considers only four subdimensions; experimentation, affordable loss, flexibility and pre-commitments (Chandler, DeTienne, McKelvie, and Mumford, 2011; Perry et al 2012). Fisher (2012) goes further beyond by building bridges between two of the most prominent emerging theories of entrepreneurship, effectuation and bricolage. These two approaches have similarities, as they both concentrate to the resources in hand.

In last three years, scholars have presented empiric results of effectuation logic in existing companies. Kalinic et al (2014) in their qualitative study of internationalization process of five existing manufacturing SMEs. 'Unplanned' internationalization does not necessarily involve nonlogical decisions; but, entrepreneurs tend to follow an effectual rather than causal logic and their decisions may be based on the affordable loss principle rather than on the maximization of expected returns (Kalinic et al 2014). One progressive research stream diversifies the effectuation logic from the entrepreneurial level to the corporate context (Brettel et al 2012; Werhahn, Mauer, Flatten and Brettel (2015). Small and medium sized companies' resources are found to be more limited than large firms. They lack the organizational and marketing capabilities, but they enjoy greater flexibility (Van de Vrande et al 2009; Berends et al 2014).

Internationalization is perceived through the theoretical lens of effectuation (Kalinic, Sarasvathy and Forza, 2014). Also Chetty et al (2015); Fuerst and Zetting (2015); Sitoh, Pan and Yu, (2014) positions the concept of effectuation to the context of internationalization. Sarasvathy, Kumar, York and Bhagavatula (2014) integrate Uppsala model with effectuation theory in existing international case company. Harms and Scheifele (2012) found out, that expert entrepreneurs tend to use the logic of effectuation in their internationalization process.

Werhahn et al (2015) takes the concept of effectuation from the individual level to the firm level in large survey study in existing companies. Coviello and Joseph (2012) explore how firms engage with customers during new product development. Their findings indicate that successful innovators tend to engage with customers. Svensrud and Åsvoll (2012) studied value of effectuation processes in innovation of large companies. This is in line with concepts such as corporate entrepreneurship (Jennings and Lumpkin, 1989; Kuratko, Hornsby, and Goldsby, 2004) and entrepreneurial orientation (Lumpkin and Dess, 1996). In support for this line of research, there is a lively debate of the need of an entrepreneurial action in large companies (Pongracic, 2009; Schmelter, Mauer, Börsch, and Brettel, 2010).

Mthanti and Urban (2014) investigates empirically the influence of effectuation on entrepreneurial orientation (EO) and firm performance. Effectuation has also be studied in the context of entrepreneurship education (Mäki-Murto, Koivumaa and Puhakka, 2013), and in the context of young companies and novice entrepreneurs (Daniel and Domenico, 2015; Nielsen and Lassen, 2012), Startups and university spinoffs (Lingelbach, Sriram, Mersha and Saffu 2015; Maine, Soh and Dos Santos, 2015).

Empirical studies have found evidence that effectuation and causation can work simultaneously in a same organization (Sitoh, Pan and Yu, 2014; Lingelbach et al 2015; Reyman, Andries, Berends, Mauer et al 2015; Dutta, Gwebu and Wang, 2015). The causation ensures that the venture stays focused and predicts what is predictable, while effectuation allows responding flexibly to changes in operation environment (Dew, Sarasvathy and Wiltbank, 2011; Dew et al 2009; Sarasvathy, 2008). Berends, Jelinek, Reyman and Stultiens (2014) revealed an early effectuation logic, which increasingly turned toward causation logic over time, in their multimethod study of product innovation processes in small existing manufacturing firms.

Effectuation and causation are generic decision-making mechanisms that can exist simultaneously with one another and that they are configured in specific ways during different phases in the process of new product creation. Managers and professionals are encouraged to apply both effectual and causal processes when designing a business model and implementing it. In different stages of the project, one of the processes is emphasized more than the other. Both processes are also used complementarily (Sitoh, Pan, and Yu, 2014; Van de Vrande, De Jong, Coviello and Joseph, 2012).

## Discussion

The objective of this study was to determine if the effectuation research has moved on from nascent to intermediate stage of development. Perry et al's (2012) primary proposition for the lack of empirical studies was that no valid measures had been developed. Our findings support and elaborate on the insights of Perry et al (2012) that the research of effectuation has moved on from nascent to intermediate stage of development, after Chandler et al (2011) developed and validate measures for causation and effectuation. Since then there has been a substantial change in effectuation research.

Empirical field studies have become primary form of the research. Although the feedback of field research is motivating, the results can be confusing and difficult to interpret without solid measurements. Chandler et al (2011) has given a kick off -boost for the quantitative study of effectuation by developing survey instruments to distinguish between effectuation and causation decision-making paradigms. However, these are only first steps, which will need to be critically assessed and developed further.

After Chandler et al (2011), measures for causation and effectuation has emerged and developed. Brettel, Engelen and Kupper (2012) differentiate between dependent and independent variables of effectuation process. The independent variables contain the description of the effectual vs. causal process, while the dependent variables are described as outcomes. Their contribution is acknowledging and examining effectuation performance in R&D context. Alsos et al (2014) developed and validated 10-item measuring instrument, including five items for causation and five items measuring effectuation (Alsos, Clausen and Solvoll 2014).

While the effectuation literature has intensified and revived, the number of empirical field studies has increased and the number of conceptual articles had decreased. When using a framework proposed by Edmonson and McManus (2007), findings indicate that during the studied period from January 2012 to September 2016, the research of effectuation has moved on from nascent to intermediate stage of development. Intermediate research programs are characterized by research questions between new and established constructs, using a mix of qualitative and quantitative methods and the development of the theory (Edmonson and McManus, 2007). Today effectuation research can be described implementing rigorous methods to separate real findings from spurious results (Chandler and Lyon, 2001). However, there are still diverged perspectives; Arend, Sarooghi and Burkemper (2016) claim that effectuation remains ineffectual and difficult to test as independent framework.

## Implications

The implications of this study can be examined through the framework proposed by Edmonson and McManus (2007) for assessing contribution of the research project from the following perspectives: How has the study advanced theory? What are the new ideas that challenge prior assumptions, integrate prior research to produce a new model, or refine understanding of the investigated phenomena?

Effectuation may achieve eligibility of the practitioners and gain more scientific appreciation due to the testability of the dimensions of theory. This would mark a step forward for the effectuation theory as an alternative explanation to a rational business planning model, causation. This paper solidifies the

foundation of theory of effectuation, by providing a firm base on which to build on in fore coming effectuation research.

The ideas outlined in this article are offered as a contribution to the theory development of effectuation. Nevertheless, some of the arguments are generalizable for entrepreneurship studies in generally with an aspiration to build a distinctively entrepreneurship study. This follow up –review has major implications for entrepreneurship- and effectuation researchers. Effectuation research can be stated as developed from nascent to an intermediate state of a theory of entrepreneurship. It offers measures and testable dimensions for future researchers to deepen the existing theory. Although effectuation may still be a relatively new line in the entrepreneurship research field, it cannot anymore be criticized as slow progression of the theory.

## Concluding observations

To conclude the development of effectuation theory, a growing number of scholars are engaging in field research, studying real people and real phenomenon in their real surroundings (Edmonson and Mc Manus, 2007:1155). Chandler et al (2011) have made a valuable contribution by introducing novel research directions for effectuation theory, through the introduction of tools. They have given the first guidelines for measurement of effectual subdimensions. These measures need to be evaluated for understanding, whether these paradigms are appropriate for measuring dimensions of effectuation (Alsos, Clausen, and Solvoll, 2014).

One observation on methodological development in effectuation research is that researchers' should stay methodologically open. Field researchers need to exposure on both quantitative and qualitative methods, and they need to evaluate when each is most appropriate for the invested phenomena. In this way the researcher will benefit from a larger toolbox for work, expanding the types of research questions to be answered effectively, and thereby also benefiting the field study of effectuation (Edmonson and McManus, 2007: 1175).

Perry et al (2012) has stimulated reflection on how theories can be assessed. Their contribution has inspired researchers to develop effectuation theory to a direction that offers possibilities for the future development of effectuation theory. It will be to critically assessed and developed further. Suggestions for the future research are to continue Perry et al (2012) contribution. They have described the guidelines for future research, offering suggestions for appropriate data analysis methods. These specifically tailored proposals has steered the theory of effectuation from nascent to intermediate stage of the theory development.

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## APPENDICES

**Table 3. Effectuation literature review, years 1/2012–10/2016.**

Article	Method	Objective	Contribution
Arend, R., Sarooghi, H. and Burkemper, A. (2016)	Conceptual. Debating leading researchers of effectuation.	Responding to the commentaries of their (2015) article criticizing effectuation.	Conclusion is that effectuation remains ineffectual.
Alsos, G., Clausen, T., Hytti, U. and Solvoll, S. (2016)	Quantitative/Qualitative mixed method study. Interviews with entrepreneurs in six start-ups	Relationship between entrepreneurial identity and entrepreneurial behavior (causation, effectuation)	Entrepreneurial identity influences the individual predominantly in effectual or causal behavior.
Ciszewska-Mlinaric, M., Obloj, K., Wasowska, A. (2016)	Qualitative case study, single case	What decision-making logic is dominant and what influences its changes over time	Early stage Internationalization ventures may apply effectuation to causation simultaneously
Hannibal, M. (2016)	Qualitative case study to eight inventor-founders embedded in university spin-off venturing	How academic socialization processes influence the appeal of involvement and the behavioural logics	Effectuation logics allow inventor-founders to re-use academic identities in the venturing process.
Korsgaard, S., Anderson, A. and Gaddefors, J. (2016)	Conceptual, Hudsons diagnosis.	To help researchers, practitioners etc. to develop entrepreneurial responses to the economic crisis	An alternative perspective on entrepreneurship is developed: Entrepreneurship as re-sourcing.
Parida, V., George, N., Lahti, T. and Wincent, J. (2016)	Quantitative Survey for founders of 104 startups.	The relationship between causation or effectuation approach and the likelihood of initial venture sales.	Higher perception of control increases the initial sales when entrepreneurs use causation
Pattinson, S. (2016)	Qualitative single case study.	Business growth entrepreneurs develop emergent strategies for opportunities.	Strategic thinking and entrepreneurial approaches to opportunity recognition
Reuber, R., Fischer, E. and Coviello, N. (2016)	Conceptual. Debating Arend, Sarooghi and Burkemper	Effectuation concentrates creativity while a second aspect of pragmatism; habit has been underexplored.	New directions for developing effectuation theory at individual, organizational, and institutional levels
Roach, D., Ryman, J., and Makani, J. (2016)	Quantitative study. A sample of 169 informants	Propose a scale suitable to the explication of the effectuation construct relative to innovation.	Innovation orientation and product/service innovation leading to increased firm performance.
Velu, C., and Jacob, A. (2016)	Quantitative survey for 111 trading platforms	Study about relationship among owner-managers, business model innovation, and competition.	Presence of entrepreneurs as owner-managers positively influences the degree of innovation
Welter, C., Mauer, R. and Wuebker, R. (2016)	Conceptual paper	Opportunity creation, effectuation, and bricolage relate and complement, but where they diverge?	Reveals avenues for future, like development of new theories of opportunity formation
Appelhoff, D., Mauer, R., Collewaert, V. and Brettel, M. (2016)	Quantitative study. Survey with a sample of 141 German ventures.	Founding team's causal vs effectual decision style	Fewer conflicts when following the causal principle of overcoming the unexpected
Agogue, M., Lundqvist, M. and Middleton, K. (2015)	Qualitative case study how the entrepreneurs perceived their decision making in hindsight.	Explore mindful deviation as decision making by nascent technology entrepreneurs	Early-stage technology entrepreneurship. How effectual and causal logics occur.
Arend R., Sarooghi, H., Burkemper, A. (2015)	Conceptual, methodological framework. Strong criticism for effectuation theory.	Effectuation lacks empirical testing and critical analysis. Critique for effectuation as a theory.	Effectuation is underdeveloped as a new theory. Overlapping with bricolage, improvisation.
Dew, N., Read, S., Sarasvathy, S., Wiltbank, R. (2015)	Quantitative Survey data collection. 412 entrepreneurs.	Objective is to understand when expertise matters and how.	Results indicate that entrepreneurial expertise matters in less predictable situations.
Crick, D., James Crick, J. (2015)	Qualitative study. Interviews with 16 managers	causation and effectuation in internationalization of UK small and medium sized enterprises	Causation and effectuation logics found planned and unplanned aspects of decision-making.
Crick, D., Crick, J. (2015)	Qualitative study. 12 interviews with owner/managers	Decision making and learning among owner - managers in comparison to growth-oriented firms.	Causation and effectuation were found to exist among owner/managers. Nascent stage of company
Daniel, M., Di Domenico M., Sharma, S. (2015)	Qualitative study. Semi-structured interview for 23 informants.	How effectual processes are manifested in home-based business domain services.	Effectuation suites for online platform. The affordable loss should be extended to social status
Dutta, D.K., Gwebu, K.L., Wang, J. (2015)	Quantitative study. Survey of 164 students at USA.	Entrepreneurial opportunities are discovered versus created. in emerging technology industries	Both causation and effectuation principles occur emerging technology industries.
Fuerst, S., Zettinig, P. (2015)	Qualitative study. Dynamics of the knowledge creation process the analysis of the process data.	Dynamic process of international new venture (INV) through the interaction with network partners.	Dynamic model of effectuation and methods qualitative diary research, visual mapping strategy.
Lingelbach, D., Sriram, V., Mersha, T., Saffu, K. (2015)	Qualitative case study. Longitudinal data from 6 innovation cases in one industry and four EEs	Effectuation and causation, on the innovation process in emerging economies.	Combination of effectuation and causation mechanisms is influenced by the context.
Maine, E., Soh P-H., Dos Santos, N. (2015)	Qualitative study. Longitudinal research, Interview data	Effectuation and causation as two opposing theories leading to opportunity creation and recognition	Shift from effectuation to causation, remain in one particular mode, or adopt a combination mode.
Werhahn, D., Mauer, R., Flatten, T., Brettel, M. (2015).	Quantitative study and two large survey-based studies of German companies.	Effectuation from the individual level to the firm level. The entrepreneurial behavior of employees	Multidimensional scale for measuring the effectual orientation. Entrepreneurship in corporate context.

Yusuf, J.-E., Sloan, M. (2015)	Qualitative case study. Two case studies. Nonprofit start-up in community development.	Effectuation can be used to explain the decision process used by actors in the nonprofit sector.	Effectual decision making is particularly suited to the start-up a social entrepreneurship venture.
Berends, H., Jelinek, M., Reymen, I., Stultiens, R. (2014)	Qualitative multimethod study, a in five small firms across 352 total events.	Product innovation in small firms, effectuation theory. A process research approach was adopted.	Analyses revealed early effectuation logic, which increasingly turned toward causation logic.
Crick, D., Crick, J. (2014)	Qualitative study. Interviews with managers of 16 high-technology manufacturing SMEs	Causation and effectuation in respect of the planned and unplanned nature of the internationalization	Aspects of causation and effectuation logic were evident in planned and unplanned internationalization.
Engel, Y., Dimitrova, N., Khapova, S., Elfring (2014)	Quantitative study, survey for randomized 93 business students, no entrepreneurial experience.	Can inexperienced entrepreneurs apply an expert decision logic.	Novice entrepreneurs use predictive logic in an attempt to foresee future, even if unpredictable.
Kalinic, I., Sarasvathy, S., Forza, C. (2014).	Qualitative study. Five cases in the foreign market.	Entrepreneurs use effectual rather than causal logic. Decisions are based on the affordable loss principle.	Switching from causation to effectuation allows firms to increase the level of commitment
Mthanti, S., Urban, B. (2014)	Quantitative study. Survey for 94 high-tech firms using Chandlers (2011) measures	Effectuation on entrepreneurial orientation (EO) and firm performance in transforming environments.	Effectuation theory is connected in the EO–performance relationship in changing environment.
Nummela, N., Saarenketo, S., Jokela, P., Loane, S. (2014)	Qualitative longitudinal study. 3 software companies in three countries, data triangulation.	International growth process of born global firms from the perspective of strategic decision-making.	Alternating periods of causation- and effectuation-based logics were found.
Sarasvathy, S., Kumar, K., York, J., Bhagavatula, S. (2014)	Qualitative single case study of an Indian family company.	International entrepreneurship (IE) research through the theoretical lens of effectuation.	Integrating Uppsala model with effectuation theory. Effectuation with other constructs
Sitoh, M.K., Pan, S.L., and Yu, C.Y. (2014)	Qualitative case study to explore business models and product creation process.	Effectuation and causation are two contrasting approaches to new business development.	Findings suggest the following effectuation and causation can coexist in new product creation.
Backes-Gellner, U., Moog, P. (2013)	Quantitative study. Survey data from a sample of more than 2000 German students.	Individuals with social skills and contacts are more disposed to become entrepreneurs	Entrepreneurial individuals use effectuation and bricolage more often than non-entrepreneurs.
Chetty S., Ojala, A., Leppäaho, T. (2013)	Qualitative case study. Multiple case study of software firms from Finland and New Zealand.	The role of effectuation to co-create opportunities when entering foreign markets.	Entrepreneurs interweave effectuation and causation logics in their decision-making.
Fiet, J., Norton, W., Clouse. (2013)	Qualitative case study. 10 participants who started 47 ventures were interviewed.	How to improve search effectiveness. Fiet's model of constrained, systematic search.	Repeatedly successful entrepreneurs, finds support for the Fiet's model of systematic search
Helmersson, H., Mattsson, J. (2013)	Qualitative case study. PERTEX text analytic method. Using Ward's clustering method	The reasons behind company growth	Low fragmentation levels of sub-components can be linked to effectuation orientation
Lam, W., Harker, M. (2013)	Qualitative case study. 11-year longitudinal study, 25 firms. Interpretive approach.	Effectuation and entrepreneurship is neither ends-driven nor means-driven	Effectuation theory challenges the ends-driven approach and argues for means-driven decisions
Mäkimurto-Koivumaa, S., Puhakka, V. (2013)	Conceptual paper	Effectuation relates to the process of creating entrepreneurship.	Effectuation could be used systematically together with causation in entrepreneurship education.
Brettel, M., Mauer, R., Engelen, A., Küpper, D. (2012)	Quantitative and qualitative scale-development process in the R&D context, 400 projects.	Study moves effectuation theory from the entrepreneurial context to large companies R&D research.	This study develops a multi-factor measurement model of effectuation and causation.
Coviello, N., Joseph, R. (2012)	Qualitative case study. 6 innovations were developed by small and young technology firms.	To explore how the firms engage with customers during new product development.	Successful innovators tend to engage with customers.
Fisher, G. (2012)	Qualitative case study data. The early development of 6 new ventures. Langley, 1999).	Building bridges between two of the most prominent new theories, effectuation and bricolage.	The behaviors associated with effectuation and bricolage were prevalent in all studied companies..
Harms, R., Schiele, H. (2012)	Quantitative study. A survey for 65 rapidly growing small and medium enterprises (SMEs).	The antecedents and consequences of causation and effectuation in the international market entry.	Experienced entrepreneurs tend to apply effectuation rather than causation, while uncertainty does not always influence.
Nielsen, S., Lassen, A. (2012)	Qualitative study. A narrative study of ten novice student entrepreneurs.	A new framework on identity construction in effectuation theory. Critique for Sarasvathy (2001)	More social constructivist view on identity is valuable to support effectuation theory
Perry, J., Chandler, G., Markova, G. (2012).	Review of the effectuation literature between years 2001-2011. Cited Sarasvathy (2001)	Why is it taking so long for effectuation research to take off? Measures must be developed.	Only few empirical studies. Lack of measures has slow n down the development of effectuation.
Politis, D., Winborg, J., Lindholm-Dahlstrand, A. (2012)	Quantitative study. Two surveys, first to 294 respondents, second to 120.	Whether student entrepreneurs are different to other kinds of entrepreneurs.	Student entrepreneurs use a resource logic that favors effectual reasoning.
Read, S., Sarasvathy, S. (2012)	Conceptual essay.	Emanating from independent streams of research, effectuation and service dominant logic.	Effectuation and service dominant logic share common logic, effectuation offer rationality.
Svensrud, E., Åsvoll, H. (2012)	Conceptual paper	Effectual innovation in large corporations, socio- dynamic model on the effectual strategies.	Effectuation processes are valuable for innovation in large corporations, especially in the early stages of venture.



**Table 4. Effectuation literature review, years 1998–2011**

Article	Method	Objective	Contribution
Andersson, S. (2011)	Qualitative case study. An explorative case study effectuation alternative to causation	early internationalization process and the use of effectuation in decision making	Effectuation as a tool to create opportunities together with network partners, born global firm.
Chandler, G., DeTienne, D., McKelvie, A., Mumford, (2011)	Qualitative study. 35 semistructured interviews with entrepreneurs in their start-up processes.	Develop and validate measures of causation and effectuation to new venture creation.	sub-dimensions; experimentation, affordable loss, and flexibility and pre-commitments
Fischer, E., Reuber, R. (2011)	Qualitative study. In depth semi-structured interviews.	Social interaction plays a central role in effectuation. Effectuation and social media, Twitter.	Twitter-based interaction can trigger effectual cognitions.
Sarasvathy, S. Dew, N. (2011)	Conceptual paper.	This paper critically evaluates some Austrian ideas on the firm, the concept of entrepreneurial judgment.	Effectual logic can leverage entrepreneurial judgment.
Dew, N., Read, S., Sarasvathy, S., Wiltbank, R. (2009)	Qualitative case study. 27 expert entrepreneurs and 37 in creating a new venture.	Experts frame decisions using an “effectual” logic. pay less attention to predictive information.	Novices use a “predictive frame” and tend to “go by the textbook.
Read, S., Dew, N., Sarasvathy, S, Song and Wiltbank, R. (2009)	Qualitative case study for 27 expert entrepreneurs and 37 MBA students	Do entrepreneurs use effectuation more often than novices do.	Experts use effectual logics more and causal logics less when making marketing decisions
Wiltbank, R., Read, S., Dew, N. and Sarasvathy, S. (2009)	Quantitative survey for 121 angel investors	Effectual logic in expert decision-making opposed to novices	Business angels who emphasize prediction make larger investments vs using non-predictive strategy
Chiles, T., Gupta, V., Bluedorn, A. (2008)	Conceptual article. Critique towards Sarasvathy’s theory of effectuation.	Lachmannian and effectuation approaches may share more common ground	Encourage scholars interested in Lachmannian, effectual, and related approaches to explore.
Karri, R., Sanjay, G. (2008)	Conceptual article. Debating Sarasvathy and Dew (2003).	Refute that effectuation is based on trait-based approach.	These assumptions need to be developed further to contribute to theory building in entrepreneurship.
Sarasvathy, S., Dew, N. (2008)	Conceptual paper. Debate with Karri and Goel	Goel and Karri are correct in claiming that effectuation supposes over-trust.	Effectuation is based on alternative behavioral assumptions that open research in entrepreneurship.
Sarasvathy, S., Dew, N. (2008)	Conceptual paper. Debate with Chiles, Bluedorn, and Gupta.	Suggesting that Sarasvathy (2001), , it is decidedly Lachmannian.	Crucial differences draw upon recent developments in our understanding of how the human mind works
Sarasvathy, S., Dew, N., Read, S. and Wiltbank, R. (2008)	Qualitative single case study. Conceptual contribution.	Why an effectual logic of design is necessary at the first interface of the business creation	Key characteristics; Knightian uncertainty, goal ambiguity and environmental isotropy.
Chiles, T., Bluedorn, A. and Gupta, V. (2007)	Conceptual. Criticism to Sarasvathy and Dew (2003)	Do creative destruction and entrepreneurial discovery fully explain how entrepreneurs create opportunities	Lachmannian entrepreneurship differs from creative destruction and entrepreneurial discovery.
Goel, S. and Karri, R. (2006)	Conceptual paper.	Why do entrepreneurs over-trust?	Effectual logic with entrepreneurial personality make entrepreneurs susceptible to over-trust
Wiltbank, R., Dew, N., Read, S. and Sarasvathy, S. (2006)	Conceptual paper.	Is effectuation as appropriate not only for new ventures but for established firms as well.	Uncertainty and decision making. Opening speech for effectuation in established companies.
Saravathy and Dew (2005)	Experimental study. Verbal protocol analysis.	Do expert entrepreneurs frame decisions using effectual thinking	Expert entrepreneurs use effectuation logics more often than novices.
Read, S. and Sarasvathy, S. (2005)	Conceptual paper.	Relationship between entrepreneurial expertise and the use of effectual logics	Sub constructs relate to entrepreneurial expertise. Use of effectuation and new venture performance
Harting, T. (2004)	Qualitative case study.	Do established organizations engage in effectuation when pursuing opportunity	Effectuation is used in early phase of the new venture and causal in later phases.
Harmeling, Oberman, Venkatamaran and Stevenson (2004)	Qualitative case study.	How do new ventures adverse conditions (e.g. high level of uncertainty) come in to existence.	Entrepreneurs use effectual logics more in the stage of the new venture when uncertainty is high.
Sarasvathy, Dew, Velamuri, and Venkatamaran (2003)	Conceptual paper.	How do entrepreneurial opportunities come into being?	Uncertainty can be managed with effectuation principles. Recognition, discovering, creation.
Dew, N. and Sarasvathy, S. (2002)	Conceptual paper.	What is effectuation?	Effectuation is distinguished from causation. A list of nine things that effectuation is not
Sarasvathy and Kotha (2001)	Qualitative case study.	Do entrepreneurs use effectuation when faced with Knightian uncertainty?	Entrepreneurs use effectuation logics when faced with Knightian uncertainty
Sarasvathy, S. (2001)	Conceptual paper.	How are firms created?	Effectuation is presented and contrasted to causation
Sarasvathy, S. (1998)	Qualitative, experimental. Verbal protocol analysis 4 entrepreneurs and 4 bankers.	Effectuation is presented and contrasted to causation	Entrepreneurs more effectuation related behavior and bankers more causation related behavior
Sarasvathy, D., Simon, H. and Lave, L. (1998)	Qualitative, experimental. Same with Sarasvathy, (1998)	Similar with Sarasvathy (1998)	Similar with Sarasvathy (1998)

## **Student entrepreneurship in India & Gender Differences: Indian women are in a greater hurry to startup than their male peers**

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Keywords: *Entrepreneurship, Start-up, Gender, Student, Women*

### **Abstract**

Since the advent of the new millennium, discourse on entrepreneurship has been rapidly expanding globally. The year 1999, saw the establishment of Global Entrepreneurship Monitor (GEM) to measure indicators that could identify entrepreneurship development across many countries around the world. The data also showed that women were also taking part in the entrepreneurship activities significantly but their participation was consistently low across the countries (Minniti M, 2003). Since the advent of GEM, the discourse on entrepreneurship development among women and gender parity has been expanding, particularly in countries from where no data was available before GEM. A number of studies have also explored various facets of entrepreneurship development and indicators for women including challenges that women entrepreneurs face vis-a-vis their male counterparts (Ayala M, 2010)(Stephan P, 2007).

Understanding of the gender related aspects of entrepreneurship is necessary to formulate policies and actions that will be helpful in reducing the gender disparities in entrepreneurship sector (Brindley C, 2005). While overall women entrepreneurial activity has lagged that of men across geographies but there have also been regional differences which have been explored in various studies either at country level for many countries :Poland(Zapalska A, 1997), Netherlands(Hooff F, 2002), Singapore(Jim K, 2001), Turkey (Ufuk H, 2001) or at the larger regional levels such as Asia (Tambunan T, 2009) or Africa(Bardasi E, 2008). A number of studies that have studied this field have been region agnostic, instead focusing on factors pertaining to entrepreneurship development. While region-agnostic studies on women entrepreneurship may be able to set a broad direction of action discourse for reducing gender disparity in entrepreneurship but there are limitations to how far can many studies that use American data could be useful for other geographies and their application on women in developing needs more examination over their applicability (Robert H, 2006). Research on women entrepreneurship for developing, non OECD countries is particularly scarce. Specific regional studies are more suited to develop an action agenda more suited for the region under consideration . In our study we have analyzed the issues pertaining to women entrepreneurship in India.

### **1. Introduction:**

Since the advent of the new millennium, discourse on entrepreneurship has been rapidly expanding globally. The year 1999, saw the establishment of Global Entrepreneurship Monitor (GEM) to measure indicators that could identify entrepreneurship development across many countries around the world. The data also showed that women were also taking part in the entrepreneurship activities significantly but their

participation was consistently low across the countries (Minniti M, 2003). Since the advent of GEM, the discourse on entrepreneurship development among women and gender parity has been expanding, particularly in countries from where no data was available before GEM. A number of studies have also explored various facets of entrepreneurship development and indicators for women including challenges that women entrepreneurs face vis-a-vis their male counterparts (Ayala M, 2010) (Stephan P, 2007).

Understanding of the gender related aspects of entrepreneurship is necessary to formulate policies and actions that will be helpful in reducing the gender disparities in entrepreneurship sector (Brindley C, 2005). While overall women entrepreneurial activity has lagged that of men across geographies but there have also been regional differences which have been explored in various studies either at country level for many countries: Poland (Zapalska A, 1997), Netherlands (Hooff F, 2002), Singapore (Jim K, 2001), Turkey (Ufuk H, 2001) or at the larger regional levels such as Asia (Tambunan T, 2009) or Africa (Bardasi E, 2008). A number of studies that have studied this field have been region agnostic, instead focusing on factors pertaining to entrepreneurship development. While region-agnostic studies on women entrepreneurship may be able to set a broad direction of action discourse for reducing gender disparity in entrepreneurship but there are limitations to how far can many studies that use American data could be useful for other geographies and their application on women in developing needs more examination over their applicability (Robert H, 2006). Research on women entrepreneurship for developing, non OECD countries is particularly scarce. Specific regional studies are more suited to develop an action agenda more suited for the region under consideration. In our study we have analyzed the issues pertaining to women entrepreneurship in India.

## **2. Literature Review:**

### **2.1 Women Entrepreneurship in India**

Entrepreneurship development in India is only in its nascent stage yet. In spite of growing fast, new enterprise creation is still not a big economic activity in India when compared to other economies of comparable economic size as India. Compounded with that is the fact that India has been a deeply traditional society for very long. With greater proliferation of education and modern urban values, the society is only beginning to adopt a more liberal culture and freedom for women. Entrepreneurship activities in most developed societies are still dominated by male entrepreneurs (Minniti M, 2007). In that context India is no different and GEM data has over years shown gender disparities in enterprise creation by women in India. To mitigate the situation more research is required to find what are the challenges to women entrepreneurship in India and how the cultural, socio-economic factors in India affect the women entrepreneurship in India differently than the women in other parts of the world.

The study of women entrepreneurship in context of developing world could be broadly divided into two sections- enterprise development in (a) Illiterate & semi literate women (Erica F, 2010)(Bertaux N, 2007) (b) Educated women (Ponmani, R 2014)(Kundu S, 2014). While there will be common lessons in (a) & (b) but there will also be differences. Factors leading to women entrepreneurship can be classified into 'necessity' or 'opportunity' types. The 'necessity' is where women opt for entrepreneurship to improve their incomes to meet their family needs and where women do not have other income options while the 'opportunity' type entrepreneurship is just the opposite, where women do not have any necessity to supplant or increase their incomes to meet family shortfalls (Reynolds et al., 2003). The (a) type of entrepreneurship is the 'necessity' type of entrepreneurship and is found in low income countries (Malach A, 2007). The type (b) is the 'Opportunity' type & it is the one where our study focuses. Other studies in developing Asian countries show that women who enter enterprise creation do not do so due to traditional pull factors such as a desire for achievement or societal recognition but due to push factors such as a need for higher income to support livelihoods/family (Tambunan t, 2009). Research literature emanating from the developed countries need not make such a distinction, in fact it can be safely assumed that most of this literature pertains to the investigation of subjects that are educated due to higher literacy levels of their subjects.

Technology entrepreneurship pursued at the higher education level leads to creation of numerous high value enterprises. Creation of such enterprises is very substantial to the economic growth. These kinds of

enterprises typically come from individuals that have acquired the higher education. The focus of our study is also investigating the entrepreneurship development among such subjects.

Further student entrepreneurship and university led entrepreneurship development are the bed rock of great entrepreneurship ecosystems. Academic entrepreneurship systems have been the source of some of the best entrepreneurship ecosystems in the world. Route 128, Silicon Valley have had an academic university at their core. University research is considered at the core of the US science & technology ecosystem (Atkinson, 2007). Some of the most radical entrepreneurial success of our age have also had their origin in a technology institutes. Educational institutes are also core to the development of competency & hence an important context in the study of women entrepreneurship (Hooff F, 2012).

Secondly technology education is one of the most dominant and preferred stream of the young in India and so in terms impact, interventions to technology colleges in India are likely to harvest the maximum result and hence would have to be at the top of the priority order of research subjects.

Women Entrepreneurship research outside the OECD countries is relatively sparse (Robert H, 2006). The same goes for India when it comes to existing research on women entrepreneurship. Within this oasis of existing research, there are very few studies that confirm or deny the broad contours of women entrepreneurship in India vis-a-vis their western counterparts. Thus through this we intend to come up with new findings on women entrepreneurship in India. We will also be able to calibrate parts of these findings with those that have been consistently found from studies from other parts of the world.

Research on women entrepreneurship often focuses on a variety of subjects among which the state of unequal accesses to resources, restrictive societal and cultural norms & behavioral traits that hinder their uptake in entrepreneurial activities.

### **3. Methodology**

This study is based on the analysis of data collected from a survey done within the students from technology colleges in India. The target population of the survey was students in technology institutes across the country. Survey questionnaire were administered through both online and offline modes. The survey questionnaire online link was shared through social media and through direct emailing to students in technology colleges across the country. Offline survey questionnaires were also floated within the target population. A total of over 403 responses were analyzed after rejecting for incorrect responses. The survey respondents sample was a random sample.

The study was designed to collect responses from the students on a variety of questions that were queried students on intention for entrepreneurship, perception of desirability, perception of feasibility, perception of support with academic systems, their social circle & community. The objective of the study was to study how the responses of students will lead to identification of gender variations and perception differences. Further analysis of this data will lead to insights into women entrepreneurship in India as well as how the women in India compare to their male counterparts and how these gender variations compare to the other studies done globally.

### **4. Results**

Survey queried the respondents over *thirty* variables divided into following sections:

- (1) Intentions to startup
- (2) Entrepreneurial Abilities
- (3) Perception of Community & Societal Support
- (4) Perception of University Support & Inputs: Within classroom
- (5) Perception of University Support & Inputs: Beyond classroom & extracurricular

We performed the independent t-test on the responses to compare the mean values between the male and female respondents. In cases where result was statistically significant it indicated a gender difference. We tested the variables for t-test with a p-value at 5%. We rejected those results for which the p-value was

found to be more than 5% & hence were statistical insignificant. Focusing on queries that were statistically significant queries we found the following queries with a gender difference:

### **Attraction towards entrepreneurship career**

We compared the mean values of men and women on 'I find entrepreneurship career as very attractive'. We found that as compared to men, women found entrepreneurship career as less attractive. Men were 15% more attracted to women when compared to women. Researchers have long argued that women maybe facing a number of barriers to entrepreneurship such as cultural & social barriers (Erica F, 2010), market access and behavior-psychological barriers (Bruni A, 2004) that may be restricting the women to take up entrepreneurship. Past research among the Indian students has found that males have significantly higher entrepreneurial intention and attitude as compared to their female counterparts (Ponmani R, 2014).

### **Entrepreneurship career is challenging**

Comparing the mean values for the response 'Entrepreneurship career is very challenging', we found that women found entrepreneurship career more challenging than the men. Women find a variety of barriers towards entrepreneurship as discussed earlier and any or all of these reasons could be adding to the women's perception of challenge involved in entrepreneurship. It is easy to see that perception of challenge towards entrepreneurship career is very intimately connected to the level of attraction towards entrepreneurship challenge.

We further conducted a cross tabulation between these two responses - 'I find entrepreneurship career as very attractive' and 'Entrepreneurship career is very challenging'.

H<sub>0</sub>: There is a no relationship between females those who find entrepreneurship career challenging and those who find entrepreneurship career attractive

H<sub>1</sub>: There is a relationship between females those who find entrepreneurship career challenging and those who find it attractive

The p-value of chi-square test of the cross tabulation was found to be less than 5% ( $p < .000$ ) and therefore we found that there is a relationship between those women who find entrepreneurship career challenging & those who find it less attractive.

Further we found that women who find entrepreneurship career less attractive are more likely to find entrepreneurship career challenging even more than their male counterparts. Nearly 80% of the women who find entrepreneurship career less attractive find it challenging. The corresponding figures for males is only 50%. This indicates very strongly that women are finding entrepreneurship career less attractive clearly because they foresee more challenges in such a career while the men might be finding it less attractive for reasons beyond its mere challenging nature.

Women may be foreseeing various challenges involved in an entrepreneurial career. Research has shown that women have a lower risk tolerance as compared to men (Hooff F, 2010). Even highly educated women are risk averse (Nandram, 2010). Entrepreneurship ventures are predominantly risky Therefore perception of risk may be one of the contributing factors to their perception of challenge.

We therefore tested the hypotheses related to risk perception of women and perception of challenge:

H<sub>0</sub>: There is a no relationship between females those who find entrepreneurship career challenging and those who find entrepreneurship risky

H<sub>1</sub>: There is a relationship between females those who find entrepreneurship career challenging and those who find it risky

We cross tabulated the responses for 'entrepreneurship career is very risky' and 'entrepreneurship career is very challenging'. We found the p-value of chi-square test within the 5% confidence interval ( $p$ -value  $< .000$ ). Therefore we find a relationship between the two.

We also tested a similar hypotheses with male respondents.

H<sub>0</sub>: There is a no relationship between males those who find entrepreneurship career challenging and those who find entrepreneurship risky

H<sub>1</sub>: There is a relationship between males those who find entrepreneurship career challenging and those who find it risky

The chi-square test of cross tabulation was again found to be within the 5% confidence interval (p-value<.000)

We further compared the cross tabulation results between the two gender groups for further insights. We found that while 76% or more than three-fourths of women who see entrepreneurship career as challenging also see it as risky, the corresponding figure for men was only 41%. This indicated that risk perception of the entrepreneurship career was very strongly - and more than their male counterparts - influencing the female perception of entrepreneurship career challenges. As we discussed since women also have lower risk tolerance (Hooff F, 2010), their attraction to entrepreneurship career reduces correspondingly. On the other hand the male perception of challenge is not merely comprised of risk perception but also other factors may be at play which needs further discussion.

### **Networking with entrepreneurs**

Networking with entrepreneurs is an important activity for those who may be thinking on entrepreneurial careers. Networks are critical towards the success of startups (Lee DY, 2001) (Witt P, 2004). Our survey had also built in several queries that focused on how the men and women networked with the entrepreneurs. Running the independent samples t-test on our survey responses we also found statistical significance for one of these queries indicating that there is a difference in the way in which the men and women. The p-value for the response ' I regularly meet or interact with successful entrepreneurs' was found to be within the 5% confidence interval (p-value<.000).

Comparing the means we found that the women were networking much more than their male counterparts. The mean values of women who were networking were 25% higher than their male counterparts. This is clearly surprising in comparison to the fact that we found lesser interest in women for entrepreneurship.

### **Entrepreneurship intention among men and women**

At this point it may be useful to reference the Shapero's model of entrepreneurial event. Shapero's model infers that the Intent to start a business derives from three factors - 1. Perceptions of desirability 2. Perceptions of feasibility and 3. A Propensity to act upon opportunities. If we model our responses into Shapero's model we see the following.

1. Perception of desirability: 'I find entrepreneurship career as very attractive'
2. Perception of feasibility: 'Entrepreneurship career is very challenging'
3. Propensity to act upon opportunities: 'Networking with entrepreneurs'

Together the entrepreneurial intention is a result of these three inputs. Our list of variables as we have mapped into Shapero's model is not intended to be predictive or exhaustive. The mapping merely allows the reader to visualize how these three variables fit into the intention of entrepreneurship. Further analysis of the three variables will be to find out how these variables relate to the overall intention variable.

### **Intention to startup**

We further mapped out four hypotheses to test the relationship between the intention to startup and attraction to entrepreneurship.

#### **Hypotheses 1: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup right after their college**

H<sub>0</sub>: There is a no relationship between females those who find entrepreneurship career attractive and those who want to startup right after their college

H<sub>1</sub>: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup right after their college

#### **Hypotheses 2: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup after a few years of work experience**

H<sub>0</sub>: There is a no relationship between females those who find entrepreneurship career attractive and those who want to startup after a few years of work experience

H<sub>1</sub>: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup after a few years of work experience

**Hypotheses 3: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup right after their college**

H<sub>0</sub>: There is a no relationship between males those who find entrepreneurship career attractive and those who want to startup right after their college

H<sub>1</sub>: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup right after their college

**Hypotheses 4: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup after a few years of work experience**

H<sub>0</sub>: There is a no relationship between males those who find entrepreneurship career attractive and those who want to startup after a few years of work experience

H<sub>1</sub>: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup after a few years of work experience

We ran a cross tabulation test for all the four hypotheses and found statistical significance for all four hypotheses.

**Hypotheses 1: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup right after their college.**

(p-value =0.006, p-value<0.5)

**Hypotheses 2: There is a relationship between females those who find entrepreneurship career attractive and those who want to startup after a few years of work experience**

(p-value =0.016, p-value<0.5)

**Hypotheses 3: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup right after their college**

(p-value <0.000, p-value<0.5)

**Hypotheses 4: There is a relationship between males those who find entrepreneurship career attractive and those who want to startup after a few years of work experience**

(p-value <0.000, p-value<0.5)

Therefore we found that there is a relationship between those women and men who find entrepreneurship career attractive and those who want to startup either right after the college or after a few years of work experience.

**Women want to startup early**

Further analysing the cross tabulation results above we found some very surprising and interesting results. We found that nearly equal proportion of men and women who are attracted to entrepreneurship want to startup right after their college at 35% & 38% for women and men respectively. But when we analyse the data for those women/men who want to start up after a few years of work experience, the figure for women drastically drops when compared to the figure for men. As many as 83% of the men who are attracted to entrepreneurship career want to startup after a few years' work experience while only 56% women want to startup at that stage.

The figures suggest that women do not foresee themselves starting up once they move up in their career. While our survey didn't query the respondents on the issue, we may be able to suggest several reasons for the above based on prior research. As both men and women move up in their careers, they marry and start settling into family lives. The effect of marriage and family lives may be different on men and women. However its effect on women could be more than men. Research has shown that women "*are more inclined*

*to comply with social pressures than their male counterparts"*(Leroy H, 2009). Women may already be foreseeing their family lives a few years down their career and hence may be taking into account its influence on their career options. There is evidence of both negative and positive effect on women's entrepreneurial careers due to their family lives.

Social & Cultural norms of a society have been a major influence on the intention of the women to take up entrepreneurship around the world. Family life and work balance deeply influences the decisions of women entrepreneurs. In a study in Turkey, It was found that Entrepreneurial career was a source of stress on women and was seen by women as negatively affecting their family lives. At the same time Women experienced a positive effect of entrepreneurial careers on their social, economic & individual life. (Ufuk H, 2001). Such influences are likely to affect their decisions on taking entrepreneurship career. Marriage in case of study of women entrepreneurship is an important variable. Social & Cultural norms are also one of the factors that are likely to show very significant variation in different societies around the world. Influence of social factors such as marriage institutions is thus likely to show different results on women entrepreneurship in different societies.

Research that has originated from more developed societies has shown differing results on women's entrepreneurial career and option than that from the developing world. A research for the year 2000 showed that married women were more likely to be entrepreneurs than unmarried (Foreman-Peck J, 2014). Marriage also has different influence on entrepreneurship careers of by men and women. For young men, marriage reduces the probability of self-employment. But for women it increases the probability of self-employment (Bradley R, 1994).

However the results of research from developing societies have shown different results. A large number of women in Pakistan who took up entrepreneurship, could do so only after their children became older or in other words long after their marriage (Roomi M, 2008). This shows that the possible window to opt for an entrepreneurial career for women may close for a long period after their marriage and in many cases be thus lost forever.

Other studies have also argued that the reproductive function that the women have to execute may also become a barrier for their entrepreneurial careers (Abubakar G, 2011). This is a limitation that emanates from the marriage institution and is different than that for men and negatively enforces the effect of marriage on women compared to men. Since the fertility rates of women are generally higher in developing world as compared to the developed world, so marriage as an institution may influence the decision to take up entrepreneurship in developing world differently and in a more adversarial manner than the developed world.

Therefore influence of family life has a significant negative effect on women's intention to take up entrepreneurship and compared to their western counterparts marriage may be possibly negatively affecting the choices of women to opt for entrepreneurial careers at a later stage in their career as compared to men.

## **5. Conclusion**

As we had established in the literature survey, entrepreneurship development research for women has been region agnostic for most part and where it has been sector specific, we've seen different results. Our survey had similarly collected data among the students in technology universities in India among both men and women. Since students are very crucial segment for entrepreneurship development and the first step of the entrepreneurial skill and attitude development, we focused on students.

Our study found that men were more attracted to entrepreneurship career as compared to women. We found this difference to be 15% in favor of men over the women who found entrepreneurship career as attractive as the baseline. Further we also found that women found entrepreneurship more challenging than men. However we further delved into cross-tabulation analysis for more insights. When we looked at the cross-tabulation results for men and women.

Analysing data between men and women who found entrepreneurship career less attractive and those who found entrepreneurship more challenging, we found a clear connection in case of women. 80% of the women who found entrepreneurship career less attractive also found it more challenging but the same relation was only 50% for men, indicating that men may be finding entrepreneurship career less attractive



for reasons beyond its mere challenging nature. We also found further that the perception of challenge was also closely related to perception of risk for women. Nearly three-fourths of 76% of Women found entrepreneurship career challenging found it risky but for men this was only 41%. Which again underlines that for men more than mere risk may be at play.

But the men and women were having different plans when it comes to plan for entrepreneurship. All men and women who found entrepreneurship career as attractive were equally likely to start just after their college at 35% & 38%. However the situation turns interesting when the same is analysed for those the case of starting up after a few years of work experience. While majority of men at 83% want to startup after experience, far lesser number of women at 56% want to startup. More research may be required to analyse exact reasons for the above but it may be important to look at possible reasons for the insight.

Research from the western societies has shown that marriage (Bradley R, 1994) increases the probability of women to take up entrepreneurship but research from the developing countries has shown that marriage decreases the probability of women to take up entrepreneurship (Roomi M, 2008), (Abubakar G, 2011). The result may suggest that cultural factors continue to play a deep role in women's intention to take up entrepreneurship even in the segment where all women are highly educated.

Thus policymakers could do well to formulate policies that will encourage more women to take up entrepreneurship right after their college as that is the stage at which they are most likely to be motivated to startup. Therefore efforts at the education institution level to encourage entrepreneurship are even more likely to help pare the gender gap in entrepreneurship development.

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**Old soul, young spirit.  
Assessing entrepreneurial orientation within long-lived firms**

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## **Abstract**

Over the last decades corporate entrepreneurship has been widely recognized as a key to success, not only for new firms but also for established ones. Indeed, the essence of an entrepreneurial mindset is represented by the capacity of an existing firm to look for new opportunities and undertake risky projects in order to sustain and nurture a competitive advantage, also in international markets. Therefore, several authors have depicted entrepreneurship as a crucial element for long-term survival, arguing that the adoption of innovative and proactive behaviors is essential to keep a business competitive over time.

Nevertheless, there is no agreement in the literature as to whether long-lived firms are more oriented towards innovation and exploration activities or tend to assume conservative behaviors aimed at exploiting and preserving the wealth of resources and capabilities accumulated over time. Dealing with the key factors of enduring success, in fact, some scholars argued that firm's long-term well-being is enhanced by the continuous pursuit of entrepreneurial activities through the search of new market opportunities and the development of new products. On the contrary, other authors highlighted that the firms able to survive over long periods are more likely to pursue exploitation efforts over exploration initiatives.

This paper is part of such vibrant academic debate. In fact, our aim is to analyze how strong are the entrepreneurial values and activities within long-lived firms. In particular, the study focuses on 290 firms included in the National Register of Italian Historical Firms, that is Italian companies operating in all sectors with at least a century of business experience behind them. Specifically, we used companies' websites to collect data regarding their vision and mission statements, along with corporate shared values. Then, a computer-aided content analysis of the text was used to investigate the presence and the relative weight of words related to entrepreneurship. While most of the existing studies on this topic, in measuring the phenomenon, adopted as indicators the corporate entrepreneurship activities (i.e. investments in R&D, new products developments, diversification, and so on), we propose a new perspective, that seems to have been overlooked in the past: the analysis of the discursive practices as a way to assess the persistence of entrepreneurial values in long-lived organizations.

With our analysis of the text used by historic companies to communicate their strategy, we aim to understand if entrepreneurship is deployed as a carrier of key values that firms' leaders want their external stakeholders to associate with the organization, and their internal stakeholder to both believe in and implement.

## 1. Introduction

In order to prosper and survive despite the intense competition and rapid changes characterizing present scenarios, organizations need to constantly adopt entrepreneurial behaviours. Thus, corporate entrepreneurship has been a central theme of inquiry among scholars and managers in the past decades (Miller, 1983; Covin and Slevin, 1989). Considerable empirical work was produced to support the existence of a positive relationship between Entrepreneurial Orientation (EO) and several measures of a firm's performance (Zahra and Covin, 1995; Dess et al., 1997; Jantunen et al., 2005; Mostafa et al., 2006).

Despite the great amount of studies dealing with EO, the debate on construct measurement and theory development is still open and quite vibrant (Chandler and Lyon, 2001). In recent years, many scholars advocated the employment of more fine-grained research methods, able to capture the complexity of entrepreneurially-oriented processes and behaviours (Lyon et al., 2010). Even if content analysis has been recognized as a useful tool to investigate entrepreneurship, only few studies have adopted this approach to assess EO (Short et al., 2010). Furthermore, most studies have examined EO as a unidimensional construct, ignoring that its different dimensions may vary independently (Lyon et al., 2010). Additionally, the few studies aimed at assessing EO across all its dimensions have been traditionally focused on young or newly created firms, while there are only rare exceptions of analysis based on long-lived firms (e.g., Zellweger and Sieger, 2012).

Based on these assumptions, we investigated EO as a multidimensional construct made up of innovativeness, autonomy, proactiveness, risk-taking and aggressiveness (Lumpkin and Dess, 1996) using computer-aided content analysis. Specifically, focusing on 290 firms included in the National Register of Italian Historical Firms, we performed a content analysis of the text they use to communicate their strategic path and values. Therefore, we investigated firms' discursive practices in search for elements able to capture entrepreneurial behaviours and processes that might not be caught through survey based measures or other archival data.

Our paper is structured as follows. First, we provide a brief literature review and describe the methodology of the research. Then, we present and discuss our findings. Finally, we shortly highlight limitations and future research directions.

## 2. Theoretical background

EO represents a central construct in the broad field of literature on entrepreneurship, that has been steadily growing over the past decades. Among the numerous conceptualizations used in this research domain, indeed, EO is the one that captures the essence of an entrepreneurial firm, defined by Miller (1983) as the one that "engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch". Subsequently, Lumpkin and Dess (1996) highlighted the firm-level processes, practices and decision making styles encapsulated in the EO construct. In their seminal work, the two authors conceptualized EO by using five dimensions: innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy. All the five dimensions were used to outline how an entrepreneurially-oriented firm acts to compete successfully. Innovativeness refers to a firm's tendency to embrace creativity, novelty and experimentation that may result in new products, services or technological processes. Risk-taking refers to a firm's propensity to make large resource commitments even to projects with uncertain outcomes. Proactiveness refers to the pursuit of opportunities aimed at gaining first-mover advantages through the introduction of new products or projects ahead of the competitors. Competitive aggressiveness consists of traditional and non-traditional methods of competition aimed at challenging rivals in a direct and intense way. Finally, autonomy refers to the initiatives and actions undertaken in an independent and self-directed way in order to pursue opportunities without too many organizational constraints.

Based on the relevance held by EO both in strategic management and entrepreneurship literatures, the relationship between this construct and business performance has gained significant scholarly attention. To date, significant empirical evidence has been provided regarding the positive influence exerted by EO on firms' results (Zahra and Covin, 1995; Dess et al., 1997; Wiklund and Shepherd, 2003). In particular, a number of scholars empirically verified that the adoption of an EO facilitates growth on foreign markets and improves international performance, since it positively influences the ability of firms to identify new opportunities beyond national borders (Jantunen et al., 2005; Mostafa et al., 2006; Ripollés-Meliá et al., 2007; Frishammar and Andersson, 2009).

As stated by Lyon et al. (2000), "despite general agreement on the effects of entrepreneurship, there is some debate regarding the definition and operationalization of entrepreneurship". Most of the empirical studies, indeed, use different variations of the scales originally developed to assess the construct (Miller, 1983; Covin and Slevin, 1989), even if such variations do not find an adequate theoretical justification (Rauch, 2004).

In recent years, content analysis has been identified as an effective method to improve theory development and measurement techniques in entrepreneurship literature (Duriau et al., 2007). In this regard, Short et al. (2010) suggest alternative approaches to measurement able to enhance the reliability and validity of scales traditionally used to investigate EO. To this aim, the authors illustrate the central role of computer-aided text analysis in construct validation, highlighting how EO may be investigated through the content analysis of organizational narratives, in search for significant aspects neglected by other approaches. In a similar vein, Lyon et al. (2010) proposed the use of content analysis as a valid method to address the main issues related to different approaches to operationalizing a firm's EO, including managerial perceptions, firm behaviour and resource allocation. As pointed out by the authors, despite the high construct validity associated with survey-based measures, obtaining managerial perceptions can be costly and high consuming and may suffer of limitations due to the subjective nature of data. Furthermore, measures of resource allocation into activities traditionally associated with corporate entrepreneurship (such as R&D investment, diversification activities, new product development and so on) may also not reflect the real level of EO, often encapsulated in behaviours, values, attitudes and decision-making styles that lie beyond traditional scales (Riviezzo et al., 2013).

Despite the numerous advantages connected with content analysis and its usefulness for the measurement of EO, studies based on this approach falling in the entrepreneurship field are still relatively scarce (Short et al., 2010).

Furthermore, while research on EO has flourished in the past decades, this has been generally focused on young and newly created firms, often operating in growing and dynamic industries and markets (Zellweger and Sieger, 2012). Less academic interest, instead, has been devoted towards the understanding of how EO may influence the results of long-lived firms. However, mainly drawing on family business experiences, significant efforts have been made in recent years to understand the kind of strategic orientation associated with long-term success (Riviezzo et al., 2015). Despite this interest, literature still appears discordant about the declination of strategic orientation that is more likely to explain the ability of firms to survive and prosper for decades or even for centuries. In this regard, much empirical support exists on the need of maintaining a balance between exploration and exploitation activities (March, 1991). In recent years, a growing number of scholars used content analysis to understand how firms, specifically family firms, may balance their ability of exploiting and exploring opportunities over time (Moss et al., 2014). However, there is still a paucity of empirical studies aimed at assessing EO within long-lived firms, especially considering a five-dimension conceptualization of the construct, that has been rarely used in previous investigations (Hughes and Morgan, 2007).

The present paper aims to provide empirical evidence useful to fill these gaps, by adopting the methodology described below.

### 3. Method

We used computerized content analysis of organizational narratives to assess the EO dimensions within long-lived firms. Content analysis is often applied to organizational narratives such as annual reports, letters to shareholders, organizational mission statements, and so on (e.g., Duriau et al., 2007; Short et al., 2010; Moss et al., 2014; Allison et al., 2014). As noted by Allison et al. (2014; p. 24), “computer-aided text analysis is a form of content analysis where word lists associated with a construct are used to identify the presence of words associated with that construct in organizational narratives”. Previous studies with similar approach in entrepreneurship literature emphasized the advantages of such method. It enables preventing: biases arising from non-response (Allison et al., 2014), recall bias (Moss et al., 2014), and attempting to generalize from one or few key informants in the organization (Lyon et al., 2010), thus overcoming some of the main limitations of individual-response methods, such as surveys and interviews. We used the software NVivo 11 to content analyse the text of organizational mission statements, organizational vision statements, and organizational values statements of 290 long-lived Italian firms.

#### Sample

We used a desk research to collect the text of organizational mission statements, organizational vision statements, and organizational values statements of 290 long-lived Italian firms entered in the National Register of Italian Historical Firms edited by Unioncamere, that is the National Association of Italian Chambers of Commerce. This Register (set up by Unioncamere in 2011) includes all firms operating within the same industry for not less than 100 years, and it has been already used as a dataset for previous studies focused on long-lived companies (e.g. Riviezzo et al., 2016).

At the time we started our research, the Register included more than 2.000 firms. For each firm we visited the official website; then, we searched in the description of company profile for an explicit statement of organizational mission, organizational vision, and organizational values, copying and pasting such text. At the end of this time-consuming process, we were able to gather the required information just from 290 firms, collecting a corpus of about 40.000 words.

**Table 1.** Descriptive statistics of the analysed long-lived firms

Industry	%	Employees	%	Years	%
Financial Services	19,66	1-9	6,81	100-149	77,93
Agri-food	16,55	10-49	29,75	150-199	16,55
Engineering	14,14	50-99	16,13	200-249	1,72
Construction	9,66	100-199	17,20	250-299	0,69
Trade	8,97	200-299	7,53	300-499	2,07
Other Manufacturing	8,96	300-499	5,02	500 e oltre	1,03
Furniture	5,86	500-999	6,45	<b>Total</b>	<b>100,00</b>
Other Services	5,51	1000 e Oltre	11,11		
Textile Services	4,83	<b>Total</b>	<b>100,00</b>		
Graphics Publishing	3,1				
Utilities	2,76				
<b>Total</b>	<b>100,00</b>				

As shown in Table 1, firms included in the sample are equally distributed among different industries: 19,66% operate in financial services, followed by the agri-food industry with 16,55%, and the mechanical engineering with 14,14%. Regarding the number of employees, most of the firms fall in the range 10-49 (29,75%), followed by the range 100-199 employees (17,20%), and the range 50-99 employees (16,13%). Ranges with a higher number of employees are less occurring. Concerning firms' age, 77,93% of companies belong to the range 100-149 years, followed by companies with 150-199 years (16,55%). Firms with more than 200 years represent a minority in our sample.

## Measures

In order to capture each of the five EO dimensions (autonomy, innovativeness, proactiveness, competitive aggressiveness, risk taking), we used the comprehensive list of words developed and validated by Short et al. (2010), shown in Table 2. As discussed by the authors (p. 331) “because entrepreneurial orientation has been *a priori* theorized as multidimensional, we created a discrete and exhaustive word list for each of its theoretically based dimensions”. The proposed word lists are mutually exclusive, thus each word can be associated with only one dimension. Beside the words deductively derived from the theoretical definitions of each dimension, the authors proposed one more list of words inductively derived from dictionary development. We retained the same lists, just adding some inductive words, mainly represented by other synonyms.

We used the NVivo software to generate word counts of the EO language used in each of the 290 long-lived firms’ statement of organizational mission, vision, and values. As it is common in studies using this approach (e.g., Moss et al., 2014; Allison et al., 2014), the frequency values were standardized by dividing the word counts by the length of the organizational narrative. In so doing, we eliminated the potential bias of document length. As an example, the word list to measure autonomy includes, among the other, the words “authority”, “deregulation”, “independence”. Each occurrence of these three words in a document (one of the 290 firms’ statements of organizational mission, vision, and values) increments the autonomy score of that document by one. We divide the total number of occurrence of all the words in the autonomy list by the total number of words that compose the document, thus obtaining a standardized autonomy score.

First, we analysed the frequency of each word in the lists, in order to get an idea of the role given to entrepreneurial language in organizational narratives in general. In this way, we were able to assess the incidence of entrepreneurial language on the total text and to find out the most used words from our lists. Then, we analysed the relative weight of each of the EO dimensions, in order to get an idea of the different role they play in the organizational rhetoric. To do this, we divided the standardized score of each of the EO dimensions by the sum of all the dimensions. As an example, the relative autonomy orientation was obtained as a result of the autonomy standardized score divided by the sum of autonomy standardized score + innovativeness standardized score + proactiveness standardized score + competitive aggressiveness standardized score + risk taking standardized score + deductive words standardized score.

**Table 2.** Word lists for Entrepreneurial Orientation dimensions

Entrepreneurial Orientation Dimension	List of words
Autonomy	At-liberty, authority, authorization, autonomic, autonomous, autonomy, decontrol, deregulation, distinct, do-it-yourself, emancipation, free, freedom, free-thinking, independence, independent, liberty, license, on-one’s-own, preroga- tive, self-directed, self-directing, self-direction, self-rule, self-ruling, separate, sovereign, sovereignty, unaffiliated, unattached, unconfined, unconnected, unfettered, unforced, ungoverned, unregulated
Innovativeness	Ad-lib, adroit, adroitness, bright-idea, change, clever, cleverness, conceive, concoct, concoction, concoctive, conjure-up, create, creation, creative, crea- tivity, creator, discover, discoverer, discovery, dream, dream-up, envisage, envision, expert, form, formulation, frame, framer, freethinker, genesis, genius, gifted, hit-upon, imagination, imaginative, imagine, improvise, ingenious, ingenuity, initiative, initiator, innovate, innovation, inspiration, inspired, invent, invented, invention, inventive, inventiveness, inventor, make-up, mastermind, master-stroke, metamorphose, metamorphosis, neoteric, neoter- ism, neoterize, new, new-wrinkle, innovation, novel, novelty, original, ori- ginality, originate, origination, originative, originator, patent, radical, recast, recasting, resourceful, resourcefulness, restyle, restyling, revolutionize, see- things, think-up, trademark, vision, visionary, visualize
Proactiveness	Anticipate, envision, expect, exploration, exploratory, explore, forecast, fore- glimpse, foreknow, foresee, foretell, forward-looking, inquire, inquiry, inves- tigate, investigation, look-into,

	opportunity-seeking, proactive, probe, prospect, research, scrutinization, scrutiny, search, study, survey
Competitive aggressiveness	Achievement, aggressive, ambitious, antagonist, antagonistic, aspirant, battle, battler, capitalize, challenge, challenger, combat, combative, compete, competitor, competing, competition, competitive, competitor, competitory, conflict-ing, contend, contender, contentious, contest, contestant, cutthroat, defend, dog-eat-dog, enemy, engage, entrant, exploit, fierce, fight, fighter, foe, intense, intensified, intensive, jockey-for-position, joust, jouster, lock-horns, opponent, oppose, opposing, opposition, play-against, ready-to-fight, rival, spar, strive, striving, struggle, tussle, vying, wrestle
Risk taking	Adventuresome, adventurous, audacious, bet, bold, bold-spirited, brash, brave, chance, chancy, courageous, danger, dangerous, dare, daredevil, daring, dauntless, dicey, enterprising, fearless, gamble, gutsy, headlong, incautious, intrepid, plunge, precarious, rash, reckless, risk, risky, stake, temerity, uncertain, venture, venturesome, wager
Additional inductively derived words	Action, advanced, advantage, commercialization, customer-centric, customized, develop, developed, developing, development, developments, emerging, enterprise, enterprises, entrepreneurial, exposure, exposures, feature, features, founding, high-value, initiated, initiatives, innovations, innovative, introductions, launch, launched, leading, opportunities, opportunity, originated, out-doing, outthinking, patents, proprietary, prospects, prototyping, pursuing, risks, unique, ventures

**Source:** Short et al., 2010, with some additional inductively derived words self-developed by the authors.

## 4. Key findings

As stated above, we analysed the frequency of each word in the EO dimensions lists. The total occurrence of these words is 5.573, that means about 14% of the total text we analysed is made up of entrepreneurial words. However, the frequency distribution among the words is very heterogeneous: 34% of the searched words has a frequency of less than 10, and 16% has a frequency equivalent to 0.

If we look at the single words, there is a word that stands above all the others: the word “action” recurs 651 times, followed by “customer centric” recurring 243 times, and “develop” with a frequency of 211. All the other words present a frequency of occurrences less than 200. It is worth noting that among the ten most recurring words (Table 3) there is also “entrepreneurship”.

**Table 3.** Top 10 recurring words from the word lists for Entrepreneurial Orientation dimensions

Rank	Word	Frequency
1	Action	651
2	Customer Centric	243
3	Develop	211
4	Mastermind	192
5	Metamorphosis	183
6	Entrepreneurship	180
7	Formulation	179
8	Adroitness	168
9	Innovation	156
10	Innovative	133

As a further analysis, we developed the word cloud shown in Figure 1 to represent the visual synthesis of all the words resulting from the content analysis. Of course, the words of larger sizes have a higher frequency while the words with smaller sizes are the less recurring ones.

After this preliminary analysis, we investigated the relative weight of each of the EO dimensions, in order to examine the different role they play in the organizational rhetoric of long-lived firms. First, we calculated a standardized score of each of the EO dimensions. It is obtained as an average of the single dimensions' score of the 290 analysed firms. It ranges from 0 to 1: as an example, a value equal to 0 for the company Alpha's innovativeness score means that none of the words in the organizational narrative of that firm is





As shown in Table 5, about 40% of the entrepreneurial language used within long-lived firms, on average, is made up of words related to innovativeness. All the other dimensions count for less than 10%, while the residual dimension of inductive words counts for 35%.

**Table 5. Relative orientation scores of Entrepreneurial Orientation dimensions**

<b>Entrepreneurial Orientation Dimension</b>	<b>Relative score</b>
Autonomy	0,072
Innovativeness	0,390
Proactiveness	0,062
Competitive aggressiveness	0,085
Risk taking	0,033
Additional inductively derived words	0,353

## 5. Discussion

By investigating EO in the specific realm of long-lived firms, the present study offers several important contributions to the entrepreneurship literature.

First of all, based on the analysis of text used by the investigated firms to communicate their strategy, we assessed EO across all the five dimensions conceptualized by Lumpkin and Dess (1996). On the contrary, as argued by Short et al. (2010), prior research generally did not address dimensionality, thus neglecting the influence that the individual dimensions of the construct may play on the EO of a firm.

Therefore, we used content analysis with the specific aim to explain and investigate each of the five EO dimensions, namely innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy. Interestingly, our analysis confirmed that some dimensions of EO, even being essential features of entrepreneurial processes and behaviours, may have a lower relevance in a specific context (Hughes and Morgan, 2007). More specifically, our results clearly showed the central role of innovativeness, that assumes a higher relative weight in the text used by firms to share their strategy, values and beliefs with internal and external stakeholders. This result is in line with the work of Lyon et al. (2000), who highlighted that EO dimensions do not have to covary in strong entrepreneurial firms, but might vary independently based on specific organizational and environmental factors.

Moreover, it must be taken into account that the described methodology has been used to investigate EO in long-lived firms, while entrepreneurship research is much more often focused on newly created firms (Zellweger and Sieger, 2012). Surprisingly, innovation appears as the main element characterizing the entrepreneurial posture of the analysed firms, thus disconfirming a fairly widespread image of businesses closed in their traditions and anchored to the past.

Along with the assessment of EO dimensions, the present paper adds to the existing body of literature since it takes a more nuanced approach, able to capture details that could be neglected by using a survey methodology. In this line of thought, the adopted methodology allowed us to partially address some issues emerging both in the research design and in construct measurement within entrepreneurship research, thanks to an analytical approach essential to a solidly constructed qualitative research (Chandler and Lyon, 2001).

To sum up, our study is among the few that have adopted content analysis in order to assess all the five dimensions of EO construct. Besides, contrary to the majority of contributions on entrepreneurship, our focus was not represented by nascent or young firms, rather by firms able to survive over time, that we examined in search of actions, decisions and values able to reflect their entrepreneurially-oriented behaviours.

## 6. Limitations and future developments

The present study is not free from limitations, that also suggest directions for future research. A possible limitation is the generalizability of our findings, due to the relative low number of investigated firms. Moreover, since they are all included in the National Register of Italian Historical Firms, the applicability of our results to firms from other backgrounds could be limited. Given our choice to assess EO within long-lived firms, conducting a parallel research in the context of young firms could lead to valuable insights regarding the extent to which the construct manifestations and dimensions differ between these two categories of businesses.

Finally, following the suggestions by Lyon et al. (2010), the qualitative approach adopted in the present study should be integrated by multiple measures, in order to allow the triangulation of methods necessary for coping with the complexity of entrepreneurship research.

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# **Impact of Knowledge Worker Deployment on Quality Performance of Public-Sector R&D in India: Evidence from a Longitudinal Study**

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## **1. Abstract**

We investigate the relationship between the structure and functioning of scientific personnel and the quality performance output record over an extended period of time in laboratories functioning under the Council of Scientific and Industrial Research (CSIR), the primary umbrella for such laboratories in India. Our objective is to examine how rapid economic and social changes and the demand for better accountability are addressed by R&D institutions in a specific developing economy. We explore whether the knowledge and capabilities of knowledge workers are critical to the meeting of goals in such contexts. We draw on theories of organizational learning in an R&D context, the role of tacit knowledge and empirical research on managing R&D which encompasses the innovations that result from it. We use functions performed by the scientific manpower as indicators of their tacit knowledge. We use the results from published prior research of the authors (Roy and Ranjan, 2012; Roy and Mitra, 2015) and data from 27 CSIR laboratories to analyze the specific functions carried out by this set of knowledge workers in order to gauge the internal strengths and weaknesses of individual laboratories in different functional areas in terms of their quality performance output record. We deploy correspondence analysis and use this method to explore the structure of multivariate relationships among the different CSIR laboratories in terms of the functions performed by the scientific personnel in these laboratories and subsequently analyze how this impact quality performance of these laboratories over a span of eleven years to validate the results of our recently published work (Roy and Mitra, 2015) over a longitudinal data set spanning over eleven years. Our research highlights the importance of strategic innovation practices which are essential for supporting pilot plants, experimental field stations and in the engineering and design units. This study provides us with a map of laboratories distinguished by their in-built strength in basic research or in engineering services or in the working of pilot plants or in other R&D thrust areas. And then we diagnose how this tacit knowledge impacts the performance of these laboratories, and the stability of this impact over time. The paper has particular implications for public R&D management leadership for innovation in a developing economy context. The paper provides critical insights into our understanding of public R&D management for innovation in an emerging economy, a relatively under researched area, in the field of innovation management. This work should be of value for planning and decision making for practitioners and policy makers engaged in global R&D based projects, innovation management and entrepreneurial outcomes.

## **2. Introduction**

There is an urgent need to strategize and spend higher amounts of money on India's development needs which can be served by science, technology and innovation together with the alarmingly low levels of R&D investment and activity in a country which boasts of rapid economic growth of between 6% to 8% for over a decade now. Indian science and technology development reflects the type of contradictions symptomatic of poor strategic direction and management of its resources. Relatively low levels of private sector expenditure (currently 33% of total R&D spending), a high level of reliance on Soviet style silo research that kept research out of the province of education and teaching, poor quality laboratories, the country's legendary bureaucracy, a fragmented research community of followers than leaders, the banning of high technology exports by Western countries after India's first atomic tests, the lure of 'big bucks' in the country's rocketing Information Technology Industry, and the absence of incentives, are some of the factors which have impeded the effective management of its R&D. The relative pluses and minuses in the science and technology landscape of India raises critical questions of the management of research

activities. Given the paucity of private sector investment much of the emphasis lies on the public sector's ability to drive research excellence. Indeed, most of the measures referred to above are led by the public sector pointing further to the need for ensuring effective deployment of research management capabilities.

The world is becoming more and more turbulent socially, politically and economically increasing the level of complexity in management practices that is required to be adopted by organizations in emerging economies like India. Shukla (1997) has looked at the Indian scenario since the economic reforms of early 1990's. According to him, the knowledge-based organization aims at creating a new paradigm that is possible by developing competencies and capabilities, requiring a change in the mind set of people about the nature of the organization. The challenge, therefore, is to learn new ways of operation. Organizations need to be more organic (Nilakant and Ramnarayan, 1998) in such a global environment with increasing tendencies toward deregulation, increased competition and technological changes, and Indigenous technology capability building can effectively enable these countries to compete in the international market. Leveraging internal R&D capabilities with external resources to deliver long-term as well as short-term value, to facilitate rapid learning, and to focus on speed in the commercialization of new technology.

Taking off from a published work by the authors (Roy and Ranjan, 2012), and a more recent publication (Roy and Mitra, 2015), the present study investigates into the relationship between quality R&D performance record and the structure and functioning of knowledge workers over an extended period of time in a longitudinal study, that is, over a period of eleven years, in laboratories functioning under the Council of Scientific and Industrial Research (CSIR), the primary umbrella for such laboratories in India. The knowledge workers are the scientific personnel working in different fields of activities like research and development, infrastructure, workshops and engineering and design units of the various CSIR laboratories. Knowledge workers add value to an organization through their ideas, analysis, judgment, synthesis and designs (Horibe, 1999). The major working tool and resource for a knowledge worker is knowledge that is of intangible character and the observer does not see and know how knowledge workers uses knowledge when creating values (Firestone and McElroy, 2005).

The rest of the paper follows a route that takes the reader through a critical review of the literature on key aspects of organisational processes that impact on R&D management, including organisational learning and especially tacit knowledge, the context of the CSIR laboratories in India which provide the organisational backdrop for our empirical investigation, the methodology adopted for our research, a presentation of the findings and a discussion of the implication of those findings for both R&D management, especially in the public sector, and public policy relevant to emerging economies.

### **3. Literature Review**

In recent times, there have been perceptible changes in the way scientific and technical knowledge is produced and if these changes are pervasive across fields of scientific and technical activity, they would affect R&D and innovation systems (Freeman, 2006). Multidimensional orientation of research and development activities in leading-edge research areas and indeed the process of innovation implies that in order to solve problems, generate innovative outcomes and ensure effective management of R&D, effective utilization of knowledge and skills in different areas are needed.

The study reported in the paper attempts to bridge the gap in the knowledge space linking management practices to the innovativeness of outcomes for R&D units. Typically, the innovation practice involves managing and monetizing intellectual property which involves risk, integration and learning at the organization or entire unit level. This process is often unique to specific sectors and the competencies required for their effective management are not necessarily transferable across sectors. With a focus on learning theory and innovation (Senge, 1990a; 1990b; Van de ven and Polley, 1992), the study carried out by Greve (1998) has adopted learning theory to examine how performance feedback affects the probability of risky organizational changes that are consequential to an organization's performance. The theory predicts how decision-makers interpret organizational performance by comparing it with historical and social aspiration levels. Interestingly, it has been observed from a perusal of organizational learning literature that there is a recursive relation between performance and goals (Lant, 1982), the study investigates whether management strategy adopted by the R&D laboratories take into account information derived from previous experiences.

Given specific contexts and non-transferable or inimitable sets of competencies located in those contexts, the role of tacit knowledge has been identified as a key source of new knowledge production. Tacit knowledge provides much of the basis for the way we interact with people and situations. It is embodied in people, rather than in any codified form or in tangible objects. In most cases it is difficult to transfer such knowledge between people even if it can be acquired by a firm through hiring people, R&D and interpersonal networking. In most organisations good practice is based on rich experience which cannot possibly be codified into written forms. But once it is exposed there is a possibility for testing such knowledge with a view to harnessing and developing it. However, there are difficulties with this process. If we follow Polanyi's definition it may not be possible at all to carry out those tests. Tacit knowledge has been recognized as a major input to any technological innovation effort. This knowledge is largely experiential, cumulative and often tacit. Much of this tacit knowledge is held in decentralized units and structures, often non-disseminated and immune to external challenge (Pitt and Clarke, 1997). Studies of innovation, technology transfer and technology diffusion identify tacit knowledge as an important component of the knowledge used in innovation. Koskinen (2004, p. 15) mentions, 'Tacit knowledge presents knowledge based on the experience of individuals. It expresses itself in human actions in the form of evaluations, attitudes, points of view, commitments, motivation, etc'.

Alexeis and Mitra (2007) have pointed out that contextual complexities as a result of the nature of knowledge-based resources of organizations are increasingly the bases of competitive advantage. Hamza (2009) has probed into the relationship between tacit knowledge and organizational competitiveness in an engineering firm. According to Pimentel and Albino (2010), the search for competitive advantage in a global environment must consider the use of tacit and explicit knowledge circulating inside companies. The generation of tacit knowledge is an inevitable adjunct to advances in science and technology, and organizations acquire such knowledge to support innovation in a purposive manner. It is this uniqueness of the knowledge production process that helps to achieve sustainable strategic capability for R&D leading to innovation and competitive advantage.

Managing strategic assets in public sector organisations has also attracted attention among researchers and decision makers not least because of the need to carry out sharper appraisal of the value of public goods in a climate of reduced public expenditure. Yet another imperative is the need for public resource utilisation for the competitive advantage of nations. It is, however, difficult to measure how countries use their resources; more particularly, how efficiently public resources are used by R&D organizations functioning. It is difficult to measure the performance of R&D organization because the nature of these organizations and the functions these organizations perform are complex, risky, and uncertain.

#### **4. The Objective: Research Context**

As mentioned earlier, in India, scientific and technological research is concentrated in industrial and government funded institutions such as the CSIR. The CSIR is an autonomous society under the Societies' Registration Act, 1860 with the Prime Minister of India as its ex-officio President. The Governing Body is the highest policy decision-making body of CSIR. The Director-General is its ex-officio chairman. The CSIR Headquarters at New Delhi coordinates the activities of the laboratories. The Council enters into bilateral agreements in the fields of pure as well as applied sciences with scientific organizations of various countries. In these institutions the demand for profit, growth and accountability respectively require that research activity is directed, at least in the long run and more often in the short run, towards the solution of practical problems. In a climate of competitive advantage and the necessary evaluation of public goods, an organisation such as CSIR cannot escape scrutiny in terms of efficient management processes which generate entrepreneurial outcomes through the proper organisation of its strategic assets. Tacit knowledge has been particularly linked to the resource-based view of the firm focusing on 'non-purchasable, intangible, firm-specific and embedded types of resources' (Von Krogh and Roos, 1995, p. 60). The scientific personnel, the knowledge workers, are strategic assets for CSIR, more so because of the *tacit knowledge* they possess as a result of actively pursuing R&D activities in different functional areas over a long period of time. The functions being performed by the scientific manpower have been considered as indicators of their tacit knowledge in the present study. In managing R&D in changing, resource constrained and competitive scenarios it is imperative to appreciate the paradigmatic shift towards strategy innovation for survival, maintenance and growth of CSIR. The corporate character of CSIR is almost

entirely built upon the performances and functioning of the laboratories functioning under CSIR (Banerjee and Roy, 1999).

We ask the following questions. How has the CSIR managed its resources, its intellectual property and the imperatives of innovation for economic development? How have the knowledge workers of the various CSIR laboratories been organized to best offer and use their competencies? Given the new commitments to improved science and technology-based activity what can we expect from the CSIR in terms of their capabilities in managing change? How the intellectual capital deployment in CSIR laboratories along different functional dimensions impacted the quality performance of these laboratories? To best answer the questions above we start with the results of a published work by the authors (Roy and Ranjan, 2012) where we had investigated the structure and functioning of scientific personnel in CSIR and a follow-up published work (Roy and Mitra, 2015) that probed how tacit knowledge potential of different CSIR laboratories - as evidenced from the previous study - impact the quality performance of these laboratories. The present work attempts to take this path of research forward providing support and evidence as a measure of validation of the results of past research through a longitudinal study of quality performance of CSIR R&D laboratories spanning over a period of eleven years. Through such critical enquiry we are able to assess the effectiveness of R&D management in the CSIR laboratories.

## 5. Methods

As mentioned above, the results of the analysis of the specific functions carried out by this set of knowledge workers from our published work (Roy and Ranjan, 2012) that had adopted the methodology of correspondence analysis, were related to the quality performance record of the laboratories concerned for the year 2010-11 (Roy and Mitra, 2015). The quality performance record was analysed based on the following dimensions: number of Indian patents filed, number of Indian patents granted, number of foreign patents filed, number of foreign patents granted and the number of published papers figuring among the top 50 CSIR publications in the areas of biological sciences, chemical sciences, engineering sciences, physical sciences and information sciences using data from 27 CSIR laboratories. The methodology of correspondence analysis (CA) was adopted in the previous study to explore the structure of multivariate relationships among the different CSIR laboratories in terms of the functions performed by the scientific personnel in these laboratories and these CA maps were interpreted in relation to the quality performance record of the corresponding laboratories for the year 2010-11. The work reported in the present paper looks to validate the results and conclusions drawn in Roy and Mitra's (2015) study by looking at the data of quality performance of these R&D laboratories in relation to the CA maps over an extended period of time – a seven-year period before the aforementioned year (2010-11), that is, the years 2003-04, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, and 2009-10, and a three-year period after 2010-11, that is, the years 2011-12, 2012-13, and 2013-14. eleven-year period – from the year 2003-04 to the year 2013-14 in the present study.



## **Functional Scheme for Scientific and Technical (S&T) Personnel**

Based on our understanding of the various scientific activities being carried out in CSIR laboratories, the different functions carried out by these personnel were grouped into six categories, defined as follows:

### **FUNCTIONAL SCHEME FOR S&T PERSONNEL**

Function 1	Research and development work.
Function 2	S&T services including testing, survey, data processing, field work, liaison, planning and co-ordination.
Function 3	Infrastructure including workshop, animal house, instrumentation, equipment maintenance, special functions such as glass blowing, printing and reprography, etc.
Function 4	Pilot plants, experimental field stations and Demonstration units.
Function 5	Engineering and design units.
Function 6	Research support functions.

**Source: Roy and Ranjan (2012)**

What we see in the functional scheme for scientific personnel is actually a complex system of organizational and social relationships. These functions, including some specialized ones, are in the main activities performed by different scientific groups in the CSIR laboratories. These functions are not independent but are related to the functions of research and development.

We have not made any attempt to divide the functions into different categories of structured and less-structured functions. Therefore, the above scheme reflects the actual scientific staffing pattern in various CSIR laboratories. A group of personnel in a particular category may perform some structured functions and some functions which are perhaps less organised.

Function 2 and function 6 are not same. Function 6 (research support functions) includes all residual functions not mentioned in the list of other functions. Scientific personnel categorized under this functional classification could include computer programmers, data entry operators and others with similar responsibilities.

## **Correspondence Analysis (CA)**

The methodology of correspondence analysis was adopted by the earlier study (Roy and Ranjan, 2012) to explore the structure of multivariate relationships among the different CSIR laboratories in terms of the functions performed by the scientific personnel in these laboratories. This is an exploratory statistical study which displays the rows and columns of a rectangular data matrix as points in a scatter-plot, often called a 'map'. It is a powerful graphical tool in many situations involving categorical data (Lebart *et al.*, 1984; Greenacre, 1984; Greenacre, 1993; Greenacre and Blasius, 1994). The data set is in the form of categorical variables in a contingency table. The important characteristics of a contingency table is that each respondent, or sampling unit, occurs in only one cell of the table, so that the grand total of the table is equal to the sample size. Correspondence analysis looks at the association, or interaction, between two

categorical variables. The maps of correspondence analysis provide a view of a data table in a continuous framework, in terms of new dimensions on continuous scales.

Correspondence analysis is an extremely useful tool in the strategic planning and management of R&D. Unlike traditional approaches to typological analysis (e.g., cluster analysis), this methodology allows for the possibility of overlapping clusters and simultaneous representation of row elements (i.e., laboratories) and column elements (i.e., functions) in two-dimensional factorial maps. Some of the keys for interpreting the factorial maps are explained below:

- 1) The centre of gravity (barycentre) located at the origin of the axes corresponds to the average profiles of both sets of points (that is, functions and laboratories), i.e., 'typical' profile of the multi-dimensional system. The points far away from the barycentre have 'specific' or 'atypical' profiles. In the full space, the points closest to the centre resemble the average profiles the most.
- 2) Two elements of a given space (two laboratories) are all the more inter-related to the conjugate space (i.e., functions) as they are near one another and far from the origin, that is, they have similar profiles. On the other hand, the greater the distance between these points, the more different are their functional profiles. The same relationship also holds true for two functions.

## 6. Findings

The A total of 27 CSIR laboratories have been analyzed in this study with reference to their quality output record. The data have been accessed from the CSIR Annual Reports of the respective years.

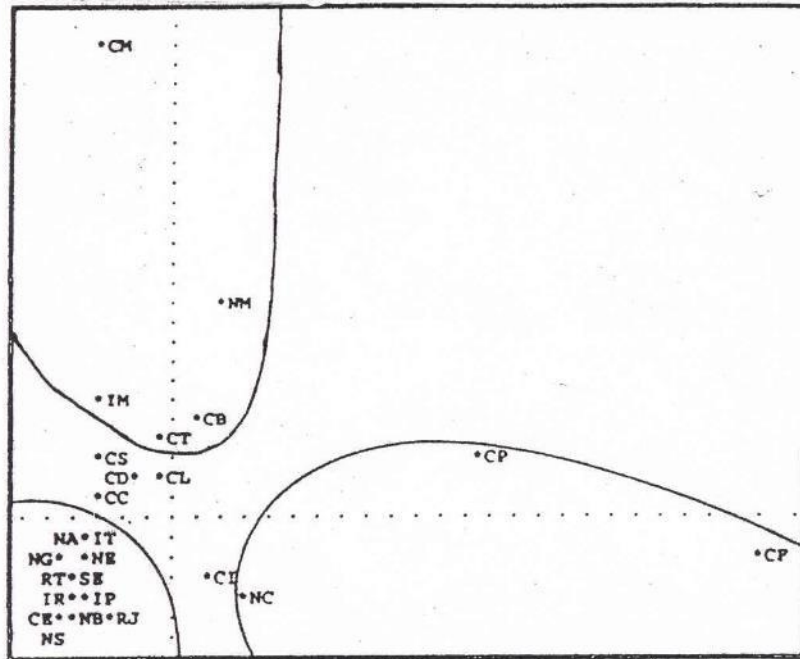
Table 1 presents the list of CSIR laboratories covered in the present study. There are two symbols in the Table (the second column), the one outside the parenthesis refers to how these laboratories have been displayed in the CA maps and the one within the parenthesis refers to the full name abbreviation of the respective laboratories.

**Table 1: List of CSIR Laboratories in the Study**

S. No.	Symbol	Name of the Laboratory
1.	CF (CIMFR)	Central Institute of Mining and Fuel Research, Dhanbad
2.	CP (CIMAP)	Central Institute of Medicinal and Aromatic Plants, Lucknow
3.	NC (NCL)	National Chemical Laboratory, Pune
4.	CI (CECRI)	Central Electrochemical Research Institute, Karaikudi
5.	NA (NAL)	National Aerospace Laboratories, Bengaluru
6.	CT (CFTRI)	Central Food Technological Research Institute, Mysore
7.	CM (CMERI)	Central Mechanical Engineering Research Institute, Durgapur
8.	NM (NML)	National Metallurgical Laboratory, Jamshedpur
9.	CB (CBRI)	Central Building Research Institute, Roorkee
10.	IM (IMTECH)	Institute of Microbial Technology, Chandigarh
11.	CL (CLRI)	Central Leather Research Institute, Chennai
12.	CD (CDRI)	Central Drug Research Institute, Lucknow
13.	CC (CCMB)	Centre for Cellular and Molecular Biology, Hyderabad
14.	IT (IICT))	Indian Institute of Chemical Technology, Hyderabad
15.	NG (NGRI)	National Geophysical Research Institute, Hyderabad
16.	IB (IICB)	Indian Institute of Chemical Biology, Kolkata
17.	NE (NEERI)	National Environmental Engineering Research Institute, Nagpur
18.	RT (NEIST)	North-East Institute of Science and Technology, Jorhat
19.	SE (SERC)	Structural Engineering Research Centre, Chennai
20.	IR (IITR)	Indian Institute of Toxicology Research, Lucknow
21.	IP (IIP)	Indian Institute of Petroleum, Dehradun
22.	CE (CEERI)	Central Electronics Engineering Research Institute, Pilani
23.	NB (NBRI)	National Botanical Research Institute, Lucknow
24.	RJ (IIIM)	Indian Institute of Integrative Medicine, Jammu
25.	CR (CSMCRI)	Central Salt and Marine Chemical Research Institute, Bhavnagar
26.	PL (IHBT)	Institute of Himalayan Bioresource Technology, Palampur
27.	NO (NIO)	National Institute of Oceanography, Goa

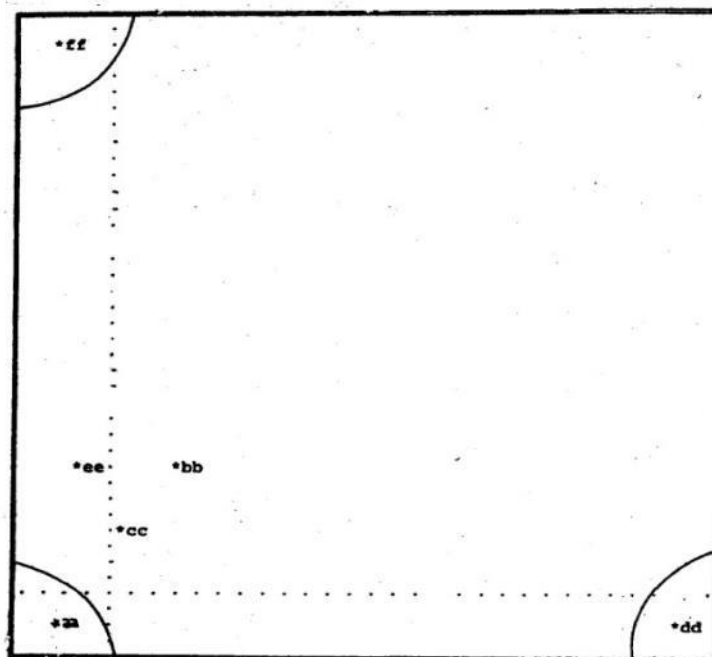
Two correspondence analysis (CA) maps are presented here, sourced from Roy and Ranjan (2012). Figure 1 presents the two-dimensional map constituted by factor 1 ( $\phi_1$ ) and factor 2 ( $\phi_2$ ) axes for the CSIR laboratory points and Figure 2 presents the same for the various function points that should be read and interpreted simultaneously. The representation of functions and laboratories in different maps has been done to avoid cluttering of the points in the same map. However, it is possible to superimpose these two maps.

**Figure 1: CA Map – Laboratory Points**



Source: Roy and Ranjan (2012)

**Figure 2: CA Map – Function Points**



Source: Roy and Ranjan (2012)

## Explanation

On the cloud of functions, the first factorial axis represents a polarity (bi-polar) between Function 4 - pilot plants, experimental field stations, etc. and Function 1 - R&D work. Function 1 is projected on this axis with negative coordinate, whereas Function 4 is projected on this axis with positive coordinate. This implies that most of the laboratories which emphasize R&D work for their scientific personnel and deploy their scientific manpower in this area tend to de-emphasize their work related to pilot plants, etc., and vice-versa.

The laboratories projected on this axis can be classified into two clusters, depending upon whether they are projected with positive coordinates (correlated with Function 4) or negative coordinates (correlated with Function 1).

**Cluster 1** (positive coordinates): CP, CF and NC.

**Cluster 2** (negative coordinates): RT, NG, IP, CE, CR, NB, IB, NE, SE, NI, PL, NO, NS, NA, IR.

On the cloud of functions, the second factorial axis is unipolar - both Function 2 - S&T services including testing, data processing, field work, planning and coordination etc. and Function 6 - research support functions, are projected on the axis with positive coordinates. This implies that most of the laboratories which are projected on this axis with positive coordinates emphasize the function of working in the areas of S&T services and research support functions for their scientific personnel and deploy scientific manpower in these areas whereas laboratories, which are projected with negative coordinates on this axis, de-emphasize these roles for their scientific manpower.

The laboratories projected on the second factorial axis can be classified into two clusters, depending upon whether they are projected on this axis with positive coordinates (correlated with both Function 2 and Function 6) or negative coordinates (anti-correlated with both Function 2 and Function 6).

**Cluster 1** (positive coordinates): CM, NM, CT, IM, CB.

**Cluster 2** (negative coordinates): CI; CE, SC, NI, RJ, NC, NO, IR, NS.

## Quality Performance of R&D Laboratories

Table 2 presents the quality performance record of our sample of 27 CSIR laboratories for the year 2010-11, categorized as explained above, sourced from Roy and Mitra (2015).

**Table 2: Quality R&D Performance of Select CSIR Laboratories (2010-2011)**

S. No.	Symbol	Laboratory Abbreviation	Indian Patents Filed	Indian Patents Granted	Foreign Patents Filed	Foreign Patents Granted	Number of Papers among Top 50 CSIR Papers in Specific Areas
1.	CF	CIMFR, Dhanbad	3	7	3	11	1: Engineering
2.	CP	CIMAP, Lucknow	0	5	0	15	2: Biological 1: Physical
3.	NC	NCL, Pune	31	39	41	45	3: Physical 3: Biological 9: Chemical 10: Engineering
4.	CI	CECRI, Karaikudi	5	7	9	1	2: Engineering 1: Chemical
5.	NA	NAL, Bengaluru	3	5	0	0	
6.	CT	CFTRI, Mysore	11	44	0	41	1: Biological 1: Chemical 3: Physical
7.	CM	CMERI, Durgapur	2	3	0	4	2: Engineering
8.	NM	NML, Jamshedpur	4	15	0	2	2: Engineering
9.	CB	CBRI, Roorkee	1	1	0	0	

10.	IM	IMTECH, Chandigarh	3	3	8	3	2: Biological 1: Engineering 3: Physical
11.	CL	CLRI, Chennai	11	15	0	1	4: Chemical 5: Physical
12.	CD	CDRI, Lucknow	8	12	21	8	6: Biological 2: Chemical 1: Engineering
13.	CC	CCMB, Hyderabad	1	2	3	4	7: Biological 1: Chemical 1: Engineering 1: Physical
14.	IT	IICT, Hyderabad	19	16	48	43	2: Biological 19: Chemical 5: Engineering 2: Info Science
15.	NG	NGRI, Hyderabad	1	0	1	0	8: Physical
16.	IB	IICB, Kolkata	5	1	6	3	4: Biological
17.	NE	NEERI, Nagpur	4	1	1	1	
18.	RT	NEIST, Jorhat	8	6	8	1	1: Chemical
19.	SE	SERC, Chennai	1	0	0	0	
20.	IR	IITR, Lucknow	0	0	2	0	1: Biological 1: Engineering 1: Physical
21.	IP	IIP, Dehradun	8	7	2	9	2: Chemical
22.	CE	CEERI, Pilani	0	0	0	0	1: Physical
23.	NB	NBRI, Lucknow	4	5	0	12	3: Biological
24.	RJ	IIIM, Jammu	4	5	5	18	1: Chemical
25.	CR	CSMCRI, Bhavnagar	9	8	22	49	8: Chemical 2: Engineering
26.	PL	IHBT, Palampur	2	1	5	15	1: Biological 2: Chemical
27.	NO	NIO, Goa	2	2	0	7	1: Engineering 15: Physical

Source: Roy and Mitra (2015)

Table 3 onwards present data on quality performance of R&D laboratories for several years before and after the year (2010-11) covered in Roy and Mitra's (2015) study. We would like to see if the pattern of relationships between the CA maps and the quality performance records hold over an extended period of time, and the results could have a more general significance.

Table 3 presents the quality R&D performance (*publication record*) of the select set of CSIR laboratories for the period *prior* to the aforementioned year (2010-11), that is, from the year 2003-04 to the year 2009-10 (seven years).

**Table 3: Quality R&D Performance (Publication Record) of Select CSIR Laboratories (2003-04 to 2009-10)**

S. No.	Symbol	2003-04 Number of Papers among Top CSIR Papers with High Impact Factor	2004-05 Number of Papers among Top CSIR Papers with High Impact Factor	2005-06 Number of Papers among Top CSIR Papers with High Impact Factor	2006-07 Number of Papers among Top 50 CSIR Papers in Specific Areas	2007-08 Number of Papers among Top 50 CSIR Papers in Specific Areas	2008-09 Number of Papers among Top 50 CSIR Papers in Specific Areas	2009-10 Number of Papers among Top 50 CSIR Papers in Specific Areas
1.	CF		1		1: Engineering			
2.	CP					1: Biological	1: Chemical	
3.	NC	4	10	8	3: Biological 21: Chemical 10: Physical 13: Engineering	8: Physical 2: Biological 7: Chemical 2: Engineering	7: Physical 1: Biological 28: Chemical 2: Engineering	5: Physical 3: Biological 13: Chemical 2: Engineering
4.	CI			1	1: Engineering	6: Engineering 2: Chemical	12: Engineering 1: Physical	7: Engineering
5.	NA				2: Physical	1: Physical	2: Engineering 2: Physical	3: Engineering 2: Physical
6.	CT	2	2		2: Biological	1: Engineering		1: Engineering

					1: Engineering	1: Biological			2: Physical
7.	CM					1: Engineering			1: Chemical
8.	NM				8: Engineering	7: Engineering		1: Engineering 2: Physical	1: Engineering
9.	CB				1: Engineering	1: Engineering			2: Engineering
10.	IM	4	11	13	7: Biological	6: Biological 1: Engineering		3: Biological 1: Chemical	1: Biological 2: Chemical 1: Physical
11.	CL	3	3	3	1: Biological 6: Engineering	6: Engineering 1: Biological 1: Physical		1: Chemical 5: Engineering 1: Physical	2: Chemical 1: Engineering
12.	CD	4	8	10	6: Biological 2: Chemical 3: Physical 7: Engineering	7: Biological 5: Chemical		8: Biological 3: Chemical	4: Biological 3: Chemical
13.	CC	8	18	26	16: Biological	8: Biological		18: Biological 1: Chemical	14: Biological
14.	IT	2	12	14	2: Biological 5: Chemical 10: Physical 2: Engineering	6: Physical 19: Chemical 9: Engineering 1: Biological		1: Physical 4: Chemical 7: Engineering	2: Physical 13: Chemical 4: Engineering 4: Biological
15.	NG				6: Physical 1: Engineering	15: Physical		10: Physical	9: Physical 1: Chemical
16.	IB	8	6	12	9: Biological 1: Engineering	14: Biological 2: Chemical		9: Biological 2: Engineering 2: Physical	3: Biological 3: Chemical 1: Physical
17.	NE				1: Biological 2: Engineering	3: Engineering		2: Engineering 1: Physical	2: Biological 7: Engineering
18.	RT							1: Engineering	1: Biological 1: Engineering 1: Physical
19.	SE								
20.	IR	2			5: Engineering	5: Engineering		1: Engineering 1: Physical	1: Biological 1: Engineering 3: Physical 1: Chemical
21.	IP							2: Engineering 1: Chemical	1: Physical
22.	CE							1: Physical	
23.	NB	1	1		1: Biological	2: Biological 2: Engineering			2: Biological
24.	RJ		1					1: Biological	1: Chemical 1: Biological
25.	CR		1	3	7: Chemical	4: Chemical 2: Engineering		6: Chemical 1: Engineering	4: Chemical 7: Engineering
26.	PL			1				1: Chemical	2: Chemical
27.	NO			1	1: Physical	1: Biological 6: Physical		3: Biological 5: Physical	1: Biological 1: Chemical 4: Physical

Table 4 presents the first set of quality R&D performance (*patent record*) of the select set of CSIR laboratories for the period *prior* to the aforementioned year (2010-11), that is, from the year 2003-04 to the year 2006-07 (four years).

**Table 4: Quality R&D Performance (Patent Record) of Select CSIR Laboratories (2003-04 to 2006-07)**

S. No.	Symbol	2003-04				2004-05				2005-06				2006-07			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	2	3	18	4	4	1	6	4	0	3	43	5	0	3	16	5
2.	CP	11	7	10	29	18	13	29	28	12	16	39	10	2	4	22	25
3.	NC	59	53	111	19	61	35	44	32	38	59	49	26	17	57	81	28
4.	CI	12	16	0	0	10	0	5	2	5	7	2	2	5	9	3	1
5.	NA	4	1	1	0	1	1	1	1	5	1	2	0	1	5	4	2
6.	CT	104	29	66	13	59	31	44	19	52	47	54	10	21	40	86	35
7.	CM	4	2	0	0	1	0	7	0	9	0	0	0	4	0	6	1
8.	NM	12	6	2	2	7	3	12	5	15	3	5	1	1	11	16	6
9.	CB	0	1	0	0	0	1	0	0					0	2	0	0
10.	IM	4	2	7	4	3	2	0	2	4	2	5	0	2	3	10	6
11.	CL	20	7	12	3	8	3	19	4	14	8	21	2	9	8	13	8
12.	CD	15	7	14	5	21	15	29	6	20	11	9	8	5	6	21	16
13.	CC	3	1	6	1	2	0	2	2	2	1	3	2	0	1	4	5

14.	IT	17	24	58	39	26	15	39	48	29	31	78	31	13	18	45	43
15.	NG	0	0	0	1	2	1	1	0	6	0	1	1	7	0	5	2
16.	IB	6	4	11	5	4	9	6	9	8	1	5	6	5	0	18	10
17.	NE	1	9	2	0	2	1	1	0	17	0	0	1	6	3	5	1
18.	RT	4	24	1	0	14	16	44	8	7	14	25	8	7	7	3	1
19.	SE	0	1	0	0												
20.	IR	1	2	0	0	2	0	0	0	1	0	0	0	1	0	0	0
21.	IP	11	20	2	3	6	7	3	11	15	4	22	0	5	8	12	2
22.	CE	0	2	0	0					1	1	0	0	0	5	0	0
23.	NB	7	0	20	3	23	0	32	4	10	2	16	5	6	0	50	11
24.	RJ	10	3	8	12	9	2	7	13	13	12	0	1	3	10	8	19
25.	CR	15	4	25	2	19	4	48	13	14	3	68	9	4	2	89	22
26.	PL	4	0	8	21	10	0	28	17	11	0	12	8	1	1	15	10
27.	NO	9	0	34	12	14	3	21	13	6	2	20	7	1	5	10	16

**Legend:**

IPF = Indian Patents Filed; IPG: Indian Patents Granted; FPF = Foreign Patents Filed; FPG = Foreign Patents Granted

Table 5 presents the second set of quality R&D performance (*patent record*) of the select set of CSIR laboratories for the period *prior* to the aforementioned year (2010-11), that is, from the year 2007-08 to the year 2009-10 (three years).

**Table 5: Quality R&D Performance (Patent Record) of Select CSIR Laboratories (2007-08 to 2009-10)**

S. No.	Symbol	2007-08				2008-09				2009-10			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	11	22	1	10	4	23	1	14	3	3	1	11
2.	CP	1	7	4	20	3	17	11	15	1	11	1	16
3.	NC	10	79	29	28	13	102	39	26	24	15	16	23
4.	CI	5	9	11	1	2	28	6	1	0	1	9	0
5.	NA	6	16	0	0	6	6	0	1	3	1	1	1
6.	CT	24	28	5	37	18	86	9	43	16	40	1	38
7.	CM	3	8	5	3	3	8	0	1	2	1	2	2
8.	NM	7	16	0	4	11	12	9	5	6	0	11	1
9.	CB	0	5	0	0	3	6	0	0	1	1	0	0
10.	IM	1	1	12	5	1	4	18	5	4	3	8	7
11.	CL	6	16	12	11	5	17	3	6	8	3	0	13
12.	CD	13	5	15	10	5	12	12	16	7	5	6	15
13.	CC	2	0	1	4	1	2	25	1	3	1	1	6
14.	IT	22	26	28	37	18	76	62	42	10	11	28	33
15.	NG	3	0	6	3	1	1	8	2	2	0	15	0
16.	IB	7	1	5	6	5	5	9	6				
17.	NE	2	8	4	3	2	9	4	1	1	0	0	3
18.	RT	5	11	1	1	5	14	3	1	9	2	1	0
19.	SE					0	1	0	0	0	0	15	0
20.	IR	1	6	0	0s	0	3	1	0	3	0	0	1
21.	IP	6	10	7	0	3	24	15	2	2	1	4	3
22.	CE	1	7	0	0	1	3	0	0	2	0	0	0
23.	NB	5	0	1	22	3	11	0	21	4	5	1	21
24.	RJ	11	10	7	11	3	20	5	14	7	3	3	9
25.	CR	7	3	40	26	16	20	56	34	9	7	18	28
26.	PL	1	2	11	10	7	13	17	8	2	2	6	
27.	NO	2	11	8	14	0	9	7	3	0	1	0	4

**Legend:**

IPF = Indian Patents Filed; IPG: Indian Patents Granted; FPF = Foreign Patents Filed; FPG = Foreign Patents Granted

Table 6 presents the quality R&D performance (*publication record*) of the select set of CSIR laboratories for the period *after* the aforementioned year (2010-11), that is, from the year 2012-13 to the year 2013-14 (two years). It may be noted that consolidated publication data was not available for the year 2011-12, and thus the same is not reflected in Table 6.

**Table 6: Quality R&D Performance (Publication Record) of Select CSIR Laboratories (2012-13 to 2013-14)**

S. No.	Symbol	2012-13 Number of Papers among Top 50 CSIR Papers in Specific Areas	2013-14 Number of Papers among Top 50 CSIR Papers in Specific Areas
1.	CF	2: Biological	
2.	CP	1: Biological 26: Chemical	
3.	NC	2: Chemical	26: Chemical
4.	CI	7: Engineering 1: Information	6: Chemical
5.	NA		5: Engineering
6.	CT	1: Engineering	
7.	CM	4: Engineering	7: Engineering
8.	NM		5: Engineering
9.	CB	7: Biological	
10.	IM	2: Chemical	2: Biological
11.	CL	3: Biological	
12.	CD	10: Biological	5: Biological
13.	CC	9: Chemical 1: Information	13: Biological 1: Chemical
14.	IT	13: Physical	1: Biological 10: Chemical
15.	NG	8: Biological	8: Physical
16.	IB	9: Engineering	13: Biological
17.	NE	3: Chemical	6: Engineering
18.	RT	1: Engineering	
19.	SE	6: Biological	
20.	IR	3: Chemical	1: Biological
21.	IP	1: Physical	
22.	CE		
23.	NB	3: Biological	1: Biological
24.	RJ	2: Chemical 1: Engineering	2: Biological
25.	CR	2: Biological	3: Chemical 1: Engineering
26.	PL	5: Physical	
27.	NO		3: Physical



Table 7 presents the quality R&D performance (*patent record*) of the select set of CSIR laboratories for the period *after* the aforementioned year (2010-11), that is, from the year 2011-12 to the year 2013-14 (three years).

**Table 7: Quality R&D Performance (Patent Record) of Select CSIR Laboratories (2011-12 to 2013-14)**

S. No.	Symbol	2011-12				2012-13				2013-14			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	2	2	0	3	0	3	5	4	3	6	0	6
2.	CP	3	2	5	8	0	1	4	11	1	1	2	6
3.	NC	75	11	80	17	73	20	159	31	122	10	115	65
4.	CI	4	4	0	2	0	1	3	0	4	2	13	6
5.	NA	3	0	3	0	4	3	1	0	1	2	2	1
6.	CT	4	27	0	22	3	12	0	8	3	13	0	7
7.	CM	1	0	0	1	0	1	0	0	2	2	0	1
8.	NM	3	4	0	3	7	7	0	0	14	2	0	0
9.	CB	0	0	0	0	0	0	0	0	0	0	0	0
10.	IM	3	1	18	16	1	2	28	9	6	1	5	9
11.	CL	9	5	4	0	6	5	1	1	13	6	2	0
12.	CD	9	1	11	10	6	6	6	3	9	5	14	12
13.	CC	2	2	2	2	0	0	3	3	1	0	4	10
14.	IT	12	7	36	45	15	11	26	43	9	7	27	55
15.	NG	0	0	0	5	0	0	2	5	0	0	0	8
16.	IB	1	0	17	7	0	0	3	6	1	1	11	5
17.	NE	4	0	3	0	1	1	3	1	1	2	11	1
18.	RT	3	3	4	0	6	4	24	4	4	2	4	4
19.	SE	1	0	0	0	0	0	1	0	1	0	1	0
20.	IR	0	0	0	0	0	1	0	0	1	0	0	2
21.	IP	8	3	4	6	22	4	9	14	11	5	7	18
22.	CE	4	4	0	2	2	0	1	0	4	0	2	0
23.	NB	4	2	5	3	1	2	3	4	2	0	3	7
24.	RJ	1	0	4	2	1	0	9	0	7	0	3	13
25.	CR	15	3	49	53	17	6	43	41	10	1	60	70
26.	PL	5	1	4	3	3	1	8	5	1	2	15	7
27.	NO	0	2	0	11	0	0	0	2	1	2	0	7

**Legend:**

**IPF = Indian Patents Filed; IPG: Indian Patents Granted; FPF = Foreign Patents Filed; FPG = Foreign Patents Granted**

## *Analysis of Quality Output of CSIR Laboratories*

In line with the results of the correspondence analysis and the discussion on tacit knowledge above, we now focus our attention on a micro-level analysis of the quality research outputs of selected CSIR laboratories to ascertain how much the presence or the absence of tacit knowledge in specific areas affect the quality output of a research laboratory. In other words, we wish to analyze whether tacit knowledge could serve as a predictor of R&D performance along specific dimensions or the presence or absence of tacit knowledge itself is not good enough – there are other significant constraints that impact R&D performance. More importantly, we would like to probe whether the results obtained and conclusions derived in Roy and Mitra's (2015) work, based on the output for the year 2010-11, hold true across an extended period of time providing validity to the analysis and interpretation of the results.

### *Focusing on outliers*

Let us first focus our attention to the clear outliers in the correspondence analysis study referenced.

#### Factor 1

A clear outlier is the Central Institute of Mining and Fuel Research, Dhanbad, CIMFR (CF) with profile points strongly overlapping with function dd (pilot plants and experimental field stations). The output profile displays 3 Indian patents filed and 7 granted, 3 foreign patents filed and 11 granted and only one paper published that figures among top 50 CSIR publications in the area of engineering sciences (2010-11). A perusal of Tables 3 to 7 reveal a similar picture. Clearly the laboratory has displayed only a moderate technology outreach, and technology development and developing a knowledge base that is transferable to the industry is the prime concern. At the same time, basic research has taken a back seat and the publication record is poor.

An interesting outlier is the Central Institute of Medicinal and Aromatic Plants, Lucknow, CIMAP (CP) with profile points related to dd (pilot plants) but also to function cc (infrastructure) and more closely to function bb (S&T services). This strong technology development tacit knowledge base has a correlation with its output profile of 5 Indian patents granted and 15 foreign patents granted during the year and 3 papers among top 50 CSIR in their respective categories, 2 in biological sciences, and 1 in physical sciences (2010-11). The pattern displayed in Tables 3 to 7 reveal that based upon its technology development knowledge base, the laboratory is upgrading its publication output (16 paper among top 5- CSIR publications in the field of chemical sciences in the year 2012-13).

#### Factor 2

A clear outlier is the Central Mechanical Engineering Research Institute, Durgapur, CMERI (CM) with profile points strongly overlapping with function ff (research support functions) and to a much lesser extent with function bb (S&T services), and, function ee (engineering and design units). A look at its output profile reveals the following: 2 Indian patents filed and 3 granted, 4 foreign patents granted, and only two papers published among top 50 CSIR papers in the area of engineering sciences (2010-11). Clearly, tacit knowledge in infrastructure and support activities is no guarantee for quality R&D performance unless integrated with basic R&D activities. There has been some evidence of external R&D reach in terms of patents, but only moderately. But a perusal of Tables 3 to 7 reveal that the laboratory is laying a greater emphasis on R&D publication output over the years but the general pattern holds.

Another strongly focused laboratory (though not exactly an outlier) is the National Metallurgical Laboratory, Jamshedpur, NML (NM) with profile points overlapping with function bb (S&T services such as testing, survey, field work, etc.) and to some extent, also with function cc (infrastructure). The output profile reveals 3 Indian patents filed and 15 granted, 2 foreign patents granted, and only two papers among top 50 CSIR papers in Engineering Science (2010-11). The applied research output is much more pronounced here as compared to CMERI displaying some evidence that a focus on infrastructure and S&T services does pay in terms of technology development. As evidenced from Tables 3 to 7, the focus on applied research output has been a constant feature of its quality R&D performance record.

Let us now focus our attention to the *non-outliers* in the correspondence analysis maps.

The Central Building Research Institute, Roorkee, CBRI (CB) has a poor performance record of just one Indian patent filed and one granted and nothing else during the year 2010-11. Its profile points overlap the function bb (S&T services) and to a lesser extent cc (infrastructure). The pattern holds largely for the entire eleven-year period (except 2012-13 in which year there were 7 publications among top 50 CSIR publications in the field of biological sciences). It shows that tacit knowledge in these support functions is simply not good enough to sustain its performance in research and technology development.

On the other hand, let us focus our attention to two laboratories lying very close to the vertical axis (and not far from the barycentre) but having profile points aligned with the function ee (engineering and design units) – both displaying strong performance parameters. The first one is the Central Food Technological Research Institute, Mysore, CFTRI (CT) displaying very strong technological development record with 11 Indian patents filed and 44 granted, 41 foreign patents granted and 5 papers among top 10 CSIR papers – one each in the areas of biological and chemical sciences and 3 in the area of physical sciences (2010-11). And the pattern has remained the same during the entire eleven-year period (Tables 3 to 7). The second one is the Central Leather Research Institute, Chennai, CLRI (CL) with 11 Indian patents filed and 15 granted, 1 foreign patent granted and 4 papers among top 50 CSIR papers in the area of chemical sciences and 5 papers in the area of physical sciences (2010-11). Here again, the pattern seems to hold true for the eleven-year period under study (Tables 3 to 7). It may be noted that CLRI that is closer to the barycentre has a more pronounced output in the publication domain, and CFTRI has more outreach effectiveness.

A very interesting case is observed when we study the Institute of Microbial Technology, Chandigarh, IMTECH (IM) with profile points closely matching the function ee (engineering and design units) indicating tacit knowledge in this domain. However, we do find an overall good output record in both basic and applied research domains with 3 Indian patents filed and 3 granted, 8 foreign patents filed and 3 granted, and 6 papers among top 50 CSIR publications in the areas of biological - 2, engineering - 1 and physical sciences – 3 (2010-11). Here again, there is clear evidence of the validity of Roy and Mitra's (2015) work – the pattern holds true over the extended period of time (Tables 3 to 7). Thus, there is a need to harness the tacit knowledge potential in any particular field strategically by the laboratory management so that the expertise in different domain areas complement each other and makes a perceptible contribution to the laboratory quality output.

Let us analyze the performance of two CSIR laboratories that are not aligned with any function point in particular - the Centre for Cellular and Molecular Biology, Hyderabad, CCMB (CC) and the Central Electrochemical Research Institute, Karaikudi, CECRI (CI) – and lying in opposite quadrants not far from the barycentre. Both have reasonably sound performances – the former with 1 Indian patent filed and 2 granted, 3 foreign patents filed and 4 granted, 10 papers among top 50 CSIR papers – 7 (biological), and one each in chemical, engineering and physical sciences (2010-11) – CCMB has a more pronounced publication than patent record that has literally stood the test of time (Tables 3 to 7). The latter, CECRI, had 5 Indian patents filed and 7 granted, 9 foreign patents filed and 1 granted, and 3 papers among top 50 CSIR papers – 2 (engineering) and 1 (chemical) for the year 2010-11. A perusal of Tables 3 to 7 point out that CECRI has very rounded and decent performance record over the entire period spanning more than a decade. These laboratories have average profiles, yet perform decently along both basic and applied research categories.

Probing the bottom left quadrant of Figure 1, we find a large cluster of laboratories largely aligned with the function aa (R&D). Does this universally correlate with publication performance? National Aerospace Laboratories, Bengaluru, NAL (NA) has in its record 3 Indian patents filed and 5 granted (2010-11) – that has remained largely similar over the years (Tables 3 to 7); National Environment Engineering Research Institute, Nagpur, NEERI (NE) has only 4 Indian patents filed and 1 granted, and 1 foreign patent filed to show in its performance record (2010-11) – its publication record has shown improvement (Tables 3 to 7). Likewise, the Indian Institute of Toxicology Research, Lucknow, IITR (IR) has 2 foreign patents filed and 3 papers among top 50 CSIR publications (2010-11) – the pattern has largely remained the same over the eleven-year period (Tables 3 to 7). National Geophysical Research Institute, Hyderabad NGRI (NG) has displayed a reasonably good output record, in the publication domain with a focused approach - 8 papers

in physical sciences among top 50 CSIR papers part from 1 patent each filed in India and abroad (2010-11) – its publication record has been constantly good from the year 2006-07 with a moderate patent output record (Tables 3 to 7). The really poor performers in this category include the Central Electronics Engineering Research Institute, Pilani, CEERI (CE) with only one publication and the Structural Engineering Research Centre, Chennai, SERC (SE) with literally nothing to show as quality output (2010-11) – and these patterns also have largely remained the same (Tables 3 to 7).

Interestingly, four laboratories belonging to this cluster have as comparatively better patent than publication record. These are the North East Institute of Science and Technology, Jorhat, NEIST (RT) – 8 Indian patents filed and 6 granted, 8 foreign patents filed and one granted, one publication (2010-11); the Indian Institute of Petroleum, Dehradun, IIP (IP) – 8 Indian patents filed, 6 granted, 2 foreign patents filed, 9 granted, 2 publications (2010-11); the National Botanical Research Institute, Lucknow, NBRI (NB) – 4 Indian patents filed, 5 granted, 12 foreign patents granted, 3 publications (2010-11); and the Indian Institute of Integrative Medicine Jammu, IIM (RJ) – 4 Indian patents filed, 5 granted, 5 foreign patents filed, 18 granted, and 1 publication (2010-11). And, here again, for these four laboratories, the pattern has largely been the same over the eleven-year period (Tables 3 to 7). So, these laboratories have carried more of applied rather than basic research and have been successful to go ahead with developing technologies suitable for transfer to business.

How do exactly similar profiles relate to laboratory performances? Three laboratories – the Indian Institute of Chemical Biology, Kolkata, IICB (IB), IITR, Lucknow (IR) and the Central Salt and Marine Chemical Research Institute, Bhavnagar, CSMCRI (CR) have exactly the similar profile, and only IR is visible on the CA Map (Figure 1) – aligned with the function aa (R&D). The case of IR has been discussed above, IB has a decent rounded performance record – 5 Indian patents filed and one granted, 6 foreign patents filed, 3 granted, 4 publications among top 50 CSIR publications in biological sciences (2010-11) and the pattern holds (Tables 3 to 7), and CR is a top performer that would be discussed later. Clearly, a mere profile position in the CA map does not automatically predict a quality output profile, it only shows the possibilities.

### *Top CSIR Laboratories in Terms of Quality Performance*

Who are top 5 CSIR laboratories in terms of their quality output records? Do their profile points match in the CA maps?

At the top of the heap lies the Indian Institute of Chemical Technology, Hyderabad, IICT (IT) that lies close to the barycentre in the CA map and its profile points aligns somewhat with the function aa (R&D). Its output record shows 19 Indian patents filed, 16 granted, 48 foreign patents filed, 43 granted, 2 papers each in the areas of biological and information sciences, 5 papers in chemical sciences and 19 papers among top 50 CSIR papers in chemical sciences (2010-11) – IICT has remained on top of the heap during the entire eleven-year period (Tables 3 to 7). Next in line is the National Chemical Laboratory, Pune, NCL (NC) with 31 Indian patents filed, 39 granted, 41 foreign patents filed, 45 granted, and 25 papers among top 50 CSIR papers in different areas, 10 papers in engineering sciences alone (2010-11) – NCL has remained a top performer during the entire eleven-year period (Tables 3 to 7).. It lies not very far from the barycentre in the bottom right quadrant in the CA map, indicating that it has elements of tacit knowledge in running and managing pilot plants.

The third in line is CFTRI, Mysore (CT) – discussed above – profile points aligned with the function ee (engineering and design units), the fourth is CSMCRI, Bhavnagar (CR), with overlapping points with IB and IR as mentioned above with 9 Indian patents filed, 8 granted, 22 foreign patents filed, 49 granted, and a total of 10 papers among top 50 CSIR papers primarily in the area of chemical sciences - 8 papers (2010-11). CFTRI has largely remained a super performer in applied research and technology domain over the years (Tables 3 to 7). The fifth in line is the Central Drug Research Institute, Lucknow, CDRI (CD) with 8 Indian patents filed, 12 granted, 21 foreign patents filed, 8 granted, and 9 papers among top 50 CSIR publications, 6 of these in the area of biological sciences (2010-11). Its profile is positioned close to the barycentre, aligned somewhat with the function ee (engineering and design units). Again, the performance of CDRI has remained along similar lines during the entire eleven-year period (Tables 3 to 7).

## 7. Discussion and Conclusions

What are the key learnings from the above analysis? It is clear that there is no readymade formula that would indicate quality performance by a research laboratory given a particular set of scientific worker profile in terms of the six functions defined in the study. The aspect of tacit knowledge has been explored vis-à-vis the quality performance indicators of the laboratories, and what do we infer from the results?

First, the standalone laboratories that are clear outliers in the CA map are not exactly the candidates for the top honours. CIMFR, Dhanbad (tacit knowledge in pilot plants) has a decent patent output and very poor publication output. CMERI, Durgapur (research support functions and engineering units) has only a moderate presence in terms of the number of patents granted in India or abroad and only two publications across all areas. We find that there are two weak outliers - NML Jamshedpur (S&T services and infrastructure) and CIMAP, Lucknow (pilot plants/S&T services/infrastructure). The former has an output record similar to CIMFR whereas the latter has done significantly better along both categories of outputs.

Second, what about the non-outliers that are aligned with specific functional specializations? There is clearly a mixed response here. CBRI, Roorkee, aligned with S&T services and infrastructure, fares poorly in all categories. We also find in this category laboratories aligned with the R&D functional specialization such as CEERI, Pilani and SERC, Chennai with literally nothing to show as a performance record and NAL, Bengaluru, NEERI, Nagpur and IITR, Lucknow with only moderate output figures. On the other hand, laboratories such as CFTRI, Mysore and CLRI, Chennai, both aligned with functional specialization of engineering and design units, tell a different story. The former has fared extremely well in technology outreach domain and the latter has not done badly either with a more rounded performance along both patent and publication dimensions.

Third, four laboratories with profiles matching the R&D function – NEIST, Jorhat; NBRI, Lucknow; IIP, Dehradun and IIIM, Jammu have a much better patent than publication output. Thus, being strong in the R&D dimension does pay off if strategically managed with other components of the innovation process.

Fourth, what do the study of the top CSIR performers indicate? The result is a mixed bag with one important commonality – *all these top performers are strong both in terms of publications and patents* – proving once again that innovation is one complete whole, and an inherent strength in basic research helps in the process of application of that knowledge. NCL, Pune, possesses a tacit knowledge in pilot plants, CFTRI, Mysore and CDRI, Lucknow in engineering and design units, IICT, Hyderabad (the best performer of all) and CSMCRI, Bhavnagar in R&D.

Fifth, and very importantly, the analysis of our findings validates the points made in our earlier published work (Roy and Mitra, 2015) and proves the generalizability of the findings as enunciated above. The pattern of quality R&D performance in relation to the structure and functioning of scientific personnel in CSIR laboratories as displayed in the correspondence analysis maps (Roy and Ranjan, 2012) remains stable over time leading credibility to our assertion of the role played by tacit knowledge in technology innovation and R&D management.

The above discussion brings us right back to the original thinkers on this subject: Nonaka and Takeuchi (1995) according to whom the social interaction between tacit and explicit knowledge helps create and expand human knowledge terming the process 'knowledge conversion'. And it is a matter of strategy, not operation. This is the crucial point that has been emphasized in the current study. Far from being involved in the operational and tactical aspects of managing R&D and innovation, CSIR as a corporate should recognize that exploiting tacit knowledge is a key component of innovation strategy. Koskinen (2004) recognises that research and development projects often require people to act on the basis of their tacit knowledge. As pointed out by Nonaka and Takeuchi (1995), the organizational capability to acquire, create, accumulate and exploit knowledge forms the cornerstone of an organization's knowledge strategy. This includes establishing a culture and an environment that help knowledge evolve (Davenport and Prusak, 1998). What is critical is to focus on CSIR's knowledge assets comprising of human capital, patents, publications, technology transfer and other forms of intellectual capital, 'the brand CSIR', and organizational routines (Birkinshaw et al., 2002).

The results of the correspondence analysis presented above illustrate critical points about organizational performance and the effective management of R&D knowledge workers. Quite often it is found that the laboratories that emphasize R&D work for their scientific human resources pay little emphasis on the distinctive and overlapping functions of pilot plants, experimental field stations and in the engineering and design units. But these are exactly the factors critical for technology development in CSIR laboratories and their subsequent transfer. Of equal importance is a strategy of networking among partners in technological innovation (Roy, 2006; Roy and Banerjee, 2007; and Roy, 2009). What is perhaps lacking is the consciousness and realization that there is perhaps a dialectic relationship between tacit and explicit knowledge. In Tsoukas's (1996, p. 14) words, 'Tacit and explicit knowledge are mutually constituted – they should not be viewed as separate types of knowledge.../explicit knowledge is always grounded on a tacit component...Tacit knowledge is the necessary component of all knowledge'. *Thus, we cannot manage tacit knowledge as a distinct entity from explicit knowledge.* Thus, CSIR, viewing itself as a corporate body, should, therefore, realize its core competencies, and evaluate its strengths and weaknesses in different R&D and allied areas and functions necessary for initiating technological innovation. Training of scientific and technical manpower in different fields of their activities, potentialities and interests could play a vital role in this regard. However, training which does not incorporate an understanding of tacit knowledge and how that plays a significant part in the deliberations of highly qualified scientific personnel may not be that useful. In a survey of CSIR directors, marketing/business development managers, and senior scientists (Bhojwani and Gupta, 1998), it was observed that there was little systematic planning done to assess the training needs of the scientific personnel. About 38% of the respondents indicated that they themselves have to worry about their own training needs.

This study takes off from an earlier study by the authors that provided us with correspondence analysis maps of laboratory points and function points displaying profiles of tacit knowledge in different functional areas (Roy and Ranjan, 2012) and then attempts to relate this information with the quality performance output of the laboratories (Roy and Mitra, 2015) and the present study. The significance such ingrained tacit knowledge cannot be underestimated. As Koskinen (2004, p. 14) points out, '...knowledge can only be produced not imported. This is to say *the only way to acquire knowledge is to utilize existing knowledge*' (emphasis added). For CSIR, viewing itself as a multi-organizational conglomerate operating globally in a select few areas of strength and competence through a network mode of consortia of laboratories and other actors in the innovative effort, such an analysis could prove extremely useful and timely. The study results and the correspondence analysis maps are a guide to forge such alliances by identifying strategic groupings of laboratories as also identifying the stand-alone ones.

Given CSIR's dominant upstream and downstream roles there are some critical policy implications flowing from our research. The first such implication for government policy is to help develop strategic capability in the management of R&D and the innovation chain within its own departments and the R&D laboratories that drive the research agenda. Such a strategic capability needs to be built round a proper understanding of the innovation process, and especially the value of tacit and explicit knowledge, rather than on traditional research which is less concerned with practical outcomes or indeed with questions of competitive advantage. Second developing strategic capability is inevitably linked with the enhancement of skills of highly qualified research personnel. A relevant compendium of skills needs to be centred round the more effective management of innovation in CSIR laboratories as a dynamic process covering R&D, service development and pilot plant or prototyping and marketing activities. Finally, and in the medium to longer term government policy could focus attention on introducing innovation management and entrepreneurship in the education agenda especially at the higher education level in the technology and research institutes from where the best minds emerge for the future development of innovate in India.

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## Reference 29 (Presentation)



### 15th International Entrepreneurship Forum

The Globalisation and Internationalisation of SMEs AND New Ventures: Travels with Eclectic Charlie, Digital Mary, Networked Nadia and Impactful Shona.

Venice, Italy

14-16 December, 2016

Impact of Knowledge Worker Deployment on Quality Performance of Public-Sector R&D in India: Evidence from a Longitudinal Study

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Sub-theme: Tools Capabilities and Competencies

Keywords: Knowledge workers, innovation, R&D, correspondence analysis, quality performance

#### FUNCTIONAL SCHEME FOR S&T PERSONNEL

Function 1	Research and development work.
Function 2	S&T services including testing, survey, data processing, field work, liaison, planning and co-ordination.
Function 3	Infrastructure including workshop, animal house, instrumentation, equipment maintenance, special functions such as glass blowing, printing and reprography, etc.
Function 4	Pilot plants, experimental field stations and Demonstration units.
Function 5	Engineering and design units.
Function 6	Research support functions.

List of CSIR Laboratories in the Study

S. No.	Symbol	Name of the Laboratory	S. No.	Symbol	Name of the Laboratory
2.	CP (CIMAP)	Central Institute of Medicinal and Aromatic Plants, Lucknow	15.	NG (NGRI)	National Geophysical Research Institute, Hyderabad
3.	NC (NCL)	National Chemical Laboratory, Pune	16.	IB (IICB)	Indian Institute of Chemical Biology, Kolkata
4.	CI (CECRI)	Central Electrochemical Research Institute, Karaikudi	17.	NE (NEERI)	National Environmental Engineering Research Institute, Nagpur
5.	NA (NAL)	National Aerospace Laboratories, Bengaluru	18.	RT (NEIST)	North-East Institute of Science and Technology, Jorhat
6.	CT (CFTRI)	Central Food Technological Research Institute, Mysore	19.	SE (SERC)	Structural Engineering Research Centre, Chennai
7.	CM (CMERI)	Central Mechanical Engineering Research Institute, Durgapur	20.	IR (IITR)	Indian Institute of Toxicology Research, Lucknow
8.	NM (NML)	National Metallurgical Laboratory, Jamshedpur	21.	IP (IIP)	Indian Institute of Petroleum, Dehradun
9.	CB (CBRI)	Central Building Research Institute, Roorkee	22.	CE (CEERI)	Central Electronics Engineering Research Institute, Pilani
10.	IM (IMTECH)	Institute of Microbial Technology, Chandigarh	23.	NB (NBRI)	National Botanical Research Institute, Lucknow
11.	CL (CLRI)	Central Leather Research Institute, Chennai	24.	RJ (IIIM)	Indian Institute of Integrative Medicine, Jammu
12.	CD (CDRI)	Central Drug Research Institute, Lucknow	25.	CR (CSMCRI)	Central Salt and Marine Chemical Research Institute, Bhavnagar
13.	CC (CCMB)	Centre for Cellular and Molecular Biology, Hyderabad	26.	PL (IHBT)	Institute of Himalayan Bioresource Technology, Palampur
14.	IT (IICT)	Indian Institute of Chemical Technology, Hyderabad	27.	NO (NIO)	National Institute of Oceanography, Goa

Figure 1: CA Map – Laboratory Points: Roy and Ranjan (2012)

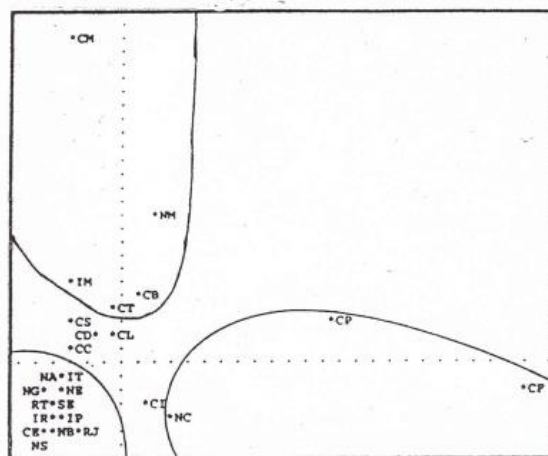
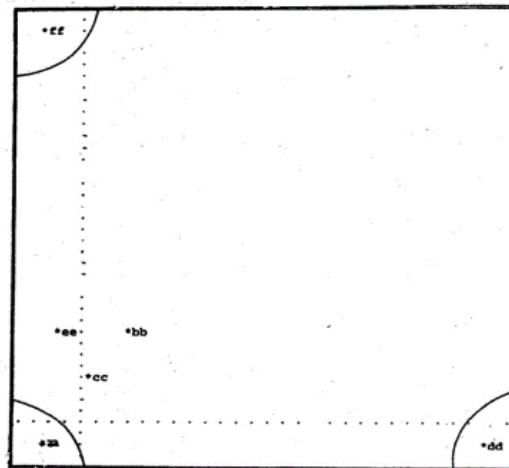


Figure 2: CA Map – Function Points: Roy and Ranjan (2012)



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Quality R&D Performance: 2010-11: Roy and Mitra (2015)

S. No.	Symbol	Laboratory Abbreviation	Indian Patents Filed	Indian Patents Granted	Foreign Patents Filed	Foreign Patents Granted	Number of Papers among Top 50 CSIR Papers in Specific Areas
1.	CF	CIMFR, Dhanbad	3	7	3	11	1: Engineering
2.	CP	CIMAP, Lucknow	0	5	0	15	2: Biological 1: Physical
3.	NC	NCL, Pune	31	39	41	45	3: Physical 3: Biological 9: Chemical 10: Engineering
4.	CI	CECRI, Karaikudi	5	7	9	1	2: Engineering 1: Chemical
5.	NA	NAL, Bengaluru	3	5	0	0	
6.	CT	CFTRI, Mysore	11	44	0	41	1: Biological 1: Chemical 3: Physical
7.	CM	CMERI, Durgapur	2	3	0	4	2: Engineering
8.	NM	NML, Jamshedpur	4	15	0	2	2: Engineering
9.	CB	CBRI, Roorkee	1	1	0	0	
10.	IM	IMTECH, Chandigarh	3	3	8	3	2: Biological 1: Engineering 3: Physical
11.	CL	CLRI, Chennai	11	15	0	1	4: Chemical 5: Physical
12.	CD	CDRI, Lucknow	8	12	21	8	6: Biological 2: Chemical 1: Engineering
13.	CC	CCMB, Hyderabad	1	2	3	4	7: Biological 1: Chemical 1: Engineering 1: Physical

S. No.	Symbol	Laboratory Abbreviation	Indian Patents Filed	Indian Patents Granted	Foreign Patents Filed	Foreign Patents Granted	Number of Papers among Top 50 CSIR Papers in Specific Areas
14.	IT	IICT, Hyderabad	19	16	48	43	2: Biological 19: Chemical 5: Engineering 2: Info Science
15.	NG	NGRI, Hyderabad	1	0	1	0	8: Physical
16.	IB	IICB, Kolkata	5	1	6	3	4: Biological
17.	NE	NEERI, Nagpur	4	1	1	1	
18.	RT	NEIST, Jorhat	8	6	8	1	1: Chemical
19.	SE	SERC, Chennai	1	0	0	0	
20.	IR	IITR, Lucknow	0	0	2	0	1: Biological 1: Engineering 1: Physical
21.	IP	IIP, Dehradun	8	7	2	9	2: Chemical
22.	CE	CEERI, Pilani	0	0	0	0	1: Physical
23.	NB	NBRI, Lucknow	4	5	0	12	3: Biological
24.	RJ	IJIM, Jammu	4	5	5	18	1: Chemical
25.	CR	CSMCRI, Bhavnagar	9	8	22	49	8: Chemical 2: Engineering
26.	PL	IHBT, Palampur	2	1	5	15	1: Biological 2: Chemical
27.	NO	NIO, Goa	2	2	0	7	1: Engineering 15: Physical

# Publication Record of CSIR Laboratories *Prior* to 2010-11

S. No.	Symbol	2003-04 Number of Papers among Top 50 CSIR Papers with High Impact Factor	2004-05 Number of Papers among Top 50 CSIR Papers with High Impact Factor	2005-06 Number of Papers among Top 50 CSIR Papers with High Impact Factor	2006-07 Number of Papers among Top 50 CSIR Papers in Specific Areas	2007-08 Number of Papers among Top 50 CSIR Papers in Specific Areas	2008-09 Number of Papers among Top 50 CSIR Papers in Specific Areas	2009-10 Number of Papers among Top 50 CSIR Papers in Specific Areas
1	CF		1		1: Engineering			
2	CP					1: Biological	1: Chemical	
3	NC	4	10	6	3: Biological 21: Chemical 10: Physical 13: Engineering	8: Physical 2: Biological 7: Chemical 2: Engineering	7: Physical 1: Biological 28: Chemical 2: Engineering	5: Physical 3: Biological 13: Chemical 2: Engineering
4	CI			1	1: Engineering	6: Engineering 2: Chemical	12: Engineering 1: Physical	7: Engineering
5	NA				2: Physical	1: Physical	2: Engineering 2: Physical	3: Engineering 2: Physical
6	CT	2	2		2: Biological 1: Engineering	1: Engineering 1: Biological		1: Engineering 2: Physical
7	CM					1: Engineering	1: Chemical	
8	NM				6: Engineering	7: Engineering	1: Engineering 2: Physical	1: Engineering
9	CB				1: Engineering	1: Engineering		2: Engineering
10	IM	4	11	13	7: Biological	6: Biological 1: Engineering	3: Biological 1: Chemical	1: Biological 2: Chemical 1: Physical
11	CL	3	3	3	1: Biological 6: Engineering	6: Engineering 1: Biological 1: Physical	1: Chemical 5: Engineering 1: Physical	2: Chemical 1: Engineering
12	CD	4	9	10	6: Biological 2: Chemical 3: Physical 7: Engineering	7: Biological 5: Chemical	8: Biological 3: Chemical	4: Biological 3: Chemical
13	CC	8	18	26	16: Biological	8: Biological	18: Biological 1: Chemical	14: Biological
14	IT	2	12	14	2: Biological 5: Chemical 10: Physical 2: Engineering	6: Physical 19: Chemical 9: Engineering 1: Biological	1: Physical 4: Chemical 7: Engineering	2: Physical 13: Chemical 4: Engineering 4: Biological
15	NG				6: Physical 1: Engineering	15: Physical	10: Physical	9: Physical 1: Chemical

S. No.	Symbol	2003-04 Number of Papers among Top CSIR Papers with High Impact Factor	2004-05 Number of Papers among Top CSIR Papers with High Impact Factor	2005-06 Number of Papers among Top CSIR Papers with High Impact Factor	2006-07 Number of Papers among Top 50 CSIR Papers in Specific Areas	2007-08 Number of Papers among Top 50 CSIR Papers in Specific Areas	2008-09 Number of Papers among Top 50 CSIR Papers in Specific Areas	2009-10 Number of Papers among Top 50 CSIR Papers in Specific Areas
16.	IB	8	6	12	9: Biological 1: Engineering	14: Biological 2: Chemical	9: Biological 2: Engineering 2: Physical	3: Biological 3: Chemical 1: Physical
17.	NE				1: Biological 2: Engineering	3: Engineering	2: Engineering 1: Physical	2: Biological 7: Engineering
18.	RT						1: Engineering	1: Biological 1: Engineering 1: Physical
19.	SE							
20.	IR	2			5: Engineering	5: Engineering	1: Engineering 1: Physical	1: Biological 1: Engineering 3: Physical 1: Chemical
21.	IP						2: Engineering 1: Chemical	1: Physical
22.	CE					1: Physical		
23.	NB	1	1		1: Biological	2: Biological 2: Engineering		2: Biological
24.	RJ		1				1: Biological	1: Chemical 1: Biological
25.	CR		1	3	7: Chemical	4: Chemical 2: Engineering	6: Chemical 1: Engineering	4: Chemical 7: Engineering
26.	PL			1		1: Chemical		2: Chemical
27.	NO			1	1: Physical	1: Biological 6: Physical	3: Biological 5: Physical	1: Biological 1: Chemical 1: Physical

## Patent Record of CSIR Laboratories *Prior* to 2010-11

S. No.	Symbol	2003-04				2004-05				2005-06				2006-07			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	2	3	18	4	4	1	6	4	0	3	43	5	0	3	16	5
2.	CP	11	7	10	29	18	13	29	28	12	16	39	10	2	4	22	25
3.	NC	59	53	111	19	61	35	44	32	38	59	49	26	17	57	81	28
4.	CI	12	16	0	0	10	0	5	2	5	7	2	2	5	9	3	1
5.	NA	4	1	1	0	1	1	1	1	5	1	2	0	1	5	4	2
6.	CT	104	29	66	13	59	31	44	19	52	47	54	10	21	40	86	35
7.	CM	4	2	0	0	1	0	7	0	9	0	0	0	4	0	6	1
8.	NM	12	6	2	2	7	3	12	5	15	3	5	1	1	11	16	6
9.	CB	0	1	0	0	0	1	0	0					0	2	0	0
10.	IM	4	2	7	4	3	2	0	2	4	2	5	0	2	3	10	6
11.	CL	20	7	12	3	8	3	19	4	14	8	21	2	9	8	13	8
12.	CD	15	7	14	5	21	15	29	6	20	11	9	8	5	6	21	16
13.	CC	3	1	6	1	2	0	2	2	2	1	3	2	0	1	4	5
14.	IT	17	24	58	39	26	15	39	48	29	31	78	31	13	18	45	43
15.	NG	0	0	0	1	2	1	1	0	6	0	1	1	7	0	5	2

S. No.	Symbol	2003-04				2004-05				2005-06				2006-07			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
16.	IB	6	4	11	5	4	9	6	9	8	1	5	6	5	0	18	10
17.	NE	1	9	2	0	2	1	1	0	17	0	0	1	6	3	5	1
18.	RT	4	24	1	0	14	16	44	8	7	14	25	8	7	7	3	1
19.	SE	0	1	0	0												
20.	IR	1	2	0	0	2	0	0	0	1	0	0	0	1	0	0	0
21.	IP	11	20	2	3	6	7	3	11	15	4	22	0	5	8	12	2
22.	CE	0	2	0	0					1	1	0	0	0	5	0	0
23.	NB	7	0	20	3	23	0	32	4	10	2	16	5	6	0	50	11
24.	RJ	10	3	8	12	9	2	7	13	13	12	0	1	3	10	8	19
25.	CR	15	4	25	2	19	4	48	13	14	3	68	9	4	2	89	22
26.	PL	4	0	8	21	10	0	28	17	11	0	12	8	1	1	15	10
27.	NO	9	0	34	12	14	3	21	13	6	2	20	7	1	5	10	16

S. No.	Symbol	2007-08				2008-09				2009-10			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	11	22	1	10	4	23	1	14	3	3	1	11
2.	CP	1	7	4	20	3	17	11	15	1	11	1	16
3.	NC	10	79	29	28	13	102	39	26	24	15	16	23
4.	CI	5	9	11	1	2	28	6	1	0	1	9	0
5.	NA	6	16	0	0	6	6	0	1	3	1	1	1
6.	CT	24	28	5	37	18	86	9	43	16	40	1	38
7.	CM	3	8	5	3	3	8	0	1	2	1	2	2
8.	NM	7	16	0	4	11	12	9	5	6	0	11	1
9.	CB	0	5	0	0	3	6	0	0	1	1	0	0
10.	IM	1	1	12	5	1	4	18	5	4	3	8	7
11.	CL	6	16	12	11	5	17	3	6	8	3	0	13
12.	CD	13	5	15	10	5	12	12	16	7	5	6	15
13.	CC	2	0	1	4	1	2	25	1	3	1	1	6
14.	IT	22	26	28	37	18	76	62	42	10	11	28	33
15.	NG	3	0	6	3	1	1	8	2	2	0	15	0

S. No.	Symbol	2007-08				2008-09				2009-10			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
16.	IB	7	1	5	6	5	5	9	6				
17.	NE	2	8	4	3	2	9	4	1	1	0	0	3
18.	RT	5	11	1	1	5	14	3	1	9	2	1	0
19.	SE					0	1	0	0	0	0	15	0
20.	IR	1	6	0	0	0	3	1	0	3	0	0	1
21.	IP	6	10	7	0	3	24	15	2	2	1	4	3
22.	CE	1	7	0	0	1	3	0	0	2	0	0	0
23.	NB	5	0	1	22	3	11	0	21	4	5	1	21
24.	RJ	11	10	7	11	3	20	5	14	7	3	3	9
25.	CR	7	3	40	26	16	20	56	34	9	7	18	28
26.	PL	1	2	11	10	7	13	17	8	2	2	6	
27.	NO	2	11	8	14	0	9	7	3	0	1	0	4



# Publication Record of CSIR Laboratories *After* 2010-11

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S. No.	Symbol	2012-13	2013-14
		Number of Papers among Top 50 CSIR Papers in Specific Areas	Number of Papers among Top 50 CSIR Papers in Specific Areas
1.	CF	2: Biological	
2.	CP	1: Biological 26: Chemical	
3.	NC	2: Chemical	26: Chemical
4.	CI	7: Engineering 1: Information	6: Chemical
5.	NA		5: Engineering
6.	CT	1: Engineering	
7.	CM	4: Engineering	7: Engineering
8.	NM		5: Engineering
9.	CB	7: Biological	
10.	IM	2: Chemical	2: Biological
11.	CL	3: Biological	
12.	CD	10: Biological	5: Biological
13.	CC	9: Chemical 1: Information	13: Biological 1: Chemical
14.	IT	13: Physical	1: Biological 10: Chemical
15.	NG	8: Biological	8: Physical
16.	IB	9: Engineering	13: Biological
17.	NE	3: Chemical	6: Engineering
18.	RT	1: Engineering	
19.	SE	6: Biological	
20.	IR	3: Chemical	1: Biological
21.	IP	1: Physical	
22.	CE		
23.	NB	3: Biological	1: Biological
24.	RJ	2: Chemical 1: Engineering	2: Biological
25.	CR	2: Biological	3: Chemical 1: Engineering

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## Patent Record of CSIR Laboratories *After* 2010-11

S. No.	Symbol	2011-12				2012-13				2013-14			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	CF	2	2	0	3	0	3	5	4	3	6	0	6
2.	CP	3	2	5	8	0	1	4	11	1	1	2	6
3.	NC	75	11	80	17	73	20	159	31	122	10	115	65
4.	CI	4	4	0	2	0	1	3	0	4	2	13	6
5.	NA	3	0	3	0	4	3	1	0	1	2	2	1
6.	CT	4	27	0	22	3	12	0	8	3	13	0	7
7.	CM	1	0	0	1	0	1	0	0	2	2	0	1
8.	NM	3	4	0	3	7	7	0	0	14	2	0	0
9.	CB	0	0	0	0	0	0	0	0	0	0	0	0
10.	JM	3	1	18	16	1	2	28	9	6	1	5	9
11.	CL	9	5	4	0	6	5	1	1	13	6	2	0
12.	CD	9	1	11	10	6	6	6	3	9	5	14	12
13.	CC	2	2	2	2	0	0	3	3	1	0	4	10
14.	IT	12	7	36	45	15	11	26	43	9	7	27	55
15.	NG	0	0	0	5	0	0	2	5	0	0	0	8
16.	IB	1	0	17	7	0	0	3	6	1	1	11	5
17.	NE	4	0	3	0	1	1	3	1	1	2	11	1
18.	RT	3	3	4	0	6	4	24	4	4	2	4	4
19.	SE	1	0	0	0	0	0	1	0	1	0	1	0
20.	JR	0	0	0	0	0	1	0	0	1	0	0	2
21.	IP	8	3	4	6	22	4	9	14	11	5	7	18
22.	CE	4	4	0	2	2	0	1	0	4	0	2	0
23.	NB	4	2	5	3	1	2	3	4	2	0	3	7
24.	RJ	1	0	4	2	1	0	9	0	7	0	3	13
25.	CR	15	3	49	53	17	6	43	41	10	1	60	70
26.	PL	5	1	4	3	3	1	8	5	1	2	15	7
27.	NO	0	2	0	11	0	0	0	2	1	2	0	7

## **Torn between funnels – Start-up entrepreneurs’ dilemma of getting started and preparing for change**

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Keywords: *Innovation, Start-up, Time, Future, Value Network*

### **Abstract:**

Start-up entrepreneurs operate in an environment that has special time-related dynamics. As earlier research has indicated, the speed of change or “clockspeed” of industries has been and keeps accelerating. That implies that the speed of market entry to hit the window of opportunity is crucial for all businesses. For startup companies, nascent ventures that offer novel solutions based on advances in knowledge and technology with limited resources, this time constraint of getting to the market and start making revenue is even more crucial than for mainstream established companies.

For certain types of investors and industries, the revenue from operations has to be generated already before investment is considered and done (e.g. Cohen, 2016). This means the company has to do quick solutions of product configuration and technologies applied. This process of narrowing the vast landscape of opportunities identified from internal and external sources to a much more limited number of solutions brought to the market is often described utilizing the schema known as *Innovation Funnel* (e.g. Dunphy et al, 1996). Simultaneously the companies need to show from 3- up to 5-year projections of revenue. Earlier research (e.g. Saukkonen et al., 2016) has shown that e.g. in ICT-intensive industries the predicted lifetime of individual technologies is 2-3 years. This means that inside the planning horizon of 5 years there is a widening array of potential technologies, some of them to be implemented by the firm doing the planning. The core idea of the widening field of alternatives is coined e.g. by Kuusi et al. (2015) as *Scenario Funnel*.

This conceptual paper discusses the challenges and demands that the firm’s internal development needs as well as external forces and stakeholders set for a start-up company moving between the planning (narrowing the first funnel) and scanning horizons (the second funnel: widening range of opportunities and challenges). The paper also discusses potential solutions derivable from earlier literature applicable to new venture context, relying on the joint effort of the value network(s) that the new venture is a part of. We also the concept of *futures mix* as a toolset for new venture development. To conclude the paper points out need and direction for further research.

## 2.Introduction

It is often stated that we live in the fast-paced environment and where the speed of change – also called clockspeed (e.g. Fine, 1998; Nadkarni & Narayan, 2007; Schimmer & Patel, 2015) is accelerating. This new order of sudden changes in the operating environment and quick responses such as shortened development cycles for new products and services is seen to favour new ventures – start-ups firms with little to none legacy of previous operations hindering their agility to move where the market is going to. E.g. Christensen 2013), based on evidence derived from various industries, made a remark that there are some fundamental reasons why “great companies fail”, opening door to the marketplace to newcomers.

The dynamics related to new ventures, also often called entrepreneurial firms or start-ups, do not always seem to prove that point. Evolution of new technologies and firms betting their future on them tend to be slower than originally expected, leading to drought in resources and inability to keep up with changes and necessary evolution steps in the turbulent environment. This then leads to investor deception in the time and magnitude in which they can make an exit and get revenue for their initial investment.

There are multiple methods and tools developed and used by the business community and researchers to help companies to both foresee the opportunities arising and in an agile and smart way to act on opportunities and risks of the future. However, the tools have been developed independently and their sheer number (e.g. one of the classics of Future Foresight, Futures Research Methodology 2.0. by Glenn and Gordon lists 23 main methods of futures research, some of which fall depending on their implementation into any of 4 categories of foresight – or multiple to all categories simultaneously: Qualitative, Quantitative, Normative, Exploratory).

It is clear the field is rich with options for an entrepreneurial firm to choose from, but much less of available criteria and guidance when and how to use them. This paper aims at drawing an overall picture of frameworks and tools of future-oriented action, demonstrate the gaps of knowledge (or abundance of it in certain terms) and point out direction for further research and development.

## 3.Objectives

The objectives set for this study were two-fold. Firstly, the authors wanted to draw an aggregate picture of the time-related contradictions that start-up entrepreneurs face in their business development as well have an overlook at the tools proposed by earlier scholars to overcome the challenges set by time. Based on these findings, the aim was thus to find out if there are important needs of improvement discipline, practices and tools. Secondly, the authors aim at proposing direction to further development and research on the field, creating stronger links between the science and art of futures foresight and entrepreneurship.

## 4. Method

This research was designed to be a conceptual enquiry, and was also performed as such. Following the ideas of Kothari (2004) it can be stated that conceptual research is about creating new theories or re-interpreting existing ones, without yet observing real-life representation of them (experimental research design) and collecting data to test and prove theories.

The objective of this paper was not to create a new theory or framework for anticipation efforts, opportunity scanning and operational planning for entrepreneurial firms, but rather study and make explicit the possible dilemmas and incompatibility of existing approaches (methods and tools) that new ventures face. The researchers have in their earlier work (Saukkonen et al., 2016) observed real-life manifestation of the issues handled in this paper, and the identified lack of common frameworks on practitioner-level of business has been the spark for this enquiry.

The data collection has happened via literature review of prior research, approaching the topic from two angles, that of a) new business development b) future foresight. These two angles do not commonly meet in research, but would still both be necessary parts of a thorough strategic development in an entrepreneurial firm.

## 5. Literature review

Nature of start-up companies and entrepreneurial effort is that they need cope with multiple options, high level of uncertainty as well as with constant willingness and ability to develop and change. The often used definitions of start-up companies by Ries (2011) and Blank (2010) stress the very nature of start-up entrepreneurship. Blank coined conceptually that start-ups are fundamentally different to established companies: "A start-up is an organization formed to search for a repeatable and scalable business model", and along the same lines Ries (2011) stated that "a start-up is a human organization designed create a new product or service under conditions of extreme uncertainty".

These forces and characteristics have gained in magnitude in the era of fast development and volatility in business and technology environment. the accelerating pace of change referred e.g. as "increased clockspeed" (Fine, 2002) and the increase in the amount of potentially transformative and often intertwined technologies has made technology anticipation a resource-demanding and wide exercise for firms aiming at "seeing what is next?". How many and which technologies to include to anticipation processes and which ones not? One of the leading ICT consulting firms Gartner has for years published their "Hype Cycle curves" of emerging technology areas and particular technologies. As the representative of Gartner, J. Fenn (2011) coined the purpose of their approach: "Hype Cycle for Emerging Technologies targets strategic planning, innovation and emerging technology professionals by highlighting a set of technologies that will have broad-ranging impact across the business. It is the broadest aggregate Gartner Hype Cycle, featuring technologies that are the focus of attention because of particularly high levels of hype, or those that may not be broadly acknowledged but that Gartner believes have the potential for significant impact." Fenn refers to the "general" ICT -hype cycle, but in addition to that Gartner publishes on a yearly basis separate Hype Cycles for specific technology areas such as cloud computing or social software. There are close to 2000 individual technologies under Gartner radar (ibid.). These listing and graphical presentations offer potential technologies that the companies pursuing technology anticipation can alter to their processes. In other words, they are (one of) potential sources from technologies to be followed.

A brief analysis (both of the stage that the listed technologies are assessed to be at the time of curve publication as well as the expected time that it will take for a technology to be mainstream adopted) of the Gartner's broadest aggregate Hype Cycle curves over a span of 5 years (2010-2014, compiled from various online-sources) clearly indicates the complexity of the field for individuals and companies that aim at engaging to technology anticipation processes (tables 1 and 2 below).

Time to mainstream adoption (nr of techs)	2010	2011	2012	2013	2014	total
0 - 2 years	4	5	4	3	2	18
2 - 5 years	18	15	17	10	10	70
5 - 10 years	11	16	20	21	27	95
10+ years	7	6	7	9	6	35
Obsolete before reaching adoption	1	-	-	-	-	1
total	41	42	48	43	45	219

As can be seen from the table 1 (above), the mere number of the technologies (or tech areas) in the aggregate level Gartner-curve is approaching 50 technologies. Also the expected time to mainstream adoption has seen a shift towards 5-10 years of "waiting" time before full commercialization of a technology

will take place, indicating that investment into development of those techs needs far-reaching planning with high risk involved.

**Table 2: Gartner Main ICT Hype Cycle curve 2011-2014: Divisions of technologies by devel. Stage-analysis**

Stage of the development of a technology	2010	2011	2012	2013	2014	total
Technology Trigger	13	12	12	14	17	68
Peak of Inflated Expectations	9	15	16	13	10	63
Through of Disillusionment	11	7	13	9	11	51
Slope of Enlightenment	7	7	6	5	6	31
Plateau of Productivity	1	1	1	2	1	6
total	41	42	48	43	45	219

Table 2 shows how most (and in an increasing manner) of the detected technologies are still at the Technology Trigger-phase. That stage is defined by Gartner: “A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.” Investing money and effort to technologies in that stage sounds a risky choice. On the other hand, if a company waits until a technology reaches the stage of the slope of enlightenment “More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious” the competitive advantage achievable via the technology in question has vastly diminished.

### 5.1. Planning horizon – concept, tools and affecting forces

Henri Mintzberg (1989) categorized managerial decision-making to be divisible into 3 broad categories. The first category is that of opportunistic decision-making: Taking the best out of the prevailing situation, inside the constraints of existing resources and competences. The short time-horizon do not allow acquisition of new resources neither rearrangement of the existing resources and competences. On the other hand, the uncertainty related to the decision-making situation is low, since the decision is most often a continuation of the earlier opportunistic and strategic decisions. Timespan for truly opportunistic managerial decisions is typically anything from immediate to one year. Interestingly, Olson (1986) noted that entrepreneurs have a tendency to be opportunistic decision-makers. This might be related to the newness of the firm established, the strategic direction is still in search and also the limits in the resource base, that directs the new venture owners to focus on the short-term steps and survival, leaning little effort to strategic, let alone visionary decision-making.

Strategic decision-making (Mintzberg, *ibid.*), in its turn, is still based on relatively well-known environment but with additional uncertainty when compared to opportunistic scope. The relatively low level of uncertainty and lengthened timeframe (in comparison to opportunism) allows acquisition of new (identified) resources and rearrangements of the existing ones. Timeframe for strategic decision-making is seen to be of 1-3(5) years. Eisenhardt and Zbaracki (1992) point out that the managers working on the strategic decision are only “boundedly rational, that power wins the battles of choice and that chance matters.” Opportunistic and strategic decision-making paradigms allow quite detailed step-by-step approaches to the development processes of the firm, and can thus be seen to belong to the *planning horizon* of the firm – reducing the number of alternatives to choose from, choosing and executing.

Inside the planning horizon the firms are likely to bring up mostly sustaining or incremental innovations, that were defined to be based on current technologies and bringing gradual upgrades to existing products and services. According to Norman & Verganti (2014) organizations are “continually looking for niches in

a market to exploit and do so by either incrementally improving existing systems, products, and services or creating entirely new ones. Some innovations come in the form of evolutionary, incremental improvements.”

The third category of decision-making, visionary management, is in its turn dealing with added uncertainties, added amount of options and is likely to bring up radical and disruptive innovations. The visionary decision-making time scope and uncertainty make detailed planning efforts unrealistic, and thus this time scope from 5 years (in today’s fast clockspeed and volatile environment often 3 years) to 10 years is referred as *scanning horizon* (Kuusi et al., 2015). The nature of scanning and practices of it are more closely presented in Chapter 5.2.

### Innovation Funnel / Open Innovation

The concept of Innovation Funnel (Dunphy et al, 1996) refers to a process that a company uses to move from vast number of opportunities to a limited number of launched/rolled-out features, products and services. The schematic picture of the funnel process as typically figured out by innovation researcher community, in this case by Anthony & McKay (1992) is shown in the figure 1.

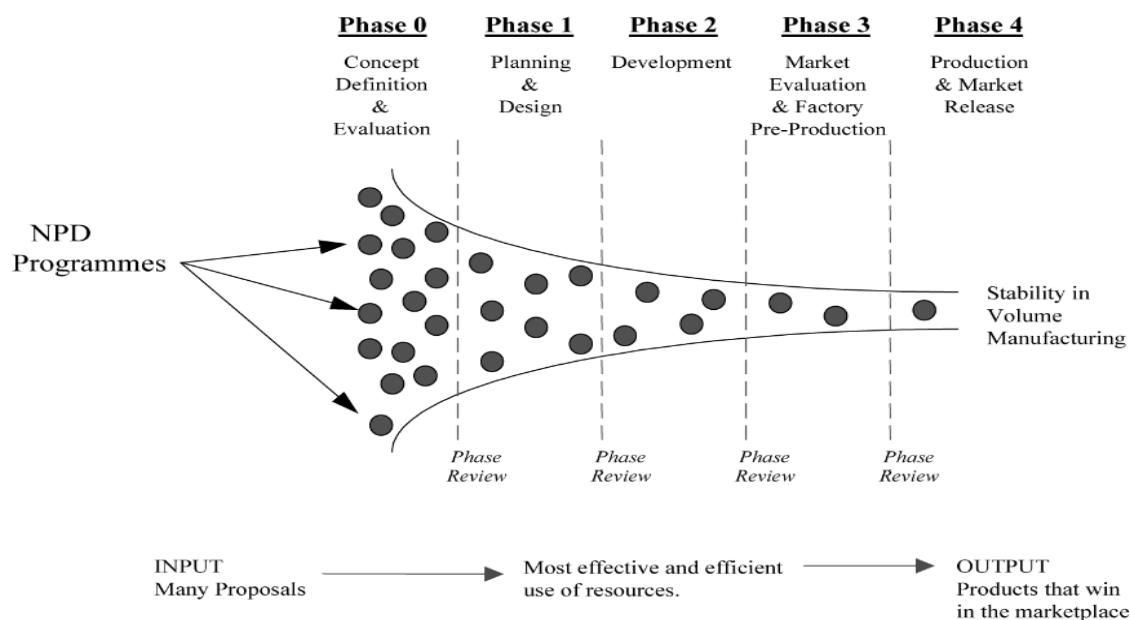


Figure 1: Innovation Funnel

Even though the model by Anthony & McKay uses the term of New Product Development (NPD) programs, that is a common term for a company’s internal R&D, most often the innovation practitioner community adds the external environment and actors to the model, like in the illustration by Phillips (2011) in Figure 2. The dotted line represents the company’s boundaries and the arrows in the figure the interaction that the company has with external actors such as partners, suppliers, customers etc. utilizing the principles of *Open Innovation*. According to Brunswicker & Vanhaverbeke (2015) the central principle of open innovation is the crossing of firm-boundaries: firms who practice it purposively “use inflows and outflows of knowledge to accelerate internal innovation, and to expand markets for external use of innovation, respectively”. The “breathing” and flow of innovation can be inbound (finding ideas, knowledge, resources from external environment, or outbound (releasing or trading ideas and knowledge to the external environment (ibid.).

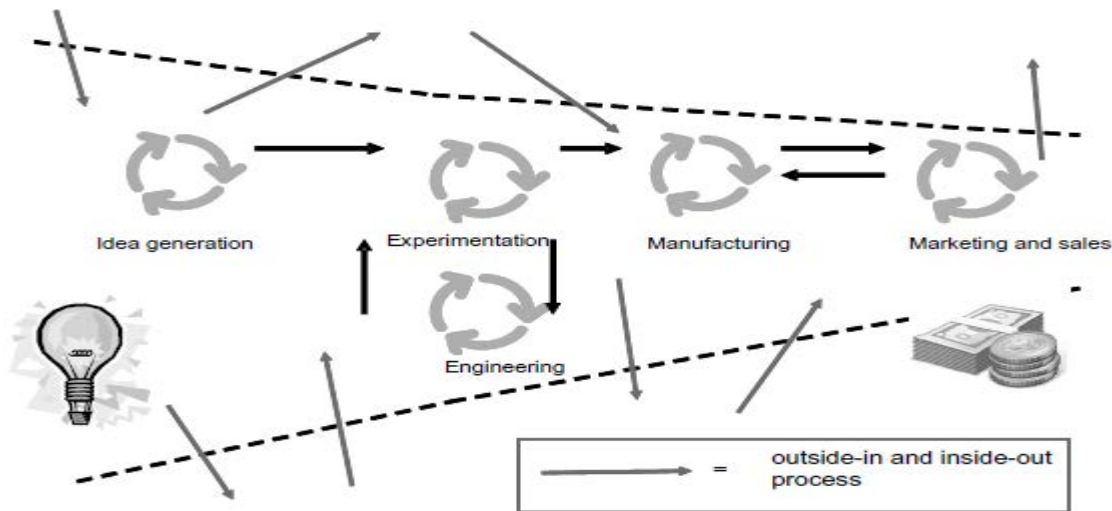


Figure 2: Steps of Innovation Funnel Process (Dunphy et al., 1996)

The loop-like symbols in the model by Dunphy et al. stress the importance of the learning process involved in NPD. Instead of linear process the trajectory from ideas to products contains iterations and returns to the earlier phases. Innovation Funnel should be seen more as an umbrella term that hosts many specific methods across its stages, like the Open Innovation-paradigm already mentioned. In the following sub-chapters some key methods related to the narrowing (with time) funnel of innovation get introduced.

### Product and Technology Roadmaps

Roadmapping is a process that take many forms and concern various layers from whole industries and technologies to a single business unit inside a corporation. Roadmapping has been seen a method of (futures) research itself (Glenn & Gordon, 2003), but also as a method of processing and organizing data obtained by various means of study. Phaal et al. (2001) that have developed the “T-Plan method for (product and) technology roadmapping (TRM)” summarize the nature and purpose of TRM to be a time-based chart that consists of a number of layers that include both commercial and technological perspectives. The roadmap enables the study/anticipation of markets, products and technologies, and of the linkages between the various perspectives.

Unlike Innovation Funnel, a roadmap is more full with information at a closer timely distance to the moment of its creation, as the near-term future is more carefully planned and data of external and internal forces affecting NPD is available. Figure 3 shows the schematic picture of Product & Technology Roadmap.

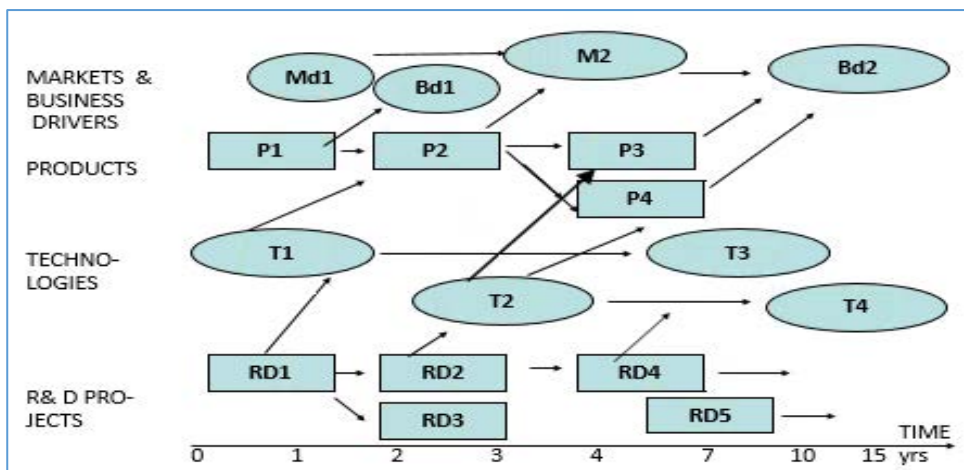


Figure 3: Product and Development Roadmap – structure



## Agile Development methods

Neither Innovation Funnel nor Technology Roadmap are responses to the question “how” (the narrowing of the options to work on). T-Plan model by Phaal et al. contains a clear process of check-ups for the validity and rationale of “results” for each layer, but they can’t be known or assessed looking at the plain roadmap, that is the outcome of many processes linked to roadmapping. In the same manner, the model of Innovation Funnel does not reveal what are the practices that need to be performed in phases of (e.g.) planning and evaluation.

As a response to the harshness of roadmaps and funnels, numerous methods have been developed to support swift progress between the stages. Examples of such approaches are Lean Start-up, Design Thinking and SCRUM-methods.

The concept of *Lean Start-up* is largely based on the writings by Steve G. Blank (2010) and Eric Ries (2011) and been backed up by the research by Marmer et al. (2011a, 2011b). The core essence of Lean Start-up methodology is to replace long at linear and lengthy product and service development cycles with agile testing, experimentation and learning in interaction with the market. To highlight this market-oriented view Blank has even replaced the name of the process of product development by customer development. Key concepts linked to Lean Start-Up are e.g. MVP (Minimum Viable Product, a product that can still be far from final solution in designs, totality of features etc. but able to demonstrate the core benefits/value to customers) and Pivoting (change of plans and direction due to feedback and learning). Marmer et al. (2001a) call the four early stages of development (before reaching maturity a.k.a. business-as-usual) Discovery, Validation, Efficiency and Scaling, and based on their 650+ start-up company data propose that iterations are needed. Marmer et al. (2011b) also state that companies who exaggerate in speeding up their development by jumping over some stages or do not spend enough effort in each stage, are proceeding and scaling prematurely, and this behavior is negatively affecting their chances of success on the market and getting funded.

According to Lockwood (2009), *design thinking* is a human-centered process aimed at innovating that emphasizes the usage of observations, collaboration, emphasized fast learning and visualization of ideas, rapid concept prototyping and also concurrent business analysis running parallel to the aforementioned more creative actions. Ben Mahmoud-Jouini et al. (2016) highlight the difference of design thinking (DT) to a more close-ended R&D process by stating that DT is a structured process that fits to exploration for problems that are ill-defined.” Liedtka (2015) states DT is best suited to decision contexts in which uncertainty and ambiguity are high and list the key principles of DT as follows (numbering by the authors of this paper) : It relies on 1) abduction and experimentation involving multiple alternative solutions that actively mediate a variety of tensions between possibilities and constraints, and 2) learning through experimentation based on 3) multiple iterations are seen as a central tasks.

*SCRUM-method* of development originates from software and systems development, and build on the basic principles of spiral development, where the continuous learning and creation of novel ideas within the development process are key elements of the process. The figure 4 by Schwaber (1997) shows the spiral-like process, that does not rely on random and ad-hoc iterations but on controlled and planned loops.

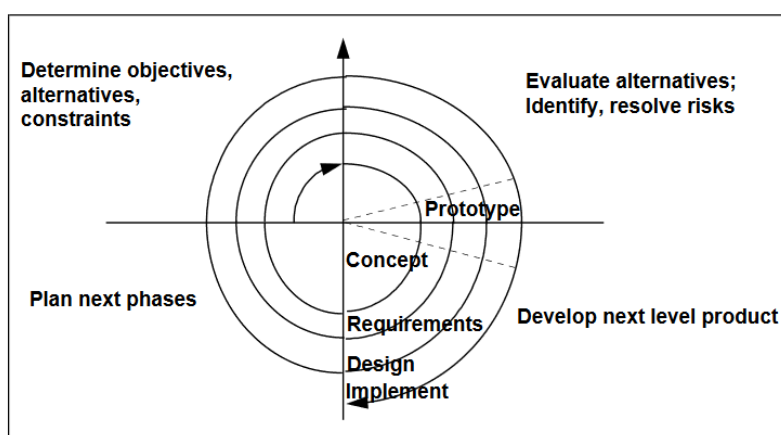


Figure 4: Spiral Method of Development (Schwaber, 1997).

SCRUM is said to enhance the team engagement (inside teams) as well as working in a controlled manner with numerous development teams that work in a reciprocal manner with each other. SCRUM is said to offer a base of joint and distributed development and mutual learning, and it is nowadays used in areas very different to its original application area, e.g. in educational processes (Kingston, 2015). This enlargement of SCRUM usage has been made a note of by Naz et al. (1986) who state that SCRUM was first defined as a flexible product development strategy by Takeuchi & Nonaka (1986), but quite soon it was elaborated further so that SCRUM is now seen as a sort of organizational knowledge creation that is working well in getting about novelty constantly and incrementally.

Despite its clear positive underpinning, the case study by Sutherland et al. (2007) proved that “distributed teams and even outsourced teams can be as productive as a small collocated team”. However, to succeed with SCRUM requires excellent implementation is needed along with good engineering practices. The whole set of teams must function as one unified team and with one global build repository, and e.g. with one tracking and reporting tool only. Thus, to reach the promise of SCRUM for an entrepreneur may be time and energy consuming.

## 5.2. Scanning horizon – concept and affecting forces

Visionary management and decision-making is typically used in the time scope of 3 (5) to 10 years from now. The time from now to the time “anticipated” in visionary management bears a lot of uncertainty, but at the same time allows the firm to respond to anticipated change by acquiring new resources and competences. The time scope allows enables the birth of radical, disruptive innovations. In spite of the vagueness of the definitions of disruptive and radical innovations brought up by Nagy et al. (2016) – for example, what is disruptive to some organization is not disruptive to another – there is some common ground found in the literature. Various definitions stress the concept of newness. Slappendel (1996) underlines the importance of true newness, as it sets innovation apart of any change. And innovation is seen to be crucial as a motivator and success factor of new venture and entrepreneurial activity (Johannesen and Olsen, 2001). Zhou and Li (2012) coin the term of radical innovation meaning innovations that are “novel, unique, or state-of-the-art technological advance in a product category that significantly alters the consumption patterns in a market”. To the concept of newness in the external dimension (market) the concept of internal newness (newness to the firm making the innovation) is often added. The newness also means that a true innovation is competence-destroying (Christensen, *ibid.*): Some of the capabilities behind the past success of the firm become obsolete with radical and disrupting innovations.

Because of the wide range of potential future paths of evolution (or revolution) of markets, competition and choices of the firm, Kuusi et al. (*ibid.*) describe the paradigm of the scanning horizon be that of the *scenario funnel*. Unlike the earlier discussed innovation funnel that attempts to narrow the range of options between now and the time of product/service launch in the *planned future*, the scenario funnel opens up towards future (see figure 5, Kosow & Gassner, 2008). The more we expand the time horizon from the present, more rich of options our view of the future gets. Following the ideas of Kuusi et al., “the basic idea of the scenario funnel is that the farther we gaze from today’s standpoint towards the future the more possibilities are open”. The different scenarios all start from time point of “present” and the range of the scenario paths increases with time, so after certain point the “collection of possible scenarios” spreads widely, like an opening funnel does. Scenario funnels are often drawn and described in the way that places the most probable scenario in the middle of the funnel and the (presumably) most radical scenarios to maximum distance from the “mid-scenario” for the time point in question. Scenarios, for their part can be shortly described as Khan puts it: “... hypothetical sequences of events constructed for the purpose of focusing attention on causal processes and decision-points. They answer two kinds of questions: (1) precisely how might some hypothetical situation develop, step by step and (2) what alternatives exist, for each actor, at each step, for preventing, diverting, or facilitating the process.” So a scenario is not just a justified estimate of future conditions at a given point, but contains “mini-scenarios” that are trends, decisions, actions and incidents on the way to the end point of the scanning horizon.

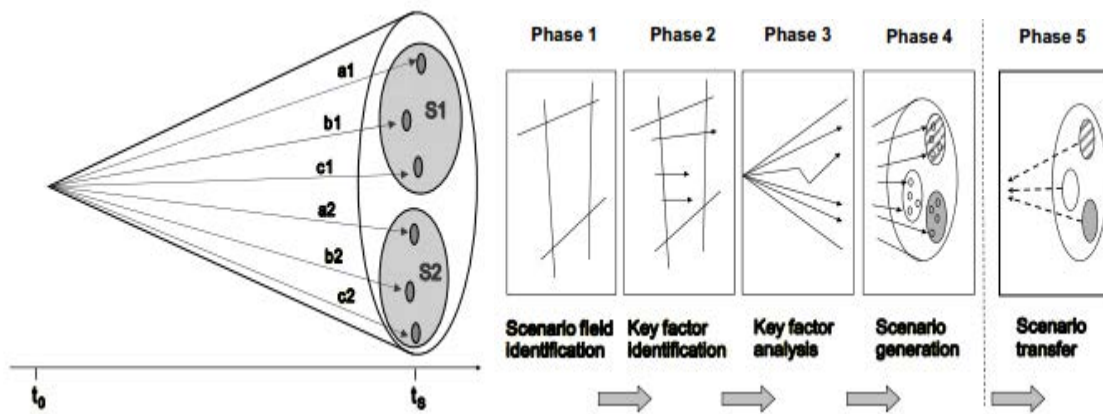


Figure 5: The schematic picture of scenario funnel and process of its creation (Kosow & Gassner, 2008)

To help the entrepreneurs to cope with increasing number and variety of options, tools for scanning have been developed to translate wide future views into selected number of issues to work on. Most often the anticipation effort is concentrating into changes in the technology landscape (the focal point of this paper), but also societal and market development could naturally be mapped as well. Both methods introduced below: Technology Radar and Radical Technology Inquirer can be seen to represent elaborated and pragmatic examples of the approach called Environmental Scanning by Glenn and Gordon (2003).

### Technology Radar

Technology Radar (TRI) as a tool for future-oriented technological intelligence was originally created and first implemented at the Deutsche Telekom Laboratories' DTAG unit and later adapted by several other companies for example Cisco (Rohrbeck et al. 2006). TR aims at offering a system for identification, selection and verification of emerging technologies, aiming at fulfilling simultaneously three purposes: 1) to identify early the technologies, trends and shocks, with potential impact to the investigating company's business 2) to raise to awareness and discussion within the company the threats and opportunities of technological development, and 3) to stimulate company's action on innovation, streamline innovation activities within the company, and to put in motion new quest for knowledge and investments to R&D (Rohrbeck et al., 2006; Boe-Lillegraven & Monterde, 2014).

#### *The process and outcome of the TR*

The TR tool is a process that consists of four stages: technology *identification, selection, assessment* and *dissemination* (Figure 2).

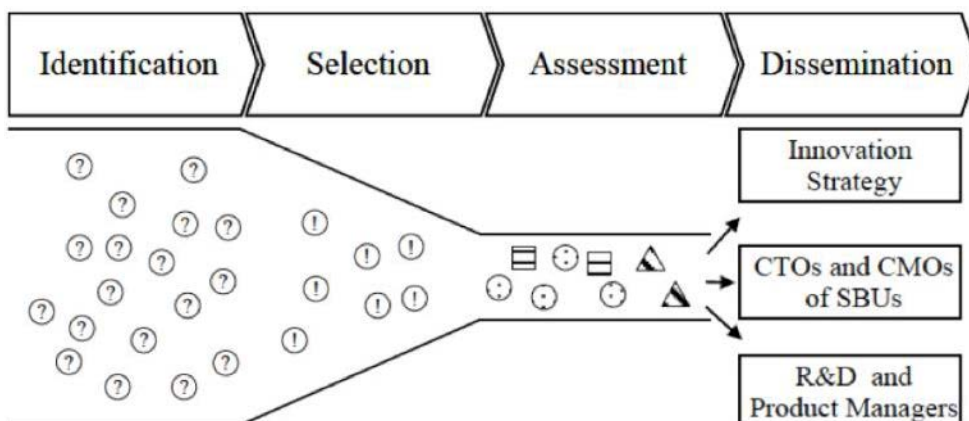


Figure 6; The Technology Radar method (Rohrbeck et al. 2006)

In the *identification* stage, technologies get identified by an international “scouting community”, internal and external to the company, that will report on emerging technologies in pre-defined (to them) fields (Boe-Lillegraven & Monterde, 2014).

After identification, a panel *selects* and short-lists the most relevant technologies for further investigation. In the selection process, the technologies are put into four categories: 1) completely new technologies, 2) state of the art technologies but with recent leaps in development, 3) important improvements in complementary technologies, and 4) notable increase in the awareness of a technology and technology application (Rohrbeck et al., *ibid*; Boe-Lillegraven & Monterde, *ibid*).

Finally, the selected technologies go to an *assessment* (by a committee) for assessment - evaluation and ranking. The technologies are rated in two dimensions: 1) 'market impact' and 2) 'technological realization potential'.

Following the assessment, the findings of the process are *disseminated* to a wider internal audience. An example on how results can be visualized in Figure 3. The technological fields represent the segments, and the development stage depicted as concentric circles starting with the lowest development stage on the outside and the most developed technologies on the inner circle.

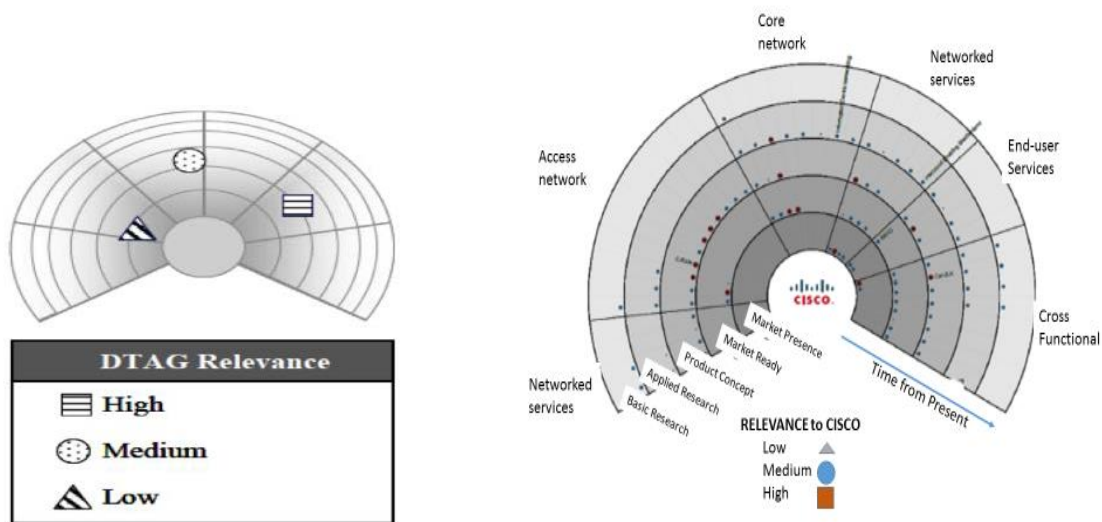


Figure 7: The Radar Screen of DTAG (left), and Cisco (right) (Rohrbeck et al. 2006; Boe-Lillegraven and Monterde, 2014)

Technology Radar offers to its users a way to dig into the recent and foreseeable developments in technologies that a company considers important to their business. Companies applying TR run the process most often 3-4 times per year, suggesting the tool is sufficiently light to be used in corporate context of. One obvious challenge of TR is that it only scans for technologies that have been pre-defined as important for their current business. It may be then a process that fortifies the present strategy rather than acts as a catalyst for change. As Vanamo et al. (2016) noted it may be also be a less appropriate tool for detecting unexpected but at the same time highly impactful technologies from sectors outside the scope of those technologies that have been deemed by the company and its network as important for the business. Also the knowledge base and number of actors participating to the process may limit its usage in start-up and small business contexts, that would anyway be fertile grounds for innovative action.

## RTI (Radical Technology Inquirer)

The RTI tool developed by Linturi, Kuusi and Ahlqvist (2014) was originally published in 2013. The tool was originally developed for national foresight purposes, but adaptations and pilot usage in corporations have taken place since the launch of the method.

The result of the RTI development process was a collection of 100 emerging radical technologies that have been listed into an order of importance based on a calculation based on various indicators, like the maturity of the technology, existing competence in the technology and the technology's anticipated impact on the marketplace. Indeed, the purpose of the development was to offer a credible tool to create such a ranking list of emerging radical technologies and help policymakers and organizations to follow, assess and prioritize reactions and actions to the reshaping technological landscape. The tool is designed to consist of a 100 emerging technological solutions called Radical Technological Solutions (RTS) and 20 Global Value-producing Networks (GVPN) that are combinations of emerging technological possibilities and customer's needs or demands, i.e. areas of technological and societal change based on anticipation of global customer demands. The Radical Technological Solutions (RTS) refer to individual technology areas aiming at addressing a shared challenge.

The authors of first-cut RTI selected the 100 most promising technological solutions from all the creation process contributors' suggestions using a set of indicators under six categories.

Global Value-producing Networks – 20 in number - (GVPNs) were presented by describing (Vasamo et al., 2014)

- the current situation and expenses related to the network
- the anticipated new operating model with its savings
- the development of the maturity of the enabling technologies
- the challenges of the transition period to the new model
- legislative/structural barriers to change, and
- the threats of the new technologies related to the network

The 100 identified Radical Technological Solutions (RTS) were presented by (Vasamo et al. 2016)

- a summary of the state-of-the-art of the solution, and its future prospects in 2020 and 2030 if the solution delivers on its promise as anticipated
- today's spearheading achievements related to the solution
- the most relevant background documents presented as Internet hyperlinks
- the most promising execution options of solution's functionality
- the most probable application areas of the solution
- an evaluation of the general maturity level of the solution
- an evaluation of global scientific interest on the solution
- an evaluation of the strength of the linkages to the Global Value-producing Networks (GVPNs)

So far, the RTI process has been conducted once in Finland and the top 100 list of most promising technologies is planned to be updated once a year or once in every parliamentary season (four years).

The pilot version of the RTI was conducted as a large crowdsourcing among stakeholders over the Internet, with hundreds of participants. This kind of an approach in terms of its size and openness may or may not be desirable for private and resource-constrained companies. The timeframe of 15 years can be also too long for companies, but as Vanamo et al. (ibid.) conclude: "...RTI could also allow companies to freely and creatively think about radically and disruptively different strategic possibilities and threats for their

business, as opposed to thinking about the mid-term, which might not allow them requisite time for major shifts in strategic direction”.

## 6. Findings

Putting together the findings of earlier research and the compilation of the tools and models introduced across research and practitioner communities, it becomes clear that there are major concerns and difficulties for managers/owners of start-up enterprises who aim at managing time in a smart way. At first sight there seems to be abundance of

### 6.1. Complicated relation between startup entrepreneur and time – need for speed?

Time can be seen as one of the resources of a company. There has not been and there is not likely to be a final and complete list of all resources that a firm can have and gain competitive advantage from - or lose its competitive edge, if resources are not well managed. A typical presentation of resources is e.g. that of Penrose (1985). He presents a wide “resource approach” in which he argues that firms are administrative organizations and collections of physical, human and intangible assets. Barney (1991) gives a good overarching definition to resources: Resources are all assets, capabilities, processes, attributes of the firm, information (today: also data (authors’ remark)) and knowledge etc. that the firms controls and enable strategies leading to better results and efficiency. The well-known resource-based view (RBV) at companies suggests that firms’ re-sources drive value creation via the development of competitive advantage (Ireland et al., 2003).

There also are sub-currents in resource-based research analysis of companies, e.g. Brush and Edelman (2015) note that the emerging international entrepreneurship perspective posits that a key difference between internationalized and non-internationalized new ventures lies in their resource stocks, which includes founder attributes, organizational dimensions and social contacts. The type of the company also affected to the list of critical strategic resources in the research by Sirmon and Hitt (2003) from family firms: Human Capital, Social Capital, Patient Financial Capital, Survivability Capital and Government Structure Capital. All these vary in time and they have an effect on the pace (action vs. time) that the firm can develop and grow.

Is time itself a resource for a firm despite the fact it rarely gets listed when creating an image of a firm? E.g. Sirmon et al. (2007) wanted to challenge the domination RBV paradigm by “linking value creation in dynamic environmental contexts to the management of firm resources”. And as the definition and essential meaning of the word “dynamics” proposes it is about movement against time. So time can be seen as a sub-element of all other resources, or a meta-resource affecting the value and exploitation opportunities and challenges of all other resources.

As Wernerfelt (1984) pointed out, what is common to the firms’ view on their resources of all kinds is that “What a firm wants is to create a situation where its own resource position directly or indirectly makes it more difficult for others to catch up”. Wernerfelt also states that in order to analyse a resource for a general potential for high returns, a company has to find ways in which a firm with a strong position can influence the action and returns of firms with a weaker position related to the resource in question.

If and when time is a universal resource, how can a firm act better on it than competition? Aren’t e.g. the market opportunities the same and known for all? Is having more time beneficial to a company with less time in their use, or can the time dynamics even work in a reverse manner? Time is by definition a complex issue to deal with.

There is a considerable amount of research related to time-boundedness and new business, and with drastically controversial conclusions. The line of thinking suggesting that “faster is better” was dominating the discussion in the 1980s and 1990a. In 1998 Stalk came up with the term time-based competition to highlight the importance of quick time-to-market in today’s intensive competitive environment. Clark (1989) estimated that for each \$10,000 car launch, any additional delay day in introducing a new model represented a \$1 million loss in life-time profit for a company. A McKinsey study quoted by Cohen et al. (1996) reported that, on average, studied tech companies lost 33% of after-tax profit when they shipped



products six months late, as compared with the losses of 3.5% when they ended up overspending 50% on product development.

However, the speed - implied often by lack of resources to elaborate on things and thus leading to jump over important steps of development and learning (e.g. Marmer et al., 2011b) – may also affect a company negatively. Overly accelerated development may lead the company to launch immature technologies or launching in too much of anticipation for market opportunity, firms thus being not able a) to reach even the innovative customers, that make some 2,5 % market for tech products in both Business-to-Consumer as well as Business-to-Business spheres (according to Moore, 2002) or b) spending too much time to reach critical masses of customers in early adopter and early majority customer groups (13 and 34 % shares of total market, Moore (ibid.).

Lately, Stanko et al. (2012) in their research aimed at answering a question whether the speed-to-market is a blessing or a curse, after a wide review of earlier research proposing contrary answers to the question. The takeaway of the work and results of Stanko et al. is in its point made: The question cannot be answered without understanding the internal and external context of innovations to be launched. They state that if there is a high level of newness of the innovation to the company working on it (internal newness), additional speed in development may be value-destroying. The so-called first mover advantage suggesting quick launches of new-to-market innovations (external newness) was not supported either. When the product bears less innovation newness both internally and externally, the speed-to-market is one of the crucial elements of lifetime profitability of the innovation.

Thus, there is no single-handed answer to the question whether limited (limited by the external environment and resources or firm’s own processes) time is affecting positively or negatively to a success of a new, innovative venture. Figure 8 summarizes the findings from prior-art research and literature portraying both early and delayed launch options and the benefits of both options. It is easy to make the conclusion that time-related competence of a new business developer and entrepreneur cannot be measured in the length of time, but in a correct balancing of time between short and longer term, and being situationally and contextually sensitive is decision-making.

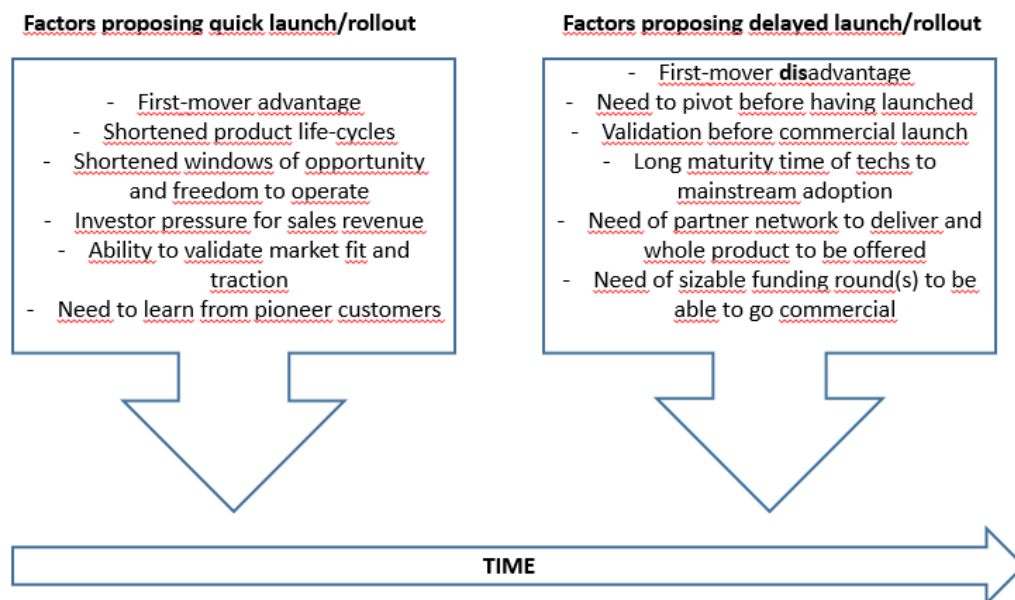


Figure 8: Controversial forces affecting the speed of launching to market

Based on the findings it is easy to enter into the conclusion that the battle of winning the marketplace for an entrepreneur is not just using the *minimum* amount of time, but use the *right* amount of time and use it widely. This mean ability to cope with multiple time horizon, act simultaneously with many time-scopes and choose and manage suitable scanning and planning tools for the needs.

## 6.2. Various time horizons and abundance of tools to work on them as an entrepreneurial challenge

Summarising the key essence of previous chapters, it has become obvious that the problem facing entrepreneurs willing and committed to act smartly with time is not the shortage of tools and frameworks but rather the abundance of them and unclear selection criteria and guidance on which tools to use. For each individual tool there is available literature on the process in question, studies of effects and critical success factors for planning and scanning processes.

Different time horizons are likely to require multiple tools, that can't be used (only) sequentially, but a start-up company and its owners/managers need to run many processes parallel. This complexity of time horizons that rose from the literature review is also backed by findings from the financing statistics of the main investment vehicle to start-up companies, Venture Capital industry. The average exit time for investors (based on compilation of reports on NVCA = National Venture Capital Association of US) has risen from the 3,3 years in the tech boom years of early 2000s to close to 7 years in 2015. This means that while the VC investors are expecting an early start and growth of sales revenue (suggesting the rapid time-to-market) in order to reach the reasonable level of sales that partly determines the value of the exit sale i.e. "multiple" (of sales to define the company value), they at the same time need to admit that the products and services will face major revisions between the investment and exit time.

The dilemma of dealing with various time horizons is visualized in Figure 9. A start-up company must find an agile way of narrowing its scope from ideation by selecting, testing and eventually rolling out the products and services, typically in 1-3 years' time from the idea generation. The closer to the roll-out date the "narrowing funnel" gets, more close it also gets to the "widening funnel" where new technologies and opportunities representing uncertainty.

The accumulated knowledge on how to use multiple tools and frameworks of scanning and planning has been extremely low, since the literature and research has mostly focused on studying and improving individual methods, not their integration.

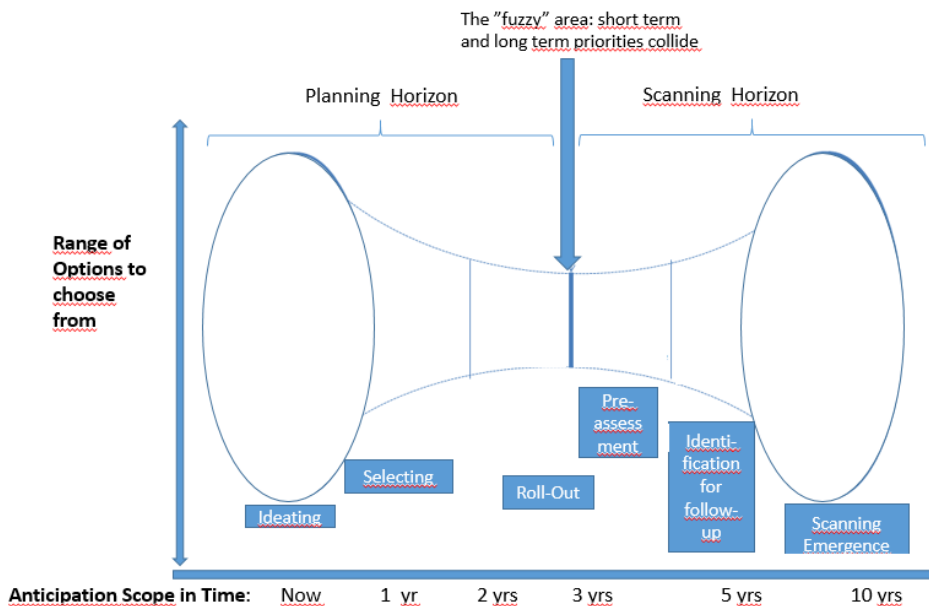


Figure 9: The competing funnels and horizons – planning vs. scanning

The accumulated knowledge on how to use multiple tools and frameworks of scanning and planning has been extremely low, since the literature and research has mostly focused on studying and improving individual methods, not their integration.

The collected data of existing concepts and their relations in the prior-art research show that choosing the correct (= relevant to the business demands and resources available) methods of planning and scanning





- developing advanced knowledge on the selection criteria for the tools and processes to use
- looking for ways of integrating individual tools to create coherent managerial processes that serve for both the short-term and long-term good for the company engaging into planning and scanning activity.

In the following figures (11 and 12) the authors show examples (following to a certain extent the model of Popper) of usage of dimensions that might facilitate the choice of the correct method(s) to be used. More diamonds could naturally be drawn by combining the dimension (x- and y-axis of the diamonds) in a new way.

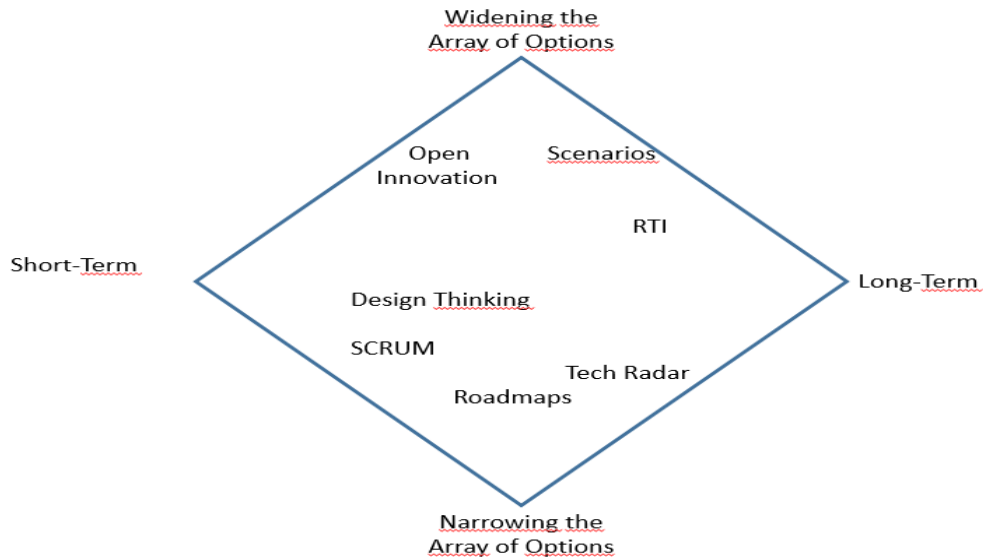


Figure 11: Scanning and Planning Method “Diamond” based on time and focus (narrowing or widening the views) –dimensions

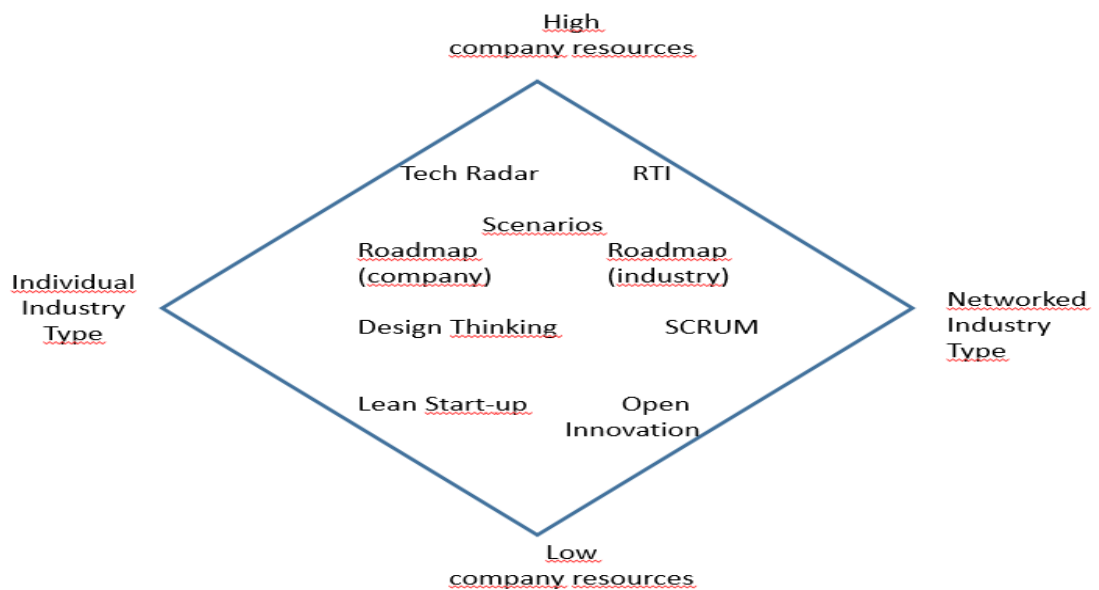


Figure 12: Scanning and Planning “Diamond” based on company resources and network interaction-type

In the last figure (13) the authors show an example of how for an individual company the methods could be combined and feed each other in content. Case studies where these integrations are taken in use would be a natural step forward in adding to the knowledge and practicality of this concept-based modelling.

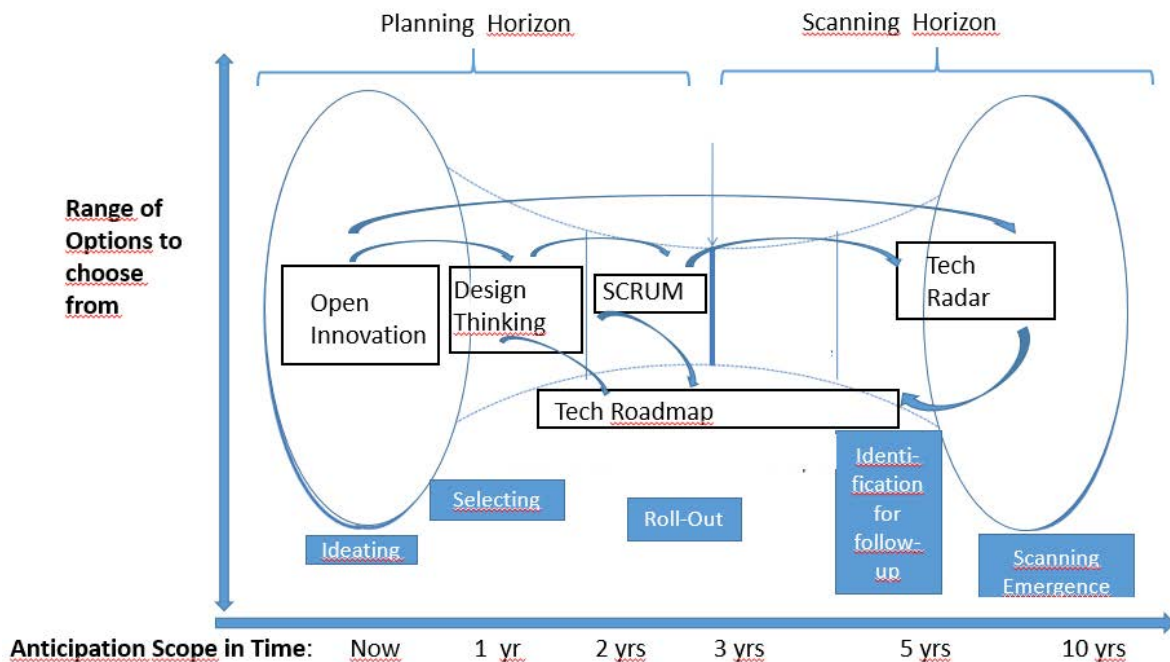


Figure 13: Potential interactions between time-horizons and methods related to them

Despite the fact that the figure above does not contain all available methods, it is capable of illustrating the synergy potential of the methods: e.g. some findings from the open innovation process can be directed to the concept configuration via design thinking and further to product configuration via SCRUM-method, but some may demand that much technological advance from the present that they need time to elaborate, and it might even be wise from the company not to invest own resources to it yet, but follow the evolution via active work with Technology Radar. Also the SCRUM method - that originally is designed for agile development with short NPD (new Product Development Development) cycle time – can spin off new ideas that will be followed and worked on over longer period of time.

## 7. Discussion

The findings of this research cannot be stated to present the whole spectrum of potential efforts and tools available for scanning and planning for opportunities that there are available to an entrepreneurial context. The authors relied in their choice of concepts and tools to their own earlier (conceptual and empirical) research (E.g. Vasamo et al., 2016; Saukkonen et al., 2016) as well reviewed widely the scholarly discussion and publications on the subject.

In spite of having to limit the total number of approaches treated in this paper, the main dilemmas related to entrepreneurial firms and time as well as clarity in the choice and implementation of approaches to use became clearly demonstrated.

## 8. Implications

The findings of this research create a relatively wide look at the anticipation (scanning and planning) practices in an organisational context. It seems obvious that there is on general level an abundance of practices, yet same time there are “missing links” in the totality of options in what comes to the main aim of practices, time frame of anticipation and resources usable for the anticipation effort. The classifications

of different tools may serve for an entrepreneur to be able to choose the “correct” (= relevant and realistic) tool/method for the purpose. What is typical to future-oriented research – triangulation a.k.a. multi-method (or mixed method) approach – where more than one method is used in order to improve the results and process itself, is somewhat more complicated issue. Where a research community may look at contrasting findings and methods as a richness and a result itself (or as a spark to a new research), enterprises and entrepreneurs cannot act based on ambiguity, they need a solid and unified process, where either one process is dominating the support of strategic development or – if many processes are run – these process fit together and give meaningful feeds to each other to make the multiple method process workable.

This latter target is – based on the finding of this study – a target that is at the moment a far reach.

## 9. Concluding Observations

The authors of this paper strongly propose additional research on time and entrepreneurship –relationship – research that would not be limited to the futures research community but also have a high input from the strategic, business and project development spheres, as well as from the key actors in business development process - entrepreneurs (and the researchers of them). The search for potential new tools and/or combinations of earlier tools and models should be kept in focus in such effort. The authors themselves aim at developing their own understanding of the phenomenon by case studies among technology- and knowledge-based start-up enterprises as well as mirror those practices against processes and frameworks in established technology/knowledge-intensive firms.

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# What kind of companies are in our scope?

## Start-Ups/New Ventures

2 classical definitions

Eric Ries (2011):

"A start-up is any organization aimed at creating new product or service in the conditions of extreme uncertainty"

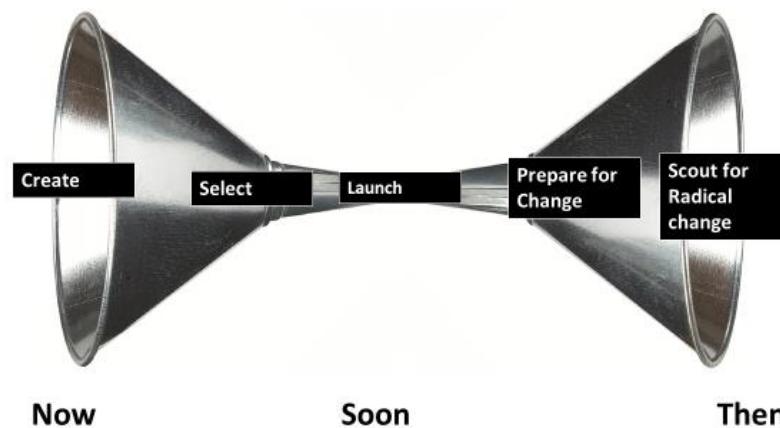
Steve Blank (2010):

" A start-up is a temporary organisation searching for a scalable and repeatable business model. "

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Torn between funnels – what do we mean?



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## How does this show in the practice for a start-up entrepreneur?

**THE CUSTOMER DEVELOPMENT  
[MANIFESTO]**  
A STARTUP IS A TEMPORARY ORGANIZATION DESIGNED TO SEARCH FOR A SCALABLE AND REPEATABLE BUSINESS MODEL.  
There are no facts inside your building, so get outside. Pair Customer Development with Agile Development. Failure is an integral part of the search. If you are afraid to fail you are destined to do so. Iterations/pivots are driven by insight from continuous passion tests. Success begins with buy-in from investors, and co-founders. No business plan survives first contact with customers. Validate hypotheses with customer experiments. [Not all startups are alike]. Agree on Market Type it changes everything. Start-up metrics differ from those in existing companies. Track progress converting hypotheses into fact. Fast & fearless decision-making, cycle time, [speed and tempo]. A startup without driven, passionate people is dead the day it opens. Startup functions/titles are different from companies. Preserve cash while searching for the business model. After it's found, spend. [Communicate & share learning]. Startups demand comfort with uncertainty, chaos and change.

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## The starting postulates

- Time is one of the key resources for any company
  - in addition to finance, human capital, technology, capacity
- Time is a simple concept on the surface – but complex to deal with in business practice
- (Start-up) Entrepreneurs have potential to act smartly with time compared to established companies – agility – but have a lack of processes and knowledge how to do it
- Time lost or wrongly used is different to recapture for entrepreneurial efforts

=> There is need for knowledge about time and for time

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# TO START WITH: THE MAIN DILEMMA

- **"You can't outSLOW your competition "**

- Timo Elliott, SAP  
Chief Innovation Evangelist, Helsinki 15.11.16

⇒ **Need for Speed ?**

- **But you can outSPEED your resources and learning**

- Authors of this paper

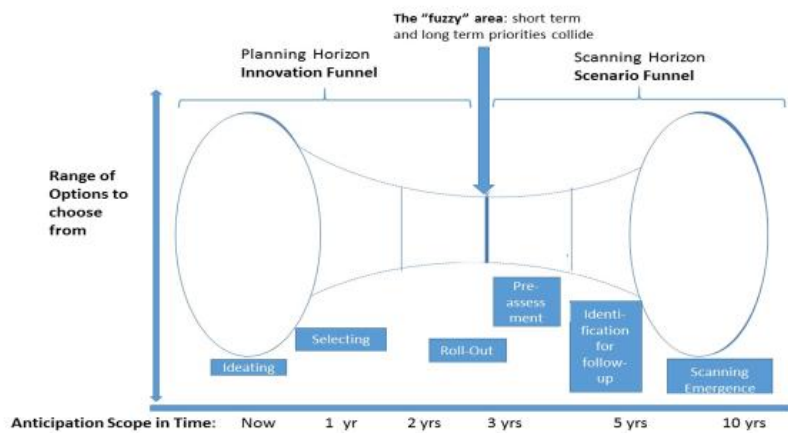
= > **How to outSMART your competition ?**

- via planning and scanning...



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## The time-related schitzofrenia



Processes on-going simultaneously 1) in many timescopes 2) with different tools and individual toolkits jamk.fi

## Some key market data & findings of earlier research (1)

- Shipping your product ½ year too late (to the window of market opportunity) can cost a firm 1/3 of the lifetime profits of the product (Cohen et al., 1996)
- In global industries like automotive, any additional delay day of launching can cost 1 mill USD in profits (Clark et al, 1989)

### **And Now:**

- The clockspeed of industries and markets is increasing (Fine, 1998)  
=> the speed of change is accelerating

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## Some key market data & findings of earlier research (2)

BUT:

- Too fast development – stepping over stages of evolution (a.k.a. inconsistent growth) will affect negatively to market success and odds of getting investment (Marmer et al, 2011)
- If the innovation has a high degree of newness to the firm working on it (internal newness), the high speed of development can be value-destroying (Stanko et al., 2012)

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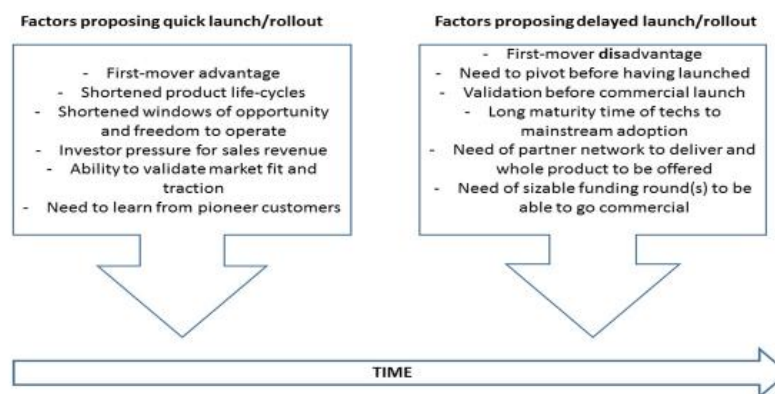
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## Some key market data & findings of earlier research (3)

- Technology is abundant = e.g. Gartner (a leading ICT research and consultancy) says to be following 1600 individual technologies – yet the time of mainstream adoption is long (typically 5-10 years)
  - The exit time = time when the original entrepreneurs and early investors can cash in the growth (NCVA reports) has grown to 7 years
- ⇒The company and its technologies yielding products and services never settles
- ⇒Companies need to master constant and even radical and cannibalizing changes

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## The forces tearing an entrepreneur



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## Present methods in use for different stages

- Scenarios
- Technology Radar
- Radical Technology Inquirer
- Lean Start-up
- Open Innovation
- Design Thinking
- Roadmapping
- SCRUM –development

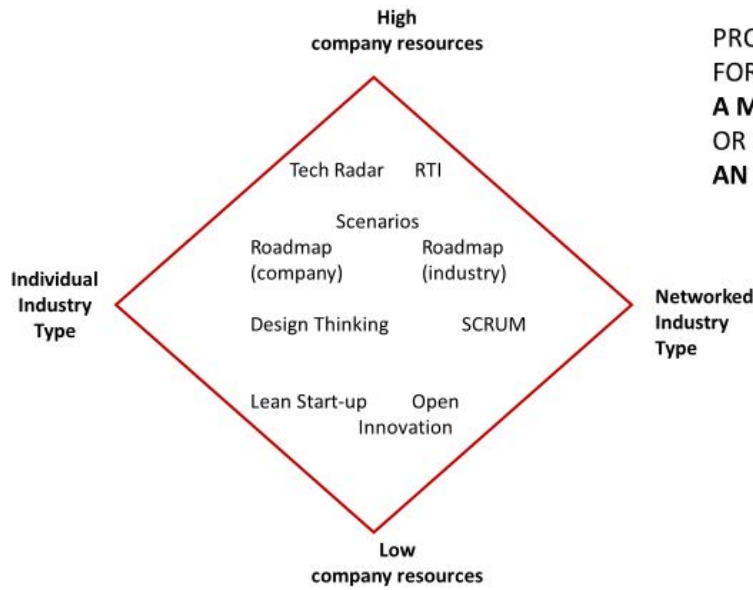
.. With a low degree of integration to each other...

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## Present aid in selecting the fitting methods?

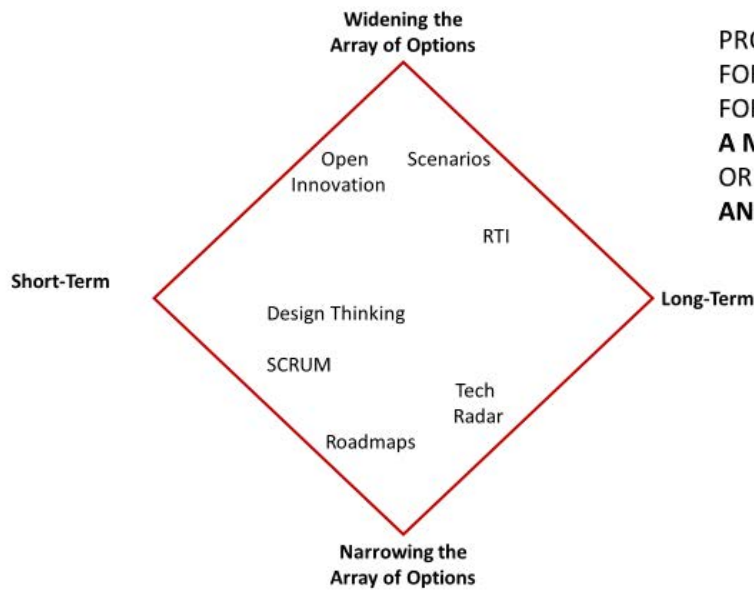


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PROPOSAL (1)  
FOR A TOOL FOR CHOOSING  
**A METHOD**  
OR  
**AN ANTICIPATION MIX**

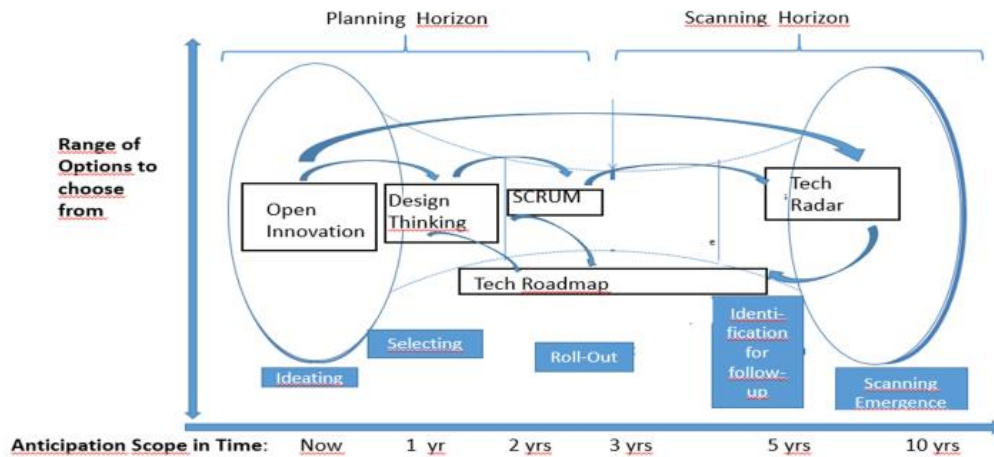
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PROPOSAL (2)  
FOR A TOOL  
FOR CHOOSING  
**A METHOD**  
OR  
**AN ANTICIPATION MIX**

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## HOW TO MAKE THE METHODS TO "MEET & FEED" EACH OTHER



## The road ahead

### For The authors of this paper:

- Want to learn more of the phenomenon by studying **cases** of various industries and companies: does the framework offer an **ease for the choice** of methods
- Will apply **method combination(s)** in real-life cases to study more their **complementary vs. supplementary nature**
- Work on in developing the concept of "**anticipation mix**"

### The Scientific and entrepreneurial community

- To Join us (the authors) to turn the gained knowledge into action – with both conceptual and pragmatic goals in mind

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TO CONCLUDE:

**Fast-paced  
Environment and Operations**

need

**Fast-paced solutions  
to make right  
Short & long-term decisions**

**We need them soon !**

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# **The Mediating Effect of Organisational Climate on the Relationship between Leadership Styles and Their Components on Innovative Behaviour**

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*Keywords: Leadership Style; Transformational Leadership; Transactional Leadership; Organisational Climate, Innovative Behaviour; Mediation.*

## **Abstract**

This study investigated the mediating effect of organisational climate on the relationship between transformational and transactional leadership styles on innovative behaviour. The effect of each component of transformational and transactional leadership styles on innovative behaviour was also investigated. A sample of 3 180 respondents from 52 South African companies participated in this research. Four main hypotheses and six sub-hypotheses were tested using multiple regression analysis. The results revealed that indeed organisational climate mediates the relationship between transformational and transactional leadership styles on innovative behaviour as well as their components. The study substantiated the expected positive relationship between transformational leadership style and innovative behaviour. Furthermore, the results showed that among the components of transformational leadership styles, inspirational motivation and intellectual stimulation influence innovative behaviour positively. In contrast to prior studies, this study showed that in an environment conducive to innovation, the transactional leadership style has no influence in enhancing employees' innovative behaviour. This study provided new insight into the nature of the relationship between leadership styles, organisational climates and innovative behaviour.

## **Introduction**

An effective innovation strategy can only be attained only if a strong climate for innovation exists (Sethibe & Steyn, 2016a). The literature shows that innovation has been identified as one of the key drivers of companies' performance and sustainable competitive advantage (Adegoke, Walumbwa and Myers, 2012). For instance, a survey of 600 global business leaders and professionals identified leadership as the best predictor of innovation performance (Barsh, Capozzi and Davidson, 2008). Above all, there is consensus among scholars that transformational and transactional leadership styles are significantly and positively associated with innovative behaviour (Paulsen, Callan, Ayoko and Saunders, 2013; Khan, Aslam and Riaz, 2012). Of the two styles of leadership, transformational leadership is held to be the most effective in enhancing innovative behaviour (Mokhber, Ismail and Vakilbashi, 2015). However, despite this agreement among scholars, some have argued that little has been done to understand the nature of this relationship (García-Morales, Matías-Reche and Hurtado-Torres, 2008; Jung, Chow and Wu, 2003; Oke, Munshi and Walumbwa, 2009). Decades ago, Avolio, Bass and Jung (1995) discovered four key components of transformational leadership: idealised influence, inspirational motivation, intellectual stimulation and idealised consideration. Furthermore, they described two key components of transactional leadership style: contingency reward and management-by-exception. Despite the importance of these classifications, few studies are designed to take into account the effect of these components when investigating the relationship between leadership style and innovation (Mokhber *et al.*, 2015). Even more importantly, very few studies exist in the literature relating to how organisational climate influences the relationship between leadership style and their components, and innovative behaviour.

Therefore, this study is designed to present a better understanding of the mediating effects of organisational climate on the relationship between transformational and transactional leadership styles and their components on innovative behaviour.

## Literature Review and Hypothesis Development

### Transformational and Transactional Leadership styles

In transformational leadership theory, the influence of a transformational leader is based on the logical result of a complex cluster of behaviour and techniques (Swanepoel, Erasmus, Wyk and Schenk, 2003). As such, a transformational leader should, by nature, appeal to the moral values of followers and by extension raise their consciousness about ethical issues (Yulk, 2010). It is in this context that **Avolio, et al. (1995) categorised transformational leadership into** four categories to manage individuals: idealised influence or charisma, motivational inspiration, intellectual stimulation and individual consideration. According to Mokhber, *et al.* (2015), leaders with idealised influence and charisma demonstrate loyalty to important values and principles while paying attention to followers' basic needs. With motivational inspiration, leaders articulate the vision of the organisation to followers in a manner that appeals to them (**Avolio et al., 1995**). Intellectual stimulation involves presenting new ideas to followers and challenging them to think critically, without criticising them when they make mistakes, but instead encouraging them to use their intuition, as well as logic, when dealing with issues (Bass and Avolio, 1990). Finally, with individualised consideration, leaders give personal attention to followers by focusing on their needs. This includes mentoring, coaching, providing opportunities for learning and creating a climate that is supportive for followers to grow (Oke *et al.*, 2009).

On the other hand, a transactional leader rewards or disciplines followers, depending on the adequacy of their performance (Yukl, 2010). In other words, a transactional leadership style emphasises that the focus should be on an individual's self-interest (Golla and Johnson, 2013; Yukl, 2010). In transactional leadership theory, compensation is the motivating factor for employees. It is in this context that **Avolio, et al. (1995)** divided transformational leadership into two components, namely, contingency reward and management-by-exception. Although rewarding employees for good performance is encouraged, Hickey (2011), correctly warned leaders against cultivating power through material exchange. In the contingency reward theory, subordinates are rewarded for completing the task or achieving a certain level of performance. In the management-by-exception theory, subordinates are disciplined when they are not performing well (Bass, 1999). Discipline can occur as a result of active or passive management-by-exception (Odumeru and Ifeanyi, 2013). In other words, a leader can continually monitor followers' performance and make changes when there is deviation from the rules and regulations and can even take corrective measures where necessary (Chaudhry and Javed, 2012). Similarly, a leader can wait for issues to arise before addressing them (Odumeru and Ifeanyi, 2013).

### Organisational climate

According to Ngo (2015), the term "climate" refers to a contextual situation at a given time and its association with the thoughts, feelings and behaviour of the individual. At the organisational level, climate refers to the perceptions, feelings and values of staff regarding their workplace (Kazemi, Moghadam and Soheili, 2012). In a broader context and more specific to innovation, Van der Vegt, Van de Vliert and Huang (2005) defined climate for innovation as a perception regarding the practices, procedures and behaviours that promote the generation of new knowledge and practices. This includes the degree to which management encourages employees to try new things and take risks without fear of prejudice (Choi, Moon and Ko, 2013).

### Innovative behaviour

Innovative behaviour is the application or implementation of novel ideas in a work role (Slatten, Svensson and Svaeri, 2011). In other words, innovative behaviour can be seen as the production or adoption of new and useful ideas, processes, products or procedures within a work role, group or even an organisation (De Jong and Den Hertod, 2007). It is important to note that this production or adoption of new and useful ideas is a multistage process of problem recognition (June and Kheng, 2014). As such, innovative employees

are those who are consistently searching for and promoting new ideas with the aim of ultimately transforming those novel ideas into commercial product (Singh and Sarkar, 2012).

### **Leadership style, organisational climate and innovative behaviour**

Although the literature abounds with studies that investigate the relationship between leadership, organisational climate and innovation, most studies are fragmented, with some studies investigating leadership and innovation on the one hand, while others focus on organisational climate and innovation on the other hand.

In an attempt to narrow this gap, Noor and Dzulkifli (2013) analysed the mediating effect of organisational climate on the relationship between leadership practice and innovative work behaviour. Data was collected from research and development scientists in public agriculture agencies in Malaysia and the results revealed a significant relationship between organisational climate and innovative work behaviour. Interestingly, the study found no relationship between leadership practice and innovative work behaviour.

Similarly, Jaiswal and Dhar (2015) investigated the mediating role of innovation climate on the relationship between transformational leadership style and employee creativity using data including a dyad of 372 employees and their immediate supervisor, representing 18 tourist hotels in India. The results indicated that transformational leaders can foster a climate for innovation that promotes creativity, but the relationship between innovation climate and employee creativity is mediated by self-efficacy. In another study using data collected from 52 companies in Tunisia, Moussa (2014), analysed the effect of leadership and individual creativity on the creative climate of an organisation. Results showed that innovation was largely conditioned by the creative organisational climate.

Although the aforementioned studies provide a better understanding of the nature of the relationship between leadership, organisational climate and innovation, none of them investigated the effects of components of leadership styles on the relationship between these constructs. Using a sample of 219 managers from 63 Iranian companies, Mokhber, *et al.* (2015) tried to expand on the understanding of the relationship between these constructs by investigating the relationship between transformational leadership and organisational innovation and the effects of components of the transformational leadership style. The results revealed that among the five components of transformational leadership, only attributive charisma, inspirational motivation and intellectual stimulation contributed positively to organisational innovation. Expanding on the aforementioned study, Sethibe and Steyn (2016b) examined the effects of transformational and transactional leadership styles and each component of transformational and transactional leadership styles on innovative behaviour. The results showed that only inspirational motivation, intellectual stimulation and contingent reward were positively and significantly related to innovative behaviour. Therefore, for this study, the following hypotheses were proposed:

*H1: Transformational leadership has a positive relationship with innovative behaviour.*

Subsequently, the following sub-hypotheses emerged from the abovementioned hypothesis.

*H1a: Idealised influence has a positive relationship with innovative behaviour.*

*H1b: Inspirational motivation has a positive relationship with innovative behaviour.*

*H1c: Intellectual stimulation has a positive relationship with innovative behaviour.*

*H1d: Individual consideration has a positive relationship with innovative behaviour.*

*H2: Transactional leadership has a positive relationship with innovative behaviour.*

Similarly, the following sub-hypotheses emerged from the abovementioned hypothesis.

*H2a: Contingent reward has a positive relationship with innovative behaviour.*

*H2b: Management-by-exception has a positive relationship with innovative behaviour.*

*H3: Organisational climate mediates the relationship between transformational leadership and innovative behaviour.*

Subsequently, the following sub-hypotheses emerged from the abovementioned hypothesis.

*H3a: Organisational climate mediates the relationship between idealised influence and innovative behaviour.*

*H3b: Organisational climate mediates the relationship between inspirational motivation and innovative behaviour.*

*H3c: Organisational climate mediates the relationship between intellectual stimulation and innovative behaviour.*

*H3d: Organisational climate mediates the relationship between individual consideration and innovative behaviour.*

*H4: Organisational climate mediates the relationship between transactional leadership and innovative behaviour.*

Similarly, the following sub-hypotheses emerged from the abovementioned hypothesis.

*H4a: Organisational climate mediates the relationship between contingent reward and innovative behaviour.*

*H4b: Organisational climate mediates the relationship between management-by-exception and innovative behaviour.*

## **Method**

This section commences with a description of the sampling and the method used to collect data, followed by a brief description of the instruments used to measure leadership styles, organisational climate and innovative behaviour constructs. The section concludes with a brief description of how the data was analysed.

### **Sample and data collection**

The study employed a quantitative research design strategy using data collected manually in South Africa using a survey technique. Following this strategy, 3 180 completed questionnaires were obtained, representative of 52 companies. In total, 55.7% respondents reported that they were male, compared to 43.1% reporting that they were female (missing data = 1.2%). Top management represented 5.1% of the respondents, 70.8% represented a wide range of middle management and professionals (e.g. specialists, skilled technical and academically qualified workers, junior management and supervisors) and 23% represented semi-skilled and unskilled workers. With regard to race, 8.3% were Asian, 58.4% black, 8.4% coloured, and 24.6% white (missing data = 0.3%). Ages ranged between 20 and 72, with an average of 37.80 (Standard Deviation (SD) = 9.11). The average working period of a participant in the organisation was 8.39 years (SD = 7.47). Sixty-nine per cent had a diploma/bachelor's degree or higher, 25% had matric and 4% had less than 12 years' schooling.

### **Instruments and measures**

The Multifactor Leadership Questionnaire (MLQ-FORM 6S) developed by Avolio, Bass and Jung (1995), was grouped into six factors, four representing transformational leadership (idealised influence, inspirational motivation, intellectual stimulation and individual consideration) and two were constructs for transactional leadership (contingent reward and management-by-exception). This questionnaire was used to measure leadership styles. The alpha value for MLQ was 0.83 and for the subscales it was 0.94 and 0.83 for transformational and transactional respectively.

Eight-item custom questionnaires on innovative behaviour were developed to assess the extent to which individuals characterise the ideas they generate at work. The alpha value for innovative behaviour was 0.85. With regard to organisational climate, a Corporate Entrepreneurship Assessment Instrument (CEAI) developed by Hornsby, Kuratko and Zahra (2002) was used. This instrument measures five constructs, namely, the level of management support, work discretion/autonomy, rewards/reinforcement, time availability and organisational boundaries. The alpha value for CEAI was 0.76.

### **Data analysis**

The statistics software IBM SPSS 22.0 was used to perform descriptive statistics, correlations and regression analysis. The results of the analysis are presented in the next section.

## Analysis and Results

This section begins by presenting the results of the descriptive statistics and correlation matrix, followed immediately by the results of multiple linear regression analysis.

### Descriptive statistics and correlation

In total, 10 constructs are included in this article. These include innovative behaviour and organisational climate constructs and two leadership style constructs, namely, transformational and transactional leadership, with their components as sub-constructs. Table 1 presents the means, standard deviations (SD) and Cronbach's Alpha of constructs included in the study.

Table 1. Means, standard deviations and Cronbach's Alpha

	Mean	SD	Alpha
Innovative Behaviour (IB)	30.3715	3.70360	0.85
Organisational Climate (OC)	65.7431	9.32065	0.76
Transformational Leadership (TFL)	2.5161	.97203	0.94
• Idealised Influence (TFL-II)	7.8191	3.15951	0.83
• Inspirational Motivation (TFL-IM)	7.7399	3.08277	0.84
• Intellectual Stimulation (TFL-IS)	7.4185	3.14007	0.83
• Individual Consideration (TFL-IC)	7.2087	3.27732	0.80
Transactional Leadership (TSL)	2.5088	0.89996	0.83
• Contingent Reward (TSL-CR)	6.8327	3.37904	0.82
• Management-by-Exception (TSL-ME)	8.2203	2.52896	0.58

### Regression analysis

All hypotheses and sub-hypotheses were tested using multiple regression analysis: the results are presented in Table 2. In general, the hypotheses are supported if the standardised beta coefficient has a positive sign and is significant.

Table 2. Results of linear regression analysis

	Innovative Behaviour (IB)				Innovative Behaviour (IB)			
	Model 1		Model 2		Model 3		Model 4	
	Beta	t	Beta	t	Beta	t	Beta	t
<i>Transformational Leadership</i>	0.178**	5.509	-	-	0.121**	3.781	-	-
Idealised Influence	-	-	-0.198**	-6.375	-	-	-0.198**	-6.475
Inspirational Motivation	-	-	0.146**	3.723	-	-	0.105**	2.700
Intellectual Stimulation	-	-	0.231**	6.545	-	-	0.219**	6.307
Individual Consideration	-	-	-0.004	-0.121	-	-	0.00	-0.001
<i>Transactional Leadership</i>	0.081*	2.532	-	-	0.031*	0.970	-	-
Contingent Reward	-	-	0.110**	3.384	-	-	0.055	1.699
Management-by-Exception	-	-	-0.019	-0.760	-	-	-0.022	-0.919
<i>Organisational Climate (OC)</i>	-	-	-	-	0.215**	11.127	0.204**	10.573
R <sup>2</sup>	0.063		0.092		0.099 Δ R <sup>2</sup> = 0.036		0.123 Δ R <sup>2</sup> = 0.031	
Adjusted R <sup>2</sup>	0.062		0.090		0.098 Δ Adjusted R <sup>2</sup> = 0.036		0.121 Δ Adjusted R <sup>2</sup> = 0.031	

\*\* $p < 0.01$ ; \* $p < 0.05$

The results of hypotheses H1 and H2 are presented in Model 1 (see Table 2). H1 expected transformational leadership style to have a positive effect on innovative behaviour. In support of the hypothesis, the beta coefficient for transformational leadership style and innovative behaviour showed a significant positive impact ( $\beta = 0.178$ ,  $p < 0.01$ ), indicating that there is a strong positive relationship between transformational leadership style and innovative behaviour. Similarly, H2 predicted that a transactional leadership style would have a positive effect on innovative behaviour. This hypothesis is supported ( $\beta = 0.081$ ,  $p < 0.05$ ). Although both transformational and transactional leadership styles have a positive effect on innovative behaviour, the results show that the transformational leadership style has a higher impact on employees' innovative behaviour than the transactional leadership style.

In Table 2, the results of sub-hypotheses H1a, H1b, H1c, H1d, H2a and H2b are presented in Model 2. Sub-hypotheses H1a, H1b, H1c and H1d tested a positive influence of each component of transformational leadership, namely, idealised influence, inspirational motivation, intellectual stimulation and individual consideration on innovative behaviour. Sub-hypotheses H1b and H1c are supported. The results show that intellectual stimulation has the highest influential factor on employees' innovative behaviour ( $\beta = 0.231$ ,  $p < 0.01$ ). It is important to note that when hypothesis H1a was tested, the results showed a negative and significant relationship between idealised influence and innovative behaviour ( $\beta = -0.198$ ,  $p < 0.01$ ), but when H1d was tested, no significant relationship was found between individual consideration and innovative behaviour ( $p > 0.05$ ). When the components of transactional leadership were tested, the results revealed contingent reward as the only factor that influences innovative behaviour ( $\beta = 0.110$ ,  $p < 0.01$ ). No relationship was found between management-by-exception and innovative behaviour ( $p > 0.05$ ). Therefore, sub-hypothesis H2a is supported and sub-hypothesis H2b is rejected.

In Model 3 (presented in Table 2), the results of hypotheses H3 and H4 are presented. H3 claimed that organisational climate mediates the relationship between transformational leadership style and innovative behaviour. This hypothesis is supported ( $\beta = 0.121$ ,  $\Delta R^2 = 0.036$ ,  $p < 0.01$ ). H4 asserted that organisational climate mediates the relationship between transactional leadership style and innovative behaviour and the hypothesis was also supported ( $\beta = 0.031$ ,  $\Delta R^2 = 0.036$ ,  $p < 0.01$ ). Furthermore, the results reveal that organisational climate reveals a slightly higher impact factor than transformational leadership style on employees' innovative behaviour. It is important to note that when organisational climate is added into the model, the results show that transformational leadership style was not significantly related to innovative behaviour.

Finally, Model 4 (in Table 2) presents the results for sub-hypotheses H3a, H3b, H3c, H3d, H4a and H4b. Sub-hypotheses H3a, H3b, H3c and H3d tested the mediating effect of organisational climate on each component of transformational leadership, namely, idealised influence, inspirational motivation, intellectual stimulation and individual consideration on employees' perceived innovative behaviour. The results show that sub-hypotheses H3b, H3c and H3d are supported, but Model 4 indicates that when H3a was tested, the results showed that adding organisational climate had no effect on the relationship between idealised influence and innovative behaviour ( $\beta = -0.198$ ,  $p < 0.01$ ). Sub-hypotheses H4a and H4b tested the mediating effect of organisational climate on each component of transactional leadership, namely contingent reward and management-by-exception, on innovative behaviour. Similarly, the results show that indeed sub-hypotheses H4a and H4b are supported. Interestingly, when organisational climate is added into the model, contingent reward is not significant any more. This suggests that contingent reward plays a minor role in influencing innovative behaviour.

In general, the overall results reveal that organisational climate mediates the relationship between transformational and transactional leadership style and innovative behaviour. In particular, the results showed that, in fact, organisational climate has more impact on innovative behaviour than either transformational or transactional leadership style.

## Discussion

This study explored how organisational climate mediates the relationship between transformational and transactional leadership styles and their components on innovative behaviour. As in previous studies, the results revealed that both transformational and transactional leadership have a positive impact on innovative

behaviour, but this relationship is mediated by organisational climate (Moussa, 2014; Jaiswal and Dhar, 2015).

When individual components were tested, the results showed that almost all components are influenced by the inclusion of organisational climate. Notably, contingent reward becomes insignificant when organisational climate is added into the model. Prior research indicated that employee creativity is mediated by self-efficacy (Jaiswal and Dhar, 2015). The study extends this view by providing evidence that the combination of management support, work discretion/autonomy, rewards/reinforcement, time availability and organisational boundaries are more important to foster employees' innovative behaviour than simply rewarding employees for completing their task as a technique in isolation. On the contrary, the results showed that idealised influence remained unchanged when organisational climate is added into the model. This finding suggests that the leader's influence on employees' innovative behaviour is not influenced by climate within the organisation.

When the impact of each construct is assessed individually, the results reveal that intellectual stimulation contributes most to an employees' innovative behaviour, followed by organisational climate. This provides evidence that leaders who are encouraging their subordinates to be more creative in finding solutions (even if the proposed solution might appear to be risky) are more likely to succeed in fostering innovativeness in the organisation. In addition, this finding supports prior studies that demonstrated that innovation by nature is largely conditioned by the creative organisational climate (Moussa, 2014). In both instances (see Models 2 and 4), individual consideration and management-by-exception are insignificant. These results suggest that in general, paying special attention to subordinates, or monitoring and taking action when they are not performing, has no impact on employees' innovative behaviour, even if a conducive environment for innovation exists.

Overall, the results suggest that if the goal of the organisation is to improve employees' innovative behaviour, then the leader should begin by firstly creating an environment that is conducive for innovation by recognising risk-takers for their willingness to champion new projects, whether eventually successful or not (organisational climate and intellectual stimulation). This should be followed by articulating a vision of the organisation to subordinates in a manner that appeals to them (idealised influence and motivational inspiration).

## Conclusion

An investigation was done into the nature of the relationship between transformational and transactional styles, organisational climate and innovative behaviour to better understand how organisational climate mediates the relationship between leadership styles and their components, and innovative behaviour. From the theoretical perspective, the results of this study highlight the importance of including organisational climate when investigating the relationship between leadership style and innovative behaviour. When the relationship between transformational leadership and its components and innovative behaviour was examined, the results were very similar to those of the study conducted by Mokhber, *et al.* (2015). The results for both studies showed that inspirational motivation and intellectual stimulation were significantly positively related to innovative behaviour, whereas idealised influence revealed a negative relationship and no relationship was found between individualised consideration and innovation.

However, despite the strong similarities between these studies, this study went further, demonstrating that intellectual stimulation is the most essential component of transformational leadership in enhancing innovative behaviour. In addition, this study showed that from the components of transactional leadership style, only contingent reward is effective in enhancing innovative behaviour. It was also found that management-by-exception had no influence on innovative behaviour. Unsurprisingly, the study demonstrated that organisational climate mediates the relationship between both style of leadership and innovative behaviour. When each component of leadership style was examined, the study revealed that the most significant component that is mediated by organisational climate is contingent reward. In Model 2, the results revealed a positive and significant relationship between contingent reward and innovative behaviour. In contrast, Model 4 revealed that when organisational climate is added, contingent reward has no significant impact on innovative behaviour.

The conclusion that can be drawn from the above synthesis is twofold: firstly, the results suggest that if the aim is to improve innovative behaviour within the organisation, then the leader should adopt a transformational leadership style, but most of the energy should be channelled towards the elements of intellectual stimulation and inspirational motivation. Secondly and most importantly, the results demonstrated that the most effective mechanism to improve innovative behaviour is the creation of an environment conducive for innovation. In other words, the conclusion drawn from this study is that employees' innovative behaviour can only be effectively achieved when there is an environment favourable for innovation.

The contribution of this study is the establishment of the mediating effects of organisational climate on the link between components of transformational and transactional leadership styles and innovative behaviour. In particular, the study has made possible a better understanding of how transformational leadership style and its components influence innovative behaviour, particularly when an environment conducive to innovation already exists.

Based on the outcome of this research and the ensuing conclusion, this study provided evidence that the argument presented in the introduction that “*an effective innovation strategy can only be attained only if a strong climate for innovation exists*” is valid, sound and justifiable.

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**The mediating effect of organisational climate on the relationship between leadership styles and their components on innovative behaviour**

**Tebogo Sethibe  
and  
Renier Steyn**

**15th International Entrepreneurship Forum  
(15<sup>TH</sup> IEF) Conference**



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## Outline

- Innovation
- Innovative Behaviour
- Antecedents of innovative behaviour
- Leadership and Organisational Climate
- Literature Review
- Objective of the study
- Research Methodology
- Results
- Conclusion
- Managerial Implication
- Recommendation for Future Research



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# Innovation – what is it?

Process whereby an **invention** is **transformed** into a **commercial product** that can be sold profitably  
(Crawford & Di Benedetto, 2006)

Development of ideas and modification of these ideas to promote the **long-term survival** of the organisation  
(Mozhdeh, Wan, & Amin, 2011 )

Innovation is the management of all the activities involved in the process of **idea generation**, technology development, manufacturing and marketing of the **new or improved** product, process or equipment  
(Trott, 2012)



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# Innovative Behaviour

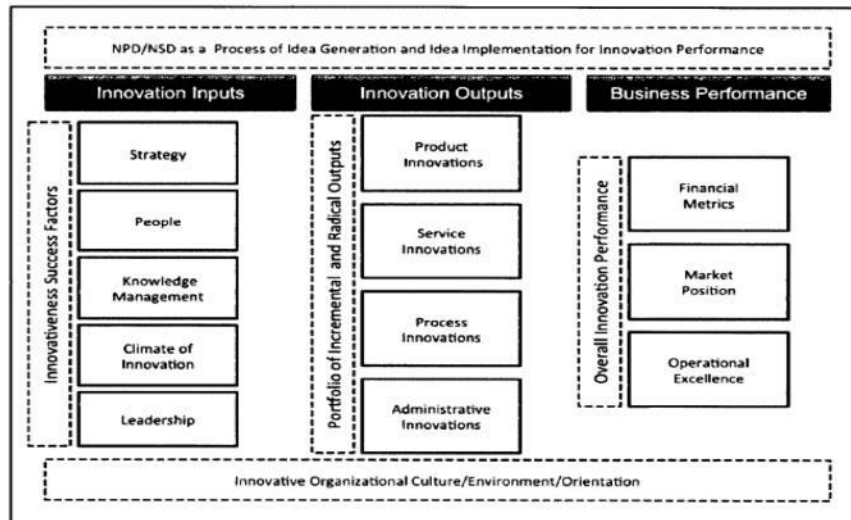
Innovative behaviour is the production or adoption of **new** and **useful** ideas, processes, products or procedures within a work role, group or organisation  
(De Jong and Den Hartog, 2007)

Innovative behaviour is a **multistage process** of problem recognition, the **generation** of ideas and solutions, building support for ideas and **idea implementation** (June and Kheng, 2014)



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# Antecedents of Innovative Behaviour



Source: Sipe (2013)



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# Leadership Styles

## Transformational Leadership

- Idealised Influence
- Motivational Inspiration
- Intellectual Stimulation
- Individual consideration

## Transactional Leadership

- Contingent Reward
- Management-by-Exception

Source: Avolio (1995)



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# Organisational Climate

Contextual situation at a given time and its association with the thoughts, feelings and behaviour of the individual

(Kazemi, Moghadam & Soheli, 2012)

## Climate for Innovation

Perception regarding the practices, procedures and behaviours that promote the generation of new knowledge and practices

(Van der Vegt, Van de Vliert & Huang, 2005)



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# Literature Review

## **Leadership Style, Organisational Climate (OC) & Innovative Behaviour (IB)**

*Author: Dhar (2015)*

Aim: Mediating effect of OC on Transformational Leadership and IB (

Results: TL foster OC; OC promote IB, but this relationship is mediated by self efficacy

*Author: Mokhber, Ismail and Vakilbashi (2015)*

Aim: Transformational Leadership and its components on Innovation

Results: Only Inspirational Motivation & Intellectual Stimulation lead to IB



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## Objective of the study

Mediating effects of **Organisational Climate** on the relationship between **Transformational and Transactional Leadership Styles** and their **Components on Innovative Behaviour**



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## Research Methodology

Research Design: Quantitative

Sample & Data Collection:

3180 Respondents from 52 Companies

Instruments:

Leadership Style: MLQ 6S

Organizational Climate: CEAI

Innovative Behaviour: Custom



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# Results

## Regression Model

	Innovative Behaviour (IB)				Innovative Behaviour (IB)			
	Model 1		Model 2		Model 3		Model 4	
	Beta	t	Beta	t	Beta	t	Beta	t
<b>Transformational Leadership</b>	0.178**	5.509	-	-	0.121**	3.781	-	-
<b>Idealised Influence</b>	-	-	-0.198**	-6.375	-	-	-0.198**	-6.475
<b>Inspirational Motivation</b>	-	-	0.146**	3.723	-	-	0.105**	2.700
<b>Intellectual Stimulation</b>	-	-	0.231**	6.545	-	-	0.219**	6.307
<b>Individual Consideration</b>	-	-	-0.004	-0.121	-	-	0.00	-0.001
<b>Transactional Leadership</b>	0.081*	2.532	-	-	0.031	0.970	-	-
<b>Contingent Reward</b>	-	-	0.110**	3.384	-	-	0.055	1.699
<b>Management-by-Exception</b>	-	-	-0.019	-0.760	-	-	-0.022	-0.919
<b>Organisational Climate(OC)</b>	-	-	-	-	0.215**	11.127	0.204**	10.573
<b>R<sup>2</sup></b>	0.063		0.092		0.099 Δ R <sup>2</sup> = 0.036		0.123 Δ R <sup>2</sup> = 0.031	
<b>Adjusted R<sup>2</sup></b>	0.062		0.090		0.098 Δ Adjusted R <sup>2</sup> = 0.036		0.121 Δ Adjusted R <sup>2</sup> = 0.031	

# Conclusion

The study substantiated the findings of prior studies that transformational leadership is very effective in enhancing employees innovative Behaviour, but showed that not all components of transformational leadership are effective

Transactional leadership style can be enabler of innovative behavior, in particularly contingent reward, but only when there is no climate which is conducive to innovation

Finally, the study provided evidence that an effective innovation strategy can be attained only if a strong climate for innovation exist



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## Managerial Implication

Leadership (in particular transformational leaders) plays an important role in fostering innovative behaviour in the organisation

If the aim is to improve innovation in the organisation, creating climate conducive for innovation should be the starting point



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## Recommendation for future research

Future studies should consider focusing on other leadership styles (Authentic, LMX, etc.)

Future studies should consider analysing the dimensions of organisational climate to provide a better understanding on the relationship of these strategic constructs



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# Concluding Remarks

Innovation is a business imperative

Innovation must be encouraged, managed, and incentivized



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Thank you

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## Entrepreneurship Skills for Teams Leading

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Keywords: *Skills, Higher Education, Entrepreneurship, Leadership, Teams.*

### Abstract

This article analyses the concept of skills and also investigates the skills needed by entrepreneurs in order to lead the teams they work with. The relevance of this research is based on the approach to theories of skills development and the main purpose is to identify the skills developed by the students from entrepreneurship and innovation classes and compare it to the skills needed by the entrepreneurs to be effective leaders.

The leadership skills needed by the entrepreneurs were identified through content analysis of two focus group with 15 entrepreneurs. In order to verify if these skills are being developed in the entrepreneurship and innovation classes from the higher education courses, a survey online was conducted with the students from the 3rd year from 2014/2015 academic year of several universities. The final output of the research will be a proposal of a model of leadership skills development for entrepreneurs.

The research problem is anchored to the following research questions: What were the leadership skills identified in the focus groups? What were the level of leadership skills development in the higher education courses? What were the relationships between the perceived leadership skills development and various factors such as gender, employed/unemployed, type of organization and job variables? and What are the lessons learnt in order to propose a model to develop leadership skills in higher education entrepreneurship and innovation courses? In order for entrepreneurs perform an effective leadership to their teams.

### 1. Introduction

This article briefly explores the concept of skills and leadership and also the entrepreneurial concept, followed by the presentation of the methodology that was used as the basis for the leadership skills identification and also in the university entrepreneurship and innovation courses context and concludes with the research findings.

As a first step this study contributes with the identification of another possible source of differences: the work position occupied by students and their different perception of how much the courses develop the required skills by industry. Firstly, this article briefly explores the concept of skills, followed by the presentation of the methodology that was used as the basis for the skills identification in the industry. After that, a sample of students was consulted through the application of a survey asking them about their perception of the level of development of these skills in those courses.

The main objective of this research was to identify leadership skills that entrepreneurs need to develop and make recommendations for the higher education entrepreneurship and innovation courses. The identification and development of leadership skills on potential entrepreneurs are a challenging task for the universities. In the context of this article the focus will be in the identification of sets of skills associated to leadership and suggest their development in higher education context. This are skills that need to be integrated in the entrepreneurship and innovation courses in higher education context and this research tries to analyses if the skills identified by the entrepreneurs as fundamental for an effective leadership of teams are being developed by the universities.

### 2. Literature Overview

## Skills concept

In the 80s the concept of skills starts to have a big importance due to technological, organizational, and economic factors. It begins to be considered as a resource – of individual and organizational nature – which would allow competitiveness and productivity advantages to companies.

Historically, the word *skills* have been used to refer individual characteristics. However, in the concept of Prochno (2001), although the skills always refer to the individual, all of them have two dimensions, the individual and the collective (organizational).

In this way, the concept of skills assumes a rather large scope which makes it complex and makes its comprehension/understanding and concept delimitation difficult.

The concept has been studied by several authors as Mulder (2000; 2001) and previous by Norris, (1991) and Ellström, (1997). Skills development prevails as a research issue in higher education dominion because is the main goal to be achieved by the students. Skills development is perceived as a strategic management tool to cope with the current business environment (Nyhan, 1998), mainly because of the market has changed from one of mass production to one of customization where quality, price, and speed of delivery are stressed. This change has brought about new circumstances in which many organisations struggle to cope: new and emerging customer segments, cultural diversity in a global marketplace, market volatility, raised customer expectations about quality of products and services, and the impact of the internet on an organisation's core business (Markowitsch et al., 2001). In the job market there has been a growth in higher-level jobs such as managerial and professional positions that require flexibility and problem-solving skills.

## Leading teams

In reviewing the literature general management literature considers leadership a success factor in organisations and that specific leadership style can lead to better performance.

In this paper context it is important to analyses the leadership styles identified by the most relevant schools of thought and also the main authors.

According to Levin there are three major leadership styles (Lewin et al., 1939):

Autocratic leaders, make decisions without consulting their team members. This can be appropriate when decisions need to be made quickly, when there's no need for team input, and when team agreement isn't necessary for an outcome. However, this style can lead to high levels of absenteeism and staff turnover.

Democratic leaders, make the final decision, but they include team members in the decision-making process. They encourage creativity and employees are often highly engaged in projects and decisions. As a result, team members tend to have high job satisfaction and high productivity.

Laissez-faire, leaders give their team members a lot of freedom to do their work, and to set their deadlines. They provide support with resources and advice if needed, but otherwise they don't get involved. This autonomy can lead to high job satisfaction, but it can be difficult if team members don't have knowledge, skills, or self-motivation to do their work effectively.

The contingency school (Fiedler, 1967; House, 1971; Krech et al., 1962; Robbins, 1997; Kirkpatrick, 1991; Adair, 1983) suggest that what makes an effective leader would depend on the situation. They tend to follow the same pattern:

1. Assess the characteristics of the leader;
2. Evaluate the situation in terms of key contingency variables;
3. Seek a match between the leader and the situation.

This theory exhorts the idea that the leader need to help the team in order to find the path to their goals and help them in that process. Path-goal theory identifies four leadership behaviours:

- Directive leaders
- Supportive leaders
- Participative leaders
- Achievement-oriented leaders

In more recent studies, Kirkpatrick & Locke identified the following personality characteristics of leaders (Kirkpatrick & Locke, 1991):

- Drive and ambition
- The desire to lead and influence others
- Honesty and integrity
- Self-confidence
- Intelligence
- Technical knowledge

The behavioural school also assumed that effective leaders adopt certain styles (Adair, 1983; Blake et al, 1982; Hersey & Blanchard, 1988), especially the ones studied in theory X and theory Y (Bass, 1990):

Theory X managers believe that the average employee has an inherent dislike of work and will avoid it if possible. Because of this, most employees must be coerced, controlled, directed, or threatened with punishment to get them to put adequate effort to achieve organizational objectives, they avoid responsibilities and have relatively little ambition.

Theory Y managers believe that the expenditure of physical and mental effort in work is something natural, and the average employees, under proper conditions, learns not only to accept but to seek responsibility. Employees will exercise self-direction and self-control to achieve objectives to which they are committed. They have the capacity to exercise a relatively high level of imagination, and creativity in the solution of organisational problems.

Meanwhile Bass identified two types of leadership, transactional and transformational (Bass, 1990). Since the late 1990s, the emphasis has been to study the complexity of the contexts where leaders emerge and researchers have acknowledged that transactional leaders emerge in situations of low complexity and transformational leaders in situations of high complexity:

Transactional leadership, the leader rewards followers for meeting performance targets. These kind of leader focuses on the role of supervision, organisation, and group performance.

Transformational leadership, the leader exhibits charisma, developing a vision, respect and trust. Gives consideration to employees, paying personal attention to followers and provides intellectual stimulation, challenging followers with new ideas and approaches.

In this research we tried to find several types of leaders in game context and make an analogy to the real life in organisations.

## **Entrepreneurship conceptualization**

Entrepreneurship can be understood as an individual or collective system and internal or external to the organizational structure, developing something new, from conception of ideas to the creation of a business. The concept of applied entrepreneurship (Miller, 1983) argues that an entrepreneurial firm focuses on innovation, is open to risk and proactive in relation to its competitors. Assuming that innovation is according to (Drucker, 1985) a specific function of entrepreneurship, whether in an existing business, a public service institution, or a new venture started by an entrepreneur which creates either new wealth-producing resources or endows existing resources with enhanced potential for creating wealth.

The entrepreneurship concept assumes different definitions regarding its evolution: It is defined as a systematic innovation (Drucker, 1985), which consists in the purposeful and organized search for changes, and it is the systematic analysis of the opportunities such changes might offer for economic and social innovation. It is the mindset and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or an existing organization.

According to Reynolds (2005), entrepreneurship can be conceptualized as the identification of opportunities and the creation of new business or a new organization. It is a powerful driver of economic growth and job creation: it creates new companies and jobs, opens up new markets, and nurtures new skills and capabilities. Entrepreneurship has grown as a concept, and in the level of importance placed on the development and sustainability of the economy.

Entrepreneurs are individuals who take significant risks in terms of capital, time and/or the commitment of his career providing value through the products or services that may be new or exclusive, but the value must be infused somehow by the employer to locate and obtain the skills and resources (Ronstadt, 1984). From this point of view the entrepreneur not only his risking money but also his prestige. Entrepreneurial action is conceived as a human attribute, such as the willingness to face uncertainty (Kihlstrom & Laffont, 1979).

Drucker (1985) describes the entrepreneur as an individual exploiting opportunities created by changes in its environment.

Being entrepreneurial and the creation of an entrepreneurial culture goes beyond the fear of risk (Mullen & Shepherd, 2006) and the stigma of failure that influence decisively the entrepreneurship context.

Implementing ideas is not an easy process even though it's possible to say that entrepreneurs profile is crucial to define a business idea and implement it successfully, but it is important to note that there is also the possibility of developing entrepreneurial characteristics and here come the educational institutions that should play a key role, very early in the creation of knowledge and skills related to entrepreneurship.

The example of an innovation is a discipline that can come into teaching from the earliest years of school, because it is a specific tool of entrepreneurs, used to explore new opportunities for business or a different product or service.

It's important to know how to reduce the risk, seek for new sources of innovation, use creativity tools, and learn from the market, this are skills that every entrepreneur or potential entrepreneurs need to have (Lumpkin & Gregory 2001; Wiklund & Shepherd 2005).

It is also significant to mention the concept of entrepreneurial orientation, which is the practice of entrepreneurship within organizations. Its origins are in strategic planning, since it refers to actions by individuals (Miller & Friesen 1978). In this perspective the company adopts this situation as a practice of entrepreneurial management.

As Miller (1983) referred the type of entrepreneurial management that characterizes an entrepreneurial organization capable of innovating in products and/or markets, with some degree of risk in business, and acting proactively as to their competitors.

Every day the world witnesses the birth and death of companies, products, processes and services, and the goal of entrepreneurship learning is to seek and to systematically explore new business/new practices that add value to the market and streamline the economy.

In this sense, entrepreneurship is built based on the different types of skills widely studied in the literature and referred as soft and hard skills. The soft skills can be defined as the behavioral skills required for the application of hard skills and knowledge in organizations (Rainsbury et al. 2002). James & James (2004) also suggest that soft skills are a set of skills and talents of an individual.

Other authors categorize the soft skills such as: 1) interpersonal skills; 2) personal and social skills; and 3) cognitive skills (Muzio et al. 2007).

With regard to soft skills inherent to managing entrepreneurial projects, (Davis, 1993) relates that are skills and practices of successful managers. He states that "the emphasis of the future have to be in leadership skills and interpersonal management practices that ensure project success."

### 3. Research questions

The following research questions have guided the present study:

RQ 1: What were the leadership skills identified by the entrepreneurs?

RQ 2: What were the level of skills development in the high education entrepreneurship and innovation courses?

RQ 3: What were the relationships between the perceived leadership skills development and various factors such as gender, employed/unemployed, type of organization and job variables?

### 4. Methodology

In this study, two sources of data were collected as follows: 1) document analysis and 2) online survey.

1) The main technique used was content analysis from the document analysis of prospective studies in industry about entrepreneur's leadership skills needed by the organizations. This methodology was used to analyse the skills identified by the organizations which participated in the study.

2) The second technique to collect data was an online survey applied to 250 students and were obtained 117 valid questionnaires equivalent to 46,8% response rate. The statistical analyses Cronbach's alpha Coefficient, Chi-square Tests, and Mann-Whitney Tests, conclusions point to generally positive perceptions for organizational development and for student's development.

In total the questionnaire consisted of 30 questions covering the following areas:

- Students background information (Question 1-4)
- List of skills development during high education human resources management courses (Question 5-30).

#### Content Analysis

In order to answer to the research question (RQ 1) What were the entrepreneur's leadership skills identified by the entrepreneurs? it was developed a content analysis from the literature review of prospective studies on leadership skills. This methodology was used to analyses the presence of skills associated to the following dimensions: "management", "leadership" and "entrepreneurship", and the period considered was between 2011 and 2014. A list of skills was made organized in the following structure:

##### Entrepreneurship Skills:

- Capacity to innovation and creativity;
- Capacity to diversify the business area;
- Capacity to identify and exploit new business opportunities;
- Project management skills to link project goals with business context;
- Capacity and willingness to undertake risk;
- Capacity to organise the necessary resources to respond to the opportunity;
- Capacity to create and develop national and international networks.

##### Leadership Skills:

- Skills related to the employee's performance development;
- Skills associated to the development of new opportunities for the employees through Techniques as coaching and mentoring.
- Skills associated to motivation techniques in order to potentiate the employee's performance;
- Skills associated to technique to improve employee's satisfaction, special through recognition instruments
- Communication skills in order to improve the commitment of the employees;
- Skills related to the management of employee's expectations about their development in the organization;
- Skills associated to the management of the cultural differences among employees.

## Management Skills:

- Skills associated with new forms of work organization, in what regards the methods of teamwork, flexibility to adapt to changes in the working processes (as a response to a high rhythm of innovation);
- Knowledge about different types of technologies;
- Skills regarding a bigger initiative, decision taking and responsibility assuming;
- Skills associated with the analysis of information related to productivity, in what concerns manpower optimization of costs;
- Capacity to adapt to organizational change;
- Capacity to manage strategic deals and alliances;
- Capacity of developing social and relational knowledge which allows the co-ordination of working teams, taking advantage of all the potential of its elements.

## Survey Analysis

Regarding the survey, the respondents were presented with 21 items representing entrepreneurship skills, leadership skills and management skills which emerged from the content analysis from the focus groups.

The dimensions of the questionnaire are the following (see Table 5):

First dimension of the questionnaire integrates the innovation skills needed by the entrepreneurs: Capacity to innovation and creativity, Capacity to diversify the business area, Capacity to identify and exploit new business opportunities, Project management skills to link project goals with business context, Capacity and willingness to undertake risk, capacity to organize the necessary resources to respond to the opportunity, Capacity to create and develop national and international networks.

The second dimension of the questionnaire integrates the leadership skills: Employees performance, Development opportunities, Motivation of employees, Satisfaction of employee, Communication, Managing expectations, integrating cultural differences.

Finally, the third dimension integrates the management skills on: New forms and models of work organization, New technologies, Organizational change, Initiative, decision taking and responsibility, Capacity to manage strategic deals and alliances, Analysis of information, Social and relational knowledge.

Respondents were asked to rate the skills on a 5-point Likert scale ranging from 1= no development; 2=weak development; 3=moderate development; 4=considerable development; 5=strong development.

## 5. Findings and Discussion

Respondents were primarily from male gender (n=64) and secondly from female gender (n=53), please see Table 1.

Table 1 Background information on students that participated in the study – Gender

	N	%
Male	64	54.7
Female	53	45.2
Total	117	100.0

Most part of the respondents were employed (n=97) and unemployed a minor part (n=20), please see Table 2.

Table 2 Background information on students that participated in the study – Employee or Unemployed

	N	%
Employee	97	82,9
Unemployed	20	17,1
Total	117	100.0

The types of respondent organizations were primarily education (n=18), public sector (n=18), health and social work (n=13), commercial services (n=12), manufacturing non-food (n=16), Transportation, communication (n=11), Financial services (n=14) and other (n=15), please see Table 3.

Table 3 Background information on students that participated in the study – Type of organization

<b>Type of Organisation (n=117)</b>	<b>n=117</b>	
	<b>n</b>	<b>%</b>
Education	18	15,4
Public sector	18	15,4
Commercial services	12	10,3
Health and social work	13	11,1
Manufacturing non-food	16	13,7
Transportation, communication	11	9,4
Financial services	14	12,0
Other	15	12,8
	117	100,0

Respondents characterized their jobs as Top management (n=12), Middle management (n=18), executive level (n=20), Technical specialist (n=21), and support staff (n=13), please see Table 4.

Table 4 Background information on students that participated in the study – Job

<b>Job Characterization of respondents (n=117)</b>	<b>n</b>	<b>%</b>
Top Management	12	10,3
Middle management/line manager	18	15,4
Executive level	30	25,6
Technical specialist/engineer/quality control	21	17,9
Staff/carry out primary work process	12	10,3
Support staff	13	11,1
Other	11	9,4
	117	100,0

RQ 2: What were the level of skills development in the high education IT courses?

According to the perceived skills development the resulting mean scores varied for entrepreneurship skills between 2.5 and 3.2, for leadership skills between 2.9 and 3.27, and management skills between 2.3 and 3.4, as outlined in table 5. Therefore all the skills identified in the focus group had a moderate development in the high education IT courses.

Table 5 Perceived development of skills by the students (1=no development; 2=weak development; 3=moderate development; 4=considerable development; 5=strong development) - (Cronbach's alpha (number of items) Mean (1–5) (SD))

<b>Rank</b>	<b>Skills</b>	<b>Cronbach Alpha</b>	<b>Mean</b>	<b>S.D.</b>
<b>Entrepreneurship Skills</b>		<b>0,71 (n=7)</b>		
<b>1</b>	Capacity to innovate and be creative		3.10	1.23
<b>2</b>	Capacity to diversify the business area		3.10	1.22
<b>3</b>	Capacity to identify and exploit new business opportunities		3.10	1.18



4	Project management skills to link project goals with business context	2.50	1.23
5	Capacity and willingness to undertake risk	3.20	1.18
6	capacity to organise the necessary resources to respond to the opportunity	3.20	1.16
7	Capacity to create and develop national and international networks	3.20	1.16
<b>Leadership Skills</b>		<b>0,78 (n=10)</b>	
1	Employees performance	3.27	1.19
2	Development opportunities	3.22	1.25
3	Motivation of employees	3.15	1.23
4	Satisfaction of employee	3.12	1.26
5	Communication	3.12	1.25
6	Managing expectations	3.07	1.25
7	Integrating cultural differences	3.07	1.21
<b>Management Skills</b>		<b>0,80 (n=7)</b>	
1	New forms and models of work organization	3.10	1.22
2	New technologies	3.40	1.24
3	Initiative, decision taking and responsibility	3.25	1.25
4	Analysis of information	2.30	1.20
5	Organizational change	3.20	1.26
6	Capacity to manage strategic deals and alliances	3.19	1.23
7	Social and relational knowledge	3.19	1.22

RQ 3: What were the relationships between the perceived entrepreneurship skills development and various factors such as gender, employed/unemployed, type of organization and job variables?

Cronbach's alpha ( $\alpha$ ) for all 117 respondents' entrepreneurship skills items was calculated and a value of 0.1 was obtained, which allows for the creation of a new variable by combining the 7 items. Similar calculations were made for the 7 leadership skills items and the 7 management skills items to achieve scores of 0.78 and 0.80 respectively.

The differences between various factors of interest and these three new key variables were assessed using Mann-Whitney U Test (gender, employment situation, job organization and type of organization). The results showed significant relationships between perceived Entrepreneurship skills development and job ( $X^2 = 180.81$ ;  $df. = 47$ ;  $Sig. = 0.00$ ); perceived leadership skills development ( $X^2 = 175.33$ ;  $df. = 51$ ;  $Sig. = 0.00$ ); and perceived management skills development ( $X^2 = 170.25$ ;  $df. = 40$ ;  $Sig. = 0.00$ ). No significant differences were found between the three skills variables and type of organization, gender, and employed/unemployed variables.

## 6. Conclusion

The motivation for this research has its roots in a lack of a systematic development approach about universities and the companies. There was little or no support for connecting these two dimensions, which have made it a very interesting challenge to embrace.

In this context two approaches to skills development can certainly be identified: the organisational development approach and the universities development approach, which can be complimentary, approaching the companies to the university context.

This research identified three types of skills through the data collection with the entrepreneurs – management, leadership and entrepreneurship, and tries to analyse the perception of the students from higher education entrepreneurship and innovation courses about the level of development of those skills.

Analysing the current curricula of management courses it is possible to identify some missing or underdeveloped skills:

Entrepreneurship skills:

- Capacity to innovate and be creative
- Capacity to diversify the business area
- Capacity to identify and exploit new business opportunities
- Project management skills to link project goals with business context
- Capacity and willingness to undertake risk
- Capacity to organise the necessary resources to respond to the opportunity
- Capacity to create and develop national and international networks

Management:

- New forms and models of work organization
- New technologies
- Initiative, decision taking and responsibility
- Analysis of information
- Organizational change
- Capacity to manage strategic deals and alliances
- Social and relational knowledge

Leadership skills:

- Employees performance
- Development opportunities
- Motivation of employees
- Satisfaction of employee
- Communication
- Managing expectations
- Integrating cultural differences

This kind of skills are hard to teach because they are linked to behaviours that are better taught with active learning methodologies. According to the students, the skills identified had a moderate development in the high education entrepreneurship and innovation courses. This conclusion leads us to rethink the pedagogical model of these courses that are taught at higher education level.

It's also possible to conclude that there are significant relationships between perceived entrepreneur's leadership skills development and the student's job, but no significant differences were found between the three skills dimensions –management, leadership, and entrepreneurship - and the type of organization, gender, and employed/unemployed variables.

This study will help universities and companies to be more integrated and to rethink their strategies according to skills development in order to respond to the challenges of the market.

### **Limitations and Further Research**

Some limitations should be mentioned about this research study. First, there was only a small sample selected for this study. Future studies may look at a larger and more diversified sample so that the results can be generalized and extrapolated to other contexts.

A second limitation is that we have only collected the skills required by industry by means of documentary evidence (essentially industry reports). We could not conduct additional interviews to fully cross-validate the list of skills needed by the labour market. However, the list was obtained from industry reports that are elaborated with the contribution of industry representatives. Further empirical studies are required to check the impact and size of the gaps identified.

Consequently, the learning outcomes are to be identified by examining the surrounding industry requirements in terms of competencies. It is very likely that individual differences may stem from work experience and position occupied by the student, among many other individual characteristics.

Another interesting research to be conducted is to identify and analyse the processes of skills development used by companies and create that theoretical model to develop these processes in higher education, transforming the courses more suitable for the market requirements and

A parallel future research avenue is the development of a typology of skills that help to build a framework of pedagogical contents for developing the skills.

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## Group Innovation among SMEs in Japan's high-tech industry

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Keywords: *SECI model, KM (Knowledge Management), Open Innovation, Industry Cluster, SMEs (Small and Medium sized Enterprises), Boundary of the Firm, OPTIL*

### 1. Abstract

Innovation has been a significant feature among leading Japanese companies, but not always with success. Though major companies may desire continuous control of the market, they may suffer loss of their dominant position to competitors who have introduced a totally new impression, as anticipated by Christensen (1997). Therefore, by becoming innovators, SMEs can provide significant competition for market leadership. As small organizations, SMEs have comparatively limited resources and capabilities; however, by co-operating among themselves and successfully sharing their resources and capabilities, they greatly increase their potential, both to create new products and to develop a new market. In support of this possibility, and as part of an effort to stimulate the domestic economy, beginning more than a decade ago, the Japanese government has taken steps to promote the development of active SMEs by its nationwide introduction of Cluster Projects. Here, the process of innovation is examined through use of the concept of KM (Knowledge Management), especially via the SECI model by Nonaka and Takeuchi (1995). Nonaka and Konno (1998) identified the significance of leadership and location ('*ba*') within that creation/formation process. Although many empirical studies have been introduced, most discussion and studies have been limited to considering a single corporate organization, so knowledge creation between or among several organizations has not been well investigated.

The first part of this paper presents the author's proposal for a new model for 'group knowledge creation' (innovation) through introducing modifications to the SECI model and through the addition of two influential factors: **trust** and **capital**.

Subsequently, in the second part of the paper, results are presented of the author's own case studies undertaken in the Tokyo Metropolitan area, where one of Japan's large Industry Clusters is located. Featured therein are questionnaire survey and several qualitative analyses based on the author's questionnaire survey and interviews with SME top management and local bureaucrats.

The results indicate that the model proposed here can be successfully applied. However, as the sample size was limited in this exploratory investigation, similar investigation and analysis is to be extended for inclusion of other firms: large-scale firms, "giant-and-dwarf" pairings, and possibly with the inclusion of non-Japanese firms.

### 2. Introduction

After Chesbrough (2004) proposed the concept of "*Open-Innovation*," the Japanese government tried to support joint development projects for the purpose of stimulating economic reform. In particular, joint projects by SMEs (small and medium-sized enterprises) have often been introduced, but without the mechanism of innovation being sufficiently explained. This paper, serves as a sketch of features relevant for successful joint innovation. Though the groundwork is not laid out in detail here, these observations derive not only from extensive investigation of relevant literature but also from years of on-site investigation of Japanese corporations and interviews and discussion and questionnaires given to a range of corporate leaders, as indicated in the references. After considering here the theory and arguments concerning joint innovation, selection will be made of factors that may effect and affect successful innovation. Those factors

have been ascertained and examined by means of questionnaire-survey responses and in-person interviews identified in the references listed for the present author..

### 3. Objectives

Although the amount of R&D (research and development) investment in large enterprises is high, the derived innovation generally fails to produce effective results (profitability). On the other hand, some of SMEs, depending on their firm size, are keen about innovation activities. Within Japan, the number of SMEs is substantial (about 99.7 %) and is responsible for creating 70% of jobs.

SMEs are limited in their management resources, such as human resources, materials resources (production and sales), financial resources, knowledge and information. This limitation has been described in a governmental white paper on SMEs (2015) as being the “scale wall for SMEs” because firm size is comparatively small. Nonetheless, that smaller size also provides advantages enabling proprietors to excel at enterprise creation, entrepreneurship, and culture and speed of decision-making.

The main subject and final goal here is to identify the factors which account for the mechanism of innovation among cooperative enterprises.

### 4. A brief literature review

Here, discussion puts focus on team formation of R&D, project activities, and so on. During this brief review, important matters will be listed or identified. If SMEs undertake R&D jointly rather than solely, that means that they have found, or now anticipate, advantages to be obtained through utilization of their own management resources combined with or enhanced by those of others. Such judgment is supported when they secure new competition predominance through the creation of new knowledge. On the other hand, for SMEs to undertake R&D independently rather than jointly with others suggests that they anticipate independent development to be more profitable than in association in a jointly developed system. If other partners cannot be found or if management resources are insufficient for undertaking independent development, the result is likely to be the abandonment of R&D.

Open innovation (Chesbrough, 2003) is a procedure applicable to team or partner selection. The concept of open innovation essentially implies to the exchange information with everybody and everywhere. However, as Chesbrough illustrates in his book, some industries are more suitable for open innovation than others, and conditions are usually applicable in the adoption of open innovation. If team members are to be selected openly, candidates for team membership interact with others to determine relevant and applicable criteria until suitable members for a project of joint development can be found. Until that point, the dissemination of information is relatively open. However, once established, the group obtains both stability and effective channels of communication through closure and containment of team members. This condition or stage can be identified as “determinative open innovation” (*limited open innovation*).

In the case of joint development, “*boundary of firm*” exists in the R&D team. Among participating member enterprises, there is risk of leakage of their management resources. However, without opening access to one’s own knowledge to the other members, the creation of new knowledge becomes limited and restricted. Contracts such as for maintaining confidentiality is also necessary in such cases, but reliance on “trust” serves to reduce the “transaction cost”.

Once a joint-development project is started, there develops a spiral of knowledge creation (the SECI model). As Nonaka et al. (1996) suggest, when this occurs it is similar to the path of knowledge creation within one enterprise. However, joint development tends to result in a project entailing a period-limitation, often one of about 3 years. If the R&D project is within a single enterprise, the initiation and the termination of the project are both determined by the proprietor. In addition, there are often difficulties concerning financial resources for SMEs, in particular in the case of joint development. If the R&D project develops or exhibits some difficulty, the proprietor may decide to withdraw from or terminate the project. This may appear in other membership enterprises. Spiral of a SECI model functions are best applied to short-term projects.

When a project team is formed, the establishment of "ba: place" and "leadership" is needed, as Nonaka and Konno (1998) have suggested. "Place" is the location for implementation, such as for an experiment of R&D, an experimental production, measurement and evaluation, implementation and meetings, etc. A suitable location should be in an area and a place where participants can communicate readily and frequently.

In the case of an R&D project within an independent enterprise, determination of the leader is relatively clear. In the case of joint development, however, it is generally assumed that the leader from a participating enterprise will be in charge of one part of the project.. Though the leaders from each participating enterprise may be the proprietors of those enterprises, the root problem is not the pecking order they may wish to establish with each other. The major problem is to determine who can best serve as a leader for the entire project, enabling maintenance of "trust" as well as a sense of expectation of the project's subsequent success. Essential to the achievement of a jointly conceived project is the persistent maintenance of the ambience of "trust" among the participants. Trust is indispensable for maintaining a mutually cooperative relationship, and functions as the core or fulcrum about which everything else must be in balance.

Four factors ("place", "trust", "investment fund" and "leadership") would be a candidate for the success factors in the joint development which premised on open innovation. Concerning with 4-factors, previous literatures will be examined here.

As Nonaka and Konno (1998) and Hayashi (2008) argued, "place" and "leadership" are key issues for the success of group innovation. When the boundary management ability of the organization by the leader is low, a project may not succeed (Ancona D.G. and Caldwell D.F., 1997). Here, the boundary management concerns about different section, job, educational and cultural background. These arguments are on the project team (or task team) in one enterprise.

Shamah and Elsayaby (2014) investigated open innovation in supply chain of Egyptian automobile industry, he concludes "relationship of mutual trust" is influential. Bengtsson et al. (2015) investigated French software industry and concluded that many partner from different kind (researcher/consultant, client and competitive person in other industry) is positive effect, but many partners is negative effect. Selection of trust worthy partner is important.

Hall (1992) confirmed that R&D investment in American large enterprises depends on the inner cash flow, and Himmeoberg and Petersen (1994) also analyzed American research-orientated SMEs and found similar result. Carpenter and Petersen (2002) investigated research-orientated firms and concluded that they conclude they were not financing from outside. Therefore, Financing is important from this thing. There is also necessity of political help by a country.

## 5. Methods

To confirm 4 factors, questionnaire survey to 350 companies and visiting interview at 8 companies were conducted.

Questionnaire was sent to SMEs in Tokyo Metropolitan Area: member companies of TAMA Association (about 270 companies), and selected companies who received national subsidy form METI(80 companies). The number of respondents was 49 companies, and an answer nothingness (only response and no answer). The number of cases of the joint development is "78 cases" because we assume that it's possible to fill it until 2 cases.

Among 49 respondents, 8 companies were welcomed interview.

## 6. Results

### 6.1 Questionnaire survey

The result showed about 4 in Table 1.

**Table 1 Effective four factors**

	(1) reserch fund	(2) "place"	(3) leadership	(4) trust
1. It was quite affected.	19	6	21	38
2. It was affected a little.	24	11	21	13
3. It didn't influence so much.	15	24	17	10
4. It didn't influence at all.	6	25	9	7
5. It isn't understood.	8	5	3	3

From Table-1, among four influential items, three items ("research fund", "leadership" and "the trust") are strongly supported as "affected", and can be confirmed. One item ("place") looks like to be not-strongly supported, but this does not mean "not important". From interviews, they use their own facilities and meeting rooms for joint research project. So they do not need to find specific "ba (place)". So it doesn't mean that "place" isn't important.

### 6.2 Interview

Focusing on four factors, the result of interview (8 companies:14 cases) are nroduced below.

#### (1) Research fund

Within 14 cases of interview, most of them received the subsidy from government or local governments (prefectures or cities). Self-funding (without the subsidies) is only 2 cases. Therefore, public fund system reduces financial burden in early stage of development.

Public subsidy systems are supporting partially (1/2 or 1/3) of the direct expense necessary to development (experimental production and the experimental cost). And overhead costs (the personnel expenses and administrative expense) are excluded. Besides subsidy, they spend their own R&D expenditure. From 2 companies, there are opinion that written application form for receiving government subsidy is too complex, and project management is too severe and rigid.

Furthermore, there was an opinion that Japanese national policy for innovation is somewhat out of focus (from B company). For example, there are 2 kinds of financial funding; (1) early development stage and (2) commercialization stage. In Silicon Valley (in USA), there are many financial aid from venture capital. However, it's completely lacking in a venture capital in a development phase in Japan. Such situation is the major reasons why open innovation doesn't spread in Japan. This comment comes from president of venture business who started the business after working experience in Silicon Valley and was familiar with the situation of the venture capital.

There are three stages of funds, (1) starting stage of joint development, (2) during development stage, and (3) commercialization stage. In third stage (commercialization process), they need much more resources such as financial and human resources. in Japan, the number of venture capital is increasing, but many of them are focusing the stage of (3) commercialization stage..

#### (2) Place(Ba)

The "place" for an experiment of R&D and an experimental production is facilities of member enterprise. R&D activities sometimes done beside other work or production facilities, so physical "place" has been maintained. Two companies (B company and C company) are using incubation facilities prepared by local government. In successful cases, they have meeting periodically.



In failed case (G company), they did not have periodic meeting. The location of 3 members was geographically away from each other. They were not old acquaintance, and first joint development. Because of less periodical meeting, it was lack of communication and development project was disappeared. There was a business relation between GA company and G company in the distance between about 3 hours by the *Shinkansen* (bullet train). And between GA company and GB company there were different business relation. The each elemental technology of G company and GA company can develop an improved products when gathering both technology, and joint development has started by 3 companies, G company, GA company and the GB company. The GB company is also the user after development and is also finding a suitable location in a halfway point of G company and GA company geographically. It can also be said it was also a problem who did a leader of the whole project that they couldn't meet periodically at the GB company, and that relationship of mutual trust couldn't form between G company and the GB company.

In successful case (E company), a development leader of E company (president) or research manager visited and stayed one week per month at the partner in a distant place. This case conquered disadvantage of distant place.

In case of using project management system, all members can access to the crowd server system which can save data of schedule control and development data. Additional effect is improvement of the consciousness, and prevents delay of schedule, because everything can be seen from members from other partners. The software has memo system and can write personal opinion of solution about any problems which other member is facing. A project member is the way to consider a countermeasure of a problem beyond the limit of the enterprise which belongs, and has the effect which does the work from tacit to explicit knowledge daily. This project management system on the web completely overcomes the geographical distance.

In case of the same company, young university engineers in foreign countries (developing country) participate as development members, by data sharing. Excellent reason is because of the abilities as well as low development cost.

### (3) Leadership

The president himself is serving as the leader who represents a company concerned as leadership. Everything of successful cases in interview was serving as a leader of the whole project, too. In one failure case (G company), president was in a youth, they have failed in first joint development, and it's said that the failed example came to consider the state of the leader after that.

There was also a case which wasn't the whole leader by other cases, but it was decided by the former activities and the contribution of participation, enterprise expects who served as the whole leader before project started, but there were no examples of leader changed on the way of project.

### (4) Trust

All presidents stated that "trust" is most important among four factors. There is also an enterprise which puts up "trust" as a management philanthropy (D company) in HP. Members were acquaintance but not necessary. Trust is formulated daily communication.

## 7. Conclusion: an acronym for success--OPTIL

To sum up, four factors ("place", "trust", "investment fund" and "leadership") appear to be essential for the success of joint development that begins on premise of "open" innovation. It is hypothesized here that those four factors are not only effective but essential for the success of joint R&D projects. A successful joint R&D project involving limited open innovation can therefore be characterized by the acronym OPTIL. It begins by establishing a goal or framework of **O**pen innovation, with open discussion and exchange of ideas and enthusiasm. Next is the necessity of establishing a suitable **P**lace for interaction and exchange. Also necessary is the existence of an **I**nvestment fund that enables the concepts, ideas, and dreams to be realized. But without effective and reliable **L**eadership, the optimistic plans and infectious enthusiasm may amount to little more than figments of imagination. However, the fulcrum of the structure is central, for it is

the establishment and cultivation of Trust. Together, those letters form the acronym **OPTIL**, a neologism that suggests two similar words, optic and optimum, words which are appropriate in this context because “optic” suggests vision and foresight, and “optimum” suggests a condition of “best fit.” OPTIL therefore neatly characterizes the progress and results of successful open innovation of the kind that has been discussed in this paper.

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# GROUP INNOVATION AMONG SMES IN JAPAN'S HIGH-TECH INDUSTRY

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**RIKKYO UNIVERSITY**



## Group Innovation among SMEs in Japan's high-tech industry

### I. Preface

“**Determine** influential Factors in **Group R&D** among SMEs”  
target ••••**identify** mechanism

### II. Background

Large firms in Japan ••• Difficulties **for** Innovation  
R&D investment **is** high, but performance is not...

⇒ Size of firms: less significant,

SMEs (about 99.7%, **yet provides** 70% of jobs)

•••”**wall of small size**” (*SMEs White Paper 2015*)

**Advantages:** entrepreneurship, quick decision making,  
and capabilities in specific field

Limited resources, **yet lots** of companies (= **chance**)

If SMEs cooperate, resources **adequate** ••• **BIG chance**

### Argument:

Innovation **from** cooperation among firms → **Joint R&D**  
“**new product**” and “**new production technique**”

### **Limited** Open Innovation

At beginning of R&D, **openly** until partners are chosen,  
and then it should be **closed**.

### Hypothesis:

**Candidates for** success factor in joint R&D are  
**Place, trust, investment fund, and leadership**

Together with each of the first letters, “**OPTIL Paradigm**”.  
(limited *Open* innovation with *Place, Trust, Investment, and Leadership*)



## 【Note-1】 Definition of Innovation

Shumpeter (1926), 5 fields of Innovation

- (1) new product
- (2) new production method
- (3) new distribution channel
- (4) change of supply channel
- (5) new organization

In this paper, research targets area in (1)(2)  
time span of (1)(2) is from 3 to 5 years

- (3)(5) will be analyzed in next step,  
(4) may be in current business.

### III. Previous Literature

#### 1. Discussion from logic

R&D team: chronologically considered (team building → performing → result )

① considering single or joint R&D → ② starting joint R&D → ③ during R&D

#### ① Considering single (autonomous) or joint R&D

if enough resources in single •••

advantage in single → single R&D

if not enough resources in single

partner is not found → single R&D, or give-up

partner is found → **joint R&D**

#### ② Starting joint R&D

large difference in comparison with single R&D •••••

#### 「boundary of firm」

「Investment」 ••• Burden of development costs

Offer of knowledge → SECI model → Knowledge creation

••• Short term

「Place」 and 「Leadership」

mutual 「Trust」 ••• reducing disincentive in cooperation

**【Note-2】** Disincentive toward cooperation in Joint R&D

1. Anticipation of unfairness in the distribution of the future profits
2. Burden of increase in additional investment for R&D
3. Differences in the contributions of the partners
4. Decline of trust in the leader
5. Uncomfortable outflow of in-house intellectual property rights
6. Differences of opinion among the partners

③ During R&D The biggest risk...Opinion opposition → Member leaves

- Whether knowledge is shared fairly with each other (or not?)  
Maintaining the confidentiality contract: Can it be maintained?  
... "trust" of each other. (reduce transaction cost)
- Differences in research policies and direction of "leadership"  
(members are often proprietors)
- Necessity of additional R&D "investment" and knowledge exposure
- Problems of "place" (experimental location, meeting and contact)
- Clarification of expectations of (un)equal profit distribution

### III. Previous Literature (cont.)

#### 2. Empirical studies

The effect by the accumulation of firms

M. E. Porter (1990) 「Diamond model」 mutual cooperation in cluster

Open innovation: Chesbrough, (2003)

Knowledge creation: Nonaka and Takeuchi (1995) SECI model

Place, Trust, Investment fund, Leadership

**Nonaka and Konno (1998), Hayashi (2008): Place , Leadership**

**Nonaka (1995): Leadership**

**Ancona and Caldwell (1997): Leadership**

**Shamah (2014): Trust (Automobile supply chain in Egypt)**

**Himmeoberg and Petersen (1994): Investment fund (US R&D type SMEs)**

**Carpenter and Petersen (2002): Self Investment (R&D type firms)**

## IV. Analysis of Joint R&D

### 1. Target of Analysis

1.1 Confirmation of effect factors → OPTIL paradigm

### 1.2 Regional characteristics

TAMA (area) (Technology Advanced Metropolitan Area)

- Tokyo-to Tama, Saitama-ken southwest and Kanagawa-ken center
- Industrial accumulation: machine for electromechanical, transportation, non-electrical machinery, electronic machine part, metal working, machine tool etc.
- Universities and research centers
- Model district by METI → Subsidies (The Ministry of Economy, Trade and Industry)
- Support activities by TAMA Association



## 2. Method of analysis

### 2.1 Questionnaire

<Objective: Confirmation of effect factors> OPTIL paradigm

Questionnaire was sent to SMEs in Tokyo Metropolitan Area: member companies of TAMA Association (about 270 companies), and selected companies that received national subsidy form METI (80 companies).

The number of respondents was 49 companies, plus one form deemed invalid for lack of answers).

The number of cases of the joint development is "78 cases" because we assume that it's possible to fill it until 2 cases.

### 2.2 interview

Among 49 respondents, 8 companies welcomed the interview.



## V. Result

### 1. Questionnaire

From Table-1, among four influential items, three items (“investment=research fund”, “leadership” and “the trust”) are strongly supported as “affected”, and can be confirmed. One item (“place”) looks to be not-strongly supported, but this does not mean “not important”. From interviews, it was apparent they use their own facilities and meeting rooms for joint research project.

So they do not need to find specific “ba (place)”. So it doesn’t mean that “place” isn’t important.

**Table 1 Effective four factors**

	( 1 ) research fund	( 2 ) "place"	( 3 ) leadership	( 4 ) trust
1. It was quite affected.	19	6	21	38
2. It was affected a little.	24	11	21	13
3. It didn't influence so much.	15	24	17	10
4. It didn't influence at all.	6	25	9	7
5. It isn't understood.	8	5	3	3

## V. Result (cont.)

### 2. Interview

Focusing on the four factors (funds, place, leadership, trust), the results of interviews (8 companies:14 cases) are introduced below.

#### (1) Research fund (investment)

Within the 14 cases of interview, most of them received subsidy from government or local governments (prefectures or cities).

Self-funding (without subsidies): only 2 cases. Therefore, the public funding system reduces the financial burden in yhe early stage of development.

Public subsidy systems partially support (1/2 or 1/3) of the direct expense necessary to development (experimental production and the experimental costs). Note that overhead costs (administrative and personnel expenses) are excluded.

Beyond the subsidy, they use their own funds for R&D expenditure.



## (2) Place(Ba)

The "place" for an experiment of R&D and an experimental production is facilities of member enterprise. R&D activities are sometimes done alongside other work or production facilities, so physical "place" has been maintained.

Two companies (B company and C company) are using incubation facilities prepared by local government. In successful cases, meetings occur periodically.

In one failed case (G company), there were no periodic meetings.

In case of using project management system, all members can access to the crowd server system which can save data of schedule control and development data. Additional effect is improvement of the consciousness, and prevents delay of schedule, because everything can be seen by all members and partners.

## (3) Leadership

The president himself is serving as the leader who represents the company concerned through his leadership.

There was also a case for which there wasn't one specific leader (unlike the other cases), but it was decided according to former activities and the contribution of participation, enterprise expects who served as the whole leader before project started, but there were no examples of a leader being changed during the progress of the project.

## (4) Trust

All presidents stated that "trust" is most important among the four factors. There is also an enterprise which puts up "trust" as a management philanthropy (D company) in HP. Members were not necessarily former acquaintances. Trust is formed through daily communication.

## VI. Conclusion

To sum up, four factors (“**place**”, “**trust**”, “**investment fund**” and “**leadership**”) appear to be essential for the success of joint development that begins on the premise of “**open**” innovation.

It is hypothesized here that those four factors are not only effective but essential for the success of joint R&D projects. A successful joint R&D project involving limited open innovation can therefore be characterized by the acronym **OPTIL**.

It begins by establishing a goal or framework of **Open innovation**, with open discussion and exchange of ideas and enthusiasm. Next is the necessity of establishing a suitable **Place for interaction and exchange**. Also necessary is the existence of an **Investment fund** that enables the concepts, ideas, and dreams to be realized. But without effective and reliable **Leadership**, the optimistic plans and infectious enthusiasm may amount to little more than figments of imagination. However, the fulcrum of the structure is central, for it is the establishment and cultivation of **Trust**. Together, those letters form the acronym **OPTIL**.

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## Q&A



## Innovation Value of External Knowledge from a B-to-B perspective

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### 1. Abstract

Following the open innovation paradigm, external knowledge can be seen as the most significant driver for innovation success. The present paper argues, that there are differences in regard to the innovation value of external knowledge. This assumption appears to be valid in particular in a business-to-business environment since in that scenario knowledge is heterogeneously dispersed over several market stages. Subsequently, the innovation success could be favoured by focussing the knowledge acquisition on external knowledge with high innovation value. Based on that, the current article introduces a concept to determine the innovation value of external knowledge. Thus, it is possible to boost innovation success.

### 2. Introduction

Knowledge can be seen as the most important resource of a firm (Brockhoff 2015; Carlsson 2011; Grant 1996; Probst et al. 2006). In particular, external knowledge appears to be elementary for innovations (Chesbrough 2003; Du Plessins 2007; Tidd et al. 2013). This very comprehensive and generalised proposition leads to the question, whether really every kind of external knowledge is of value and helps firms to have advantages such as being better than the competition in the sense of being more innovative. Knowledge in a B-to-B environment is spread across several players (Wiesener 2014). Consequently, it can be assumed that not every kind of knowledge from any market stage is of value for a firm. From a resource-based perspective a resource has to be valuable to contribute to competitive advantages (Barney 2010). Therefore, it seems to be meaningful to specify the value of external knowledge in regard to its contribution to innovations. The link between external knowledge and open innovation is documented in the so-called outside-in process (Vanhaverbeke/Chesbrough 2014; Enkel 2009). Corresponding literature is often about strategy, tools and sources for the acquisition of external knowledge (Heavin/Adam 2013; Batterink 2009; Du et al. 2014; Englis et al. 2009; Felin/Zenger 2014; Gassmann/Enkel 2006; West/Bogers 2013). The target of all open innovation actions can be seen in increasing innovation success (Chesbrough 2003). However, if there are really differences in the innovation value of external knowledge, it consequently seems to be important to evaluate factors to differ between useful and useless knowledge in an innovation context. Thus, understanding which knowledge is of value could increase the probability of innovation success.

### 3. Objectives

Since knowledge can be seen as a resource, the present paper is theoretically based on the resource-based view (RBV). The RBV describes a firm's success respectively innovation success by resources (Barney 2010; Gersch et al. 2005; Kraaijenbrink et al. 2010). This corresponds with the target of the current article to evaluate the innovation value of external knowledge. Based on the RBV, the interpretation of innovation value of knowledge can be seen in its contribution to the innovation success of a firm. In particular the VRIO-approach of Barney is often mentioned within the RBV research. This approach argues a resource to favour sustainable competitive advantages, if it is valuable, rare, inimitable and exploited within the organization (Barney 1991). Subsequently, the combination of the VRIO-approach and the outside-in process should lead to innovation success. For instance, if a firm acquires valuable knowledge and combines it with internal knowledge, new knowledge is generated that can be seen as rare (Wiesener 2014). By integrating the knowledge into the firm it becomes inimitable because thus, it seems to be very



complex to copy knowledge spread and rooted within a firm. Using the knowledge finally in the innovation context it gets organisationally exploited. That way, the resource external knowledge has become a VRIO resource. As a result, applying the outside-in process corresponding to the RBV leads to sustainable competitive advantages and therefore, to innovation success. However, this is only valid as long as the resource argument valuable refers to an innovation value.

Following this argumentation, the present article's target can be further refined. To evaluate the innovation value of external knowledge, it seems reasonable, to define appropriate knowledge categories. As a result, the innovation value of those categories can be proved on a more detailed level. This leads to the following research questions:

**Research question 1:** What are the reasonable categories of external knowledge in an B-to-B innovation context?

**Research question 2:** Which of those knowledge categories are about to influence the innovation value in which way?

By answering these questions it will be possible, to assess the innovation value of external knowledge by summing up the innovation values of the categories.

#### 4. Literature review

Since the object of the present paper is to identify the innovation value of external knowledge, it seems useful to look for possible segmentation criteria of knowledge, in a first step. Thus, it is possible to test the different knowledge criteria in regard to its contribution to the innovation success and therefore to its innovation value. This test will be done in a second step in the section findings. The literature review in regard to possible knowledge criteria will be performed within the knowledge-based research. Complementary, criteria will be searched within current open innovation literature since there is a close link between open innovation and external knowledge. Knowledge research is often based on knowledge models. Typically mentioned knowledge models are, for instance, the process-oriented model of Probst/Romhardt/Raub (Probst et al. 2006) or also the rather knowledge-defining model of Nonaka/Takeuchi (Nonaka/Takeuchi 1997). To find knowledge-classifying criteria, recent knowledge models will be analysed. The base for this analyse will be a comprehensive overview regarding knowledge models according to Wiesener (Wiesener 2014).

Huber differs between (i) inherited and congenital knowledge in the birth phase of a firm (Huber 1991). The knowledge that founders bring into a firm can be called inherited knowledge since the firm gets this knowledge without any further activities. Typically, there is a time gap between the plan to start a business and the final birth of a firm. Within this time frame additional knowledge in regard to the business could be acquired. The combination of this new knowledge and the inherited knowledge can be called congenital knowledge. Von Krogh/Velzin distinguish basically between (ii) individual and organisational knowledge. In their so-called knowledge map the authors describe a more detailed segmentation by (iii) project-, personal-bounded, process- and market knowledge (Von Krogh/Venzin 1995). Mittelmann divides knowledge depending on the abstraction level in (iv) expert-, concept- and meta-knowledge (Mittelmann 1999). Reinmann-Rothmeier offers a separation between (v) information-based and operation-based knowledge (Reinmann-Rothmeier 2001). Rehäuser/Krcmar differ between (vi) private and collective knowledge (Rehäuser/Krcmar 1996) similar to (vii) individual and collective knowledge, used within the knowledge model of Probst/Romhardt/Raub (Probst et al. 2006). A segmentation regarding the possibility of articulation can be seen by distinguishing between (viii) tacit and explicit knowledge (Nonaka/Takeuchi 1997). North describes a classification in (ix) employer-, customer and organizational knowledge (North 1998).

Looking at current open innovation research a very basic view is to differ (x) between internal and external knowledge (Brockhoff 2015; Chesbrough 2003; Gassmann/Sutter 2013; Lichten-thaler/Lichtenthaler 2009). A further segmentation derived from open innovation research divides knowledge into (xi) technology and market knowledge (Brockhoff 2015; Hauschildt/Salomo 2011; Simard/West 2006). In regard to open innovation within the B-to-B sector, knowledge can be differed between (xii) derived and original knowledge (Wiesener 2014). This segmentation can be explained by the knowledge distribution

within supply chains. Subsequently, knowledge is typically spread heterogeneously over different market stages. Due to interferences by transferring knowledge from one market stage to another this can be called derived market knowledge, if the knowledge starts on the market side (Wiesener 2014). From a resource-oriented perspective knowledge can be differentiated in regard to its contribution to a firm's throughput between (xiii) component and architectural knowledge (Matusik/Hill 1998). Following that kind of differentiation, component knowledge describes the contribution to a product such as material knowledge, for instance. How to process a product out of different components corresponds to the so-called architectural knowledge. This could be knowledge such as how to operate a machine. As a summary, thirteen different criteria could be found to separate knowledge.

## 5. Methods

The previous section revealed various criteria for possible knowledge segmentations. There seem to be some duplicates. Furthermore, different authors call similar knowledge criteria differently. For instance, private and individual or common and organisational knowledge appear to be similar. Therefore, in a first step all criteria will be tested regarding similarities. This will be done by testing all found criteria with each other. In case of similarities, corresponding criteria will be consolidated. Subsequently, knowledge categories and corresponding attributes will be built based on the consolidated criteria. As reviewed knowledge criteria consist partially of several attributes that might be assigned to different knowledge categories, these attributes will be marked with a, b, c and so on, when necessary. To define the innovation value of external knowledge, the resulting knowledge categories and attributes will be aligned with its particular innovation value in a second step. This will be done by clarifying, whether a knowledge category contributes to innovation success in general. That followed, a scale related to the innovation value will be defined based on the category's attributes, if possible. Since the focus of current work lies on the B-to-B sector, an additional test will be performed to evaluate, whether the categories and attributes are relevant for use in that sector. Finally, the innovation value of each category and its attributes will be aligned with external knowledge to be able to define the innovation value of external knowledge.

## 6. Findings

### Consolidation of reviewed knowledge criteria

As described in the previous section, (i a) inherited knowledge can be seen as (iii b) personal- bound knowledge of founders from a start-up, for instance. Criteria (ii), (vi), (vii) and (ix a, c) distinguish knowledge between private, individual respectively employer- and collective respectively organizational knowledge. There seems to be a concrete analogy between all mentioned criteria in regard to the dispersion of knowledge. These criteria will be consolidated under the umbrella term dispersion with the attributes individual and common knowledge. Criteria (iii a, c) define project- and process knowledge that can be seen similar to (iv a,b) concept- and expert-knowledge. Likewise appears the segmentation in (xiii) architectural and component-knowledge, whereas architectural can be assigned to process- and component- to project-knowledge. Criteria (v) describes information- and operation-based knowledge. Information-based knowledge could be knowledge regarding products and thus be integrated into the attribute product-knowledge. Operation-based can be interpreted as all kind of knowledge to build up a product from a process-view, for instance. Consequently, this characteristic can be aligned to process-knowledge. As a result, this consolidation step leads to a differentiation between product- and process-knowledge that will be consolidated under the term object knowledge.

The differentiation between (iii d) market-, (ix b) customer- and (xi) market- and technology- knowledge describes, from which direction within a supply chain the knowledge is coming from (Wiesener 2014). Inside the B-to-B sector, market knowledge is coming from market- respectively the manufacturer side since manufacturer have direct contact to the end market. On the other side of the supply chain, more technology knowledge can be located, as firms in earlier stages such as converters and raw material suppliers possess more detailed knowledge about technologies (Wiesener 2014). As a result, these criteria will be summarised as category direction, differing between market- and technology knowledge. The category articulation will base on the attributes (viii) tacit and explicit knowledge. No other similar criteria out of the literature review could be found for a possible consolidation. Analogously, the criteria (x) internal

and external knowledge will be summed up in a knowledge category location. Finally, the criteria (xii) derived and original knowledge defines the authenticity of knowledge. The remaining characteristic (iv c) meta knowledge won't be integrated in the current work since meta-knowledge can be seen as knowledge about knowledge (Liebowitz 1999). That describes rather the topic of this paper than the innovation value itself. As a result, following categories could be consolidated out of 30 criteria:

- (1)Dispersion: individual - common
- (2)Object: process - component
- (3)Direction: technology - market
- (4)Articulation: tacit - explicit
- (5)Location: internal - external
- (6)Authenticity: derived – original

### **Defining the innovation value of the knowledge categories in a B-to-B context**

Classifying knowledge related to its (1) dispersion in individual and common knowledge can be seen as generally innovation related since, for instance, common knowledge within a firm correlates with the knowledge base of a firm. Following the resource-based research, the knowledge base of a firm is a key resource for innovations (Von Krogh/Venzin 1995; Wiesener 2014). The more people within a firm know about new technologies, for instance, the higher the possibility to generate new ideas. However, this can be understood as a view on internal knowledge. Interpreting the attribute common as external knowledge of everybody, this could be seen as negative effect on the innovation value, because common knowledge isn't rare. A rare resource is a precondition for success following the resource-based research (Barney 1991). Consequently, individual knowledge is supposed to be of higher innovation value in the context of external knowledge. This can also be argued by the so-called crowd-sourcing concept that is based on external intelligence of a crowd (Gassmann 2012). In the context of external knowledge, a crowd doesn't mean that the whole crowd knows the same thing. Furthermore, knowledge from a crowd can be seen as several single units of knowledge. As a result, the more individual the external knowledge, the higher is its innovation value. Subsequently, the knowledge category dispersion is applicable to scale the innovation value of external knowledge. Applying this category to B-to-B seems to be possible since every firm is principally in the position to acquire individual respectively rare knowledge.

The (2) object category differs between process- and component-knowledge. Both types of knowledge can be seen as a necessary condition to generate innovations. Ford's Model T explains this correlation, for instance. Henry Ford built a new car in 1908 (Rausch 2007), whereas component knowledge can be seen as a base to build a new product such as a car. However, the car didn't succeed at the beginning. Thus, it couldn't be called innovation. Only by reducing the costs by more than 50% the Model T became an innovation. This was possible due to an optimized process of manufacturing respectively due to process-knowledge. Consequently, the object category has a clear innovation relation. On the other hand, since a firm needs both attributes of object knowledge to generate innovations, the object category appears not to be applicable to build a scale for the innovation value of knowledge. The need of both types of knowledge can be seen as independently of internal and external, as shown in the example. It didn't matter where the component- and process-knowledge for the Model T came from. Furthermore, this category seems to be also of innovation value in case of products with less complexity than a car. For instance, a firm offering burgers needs component knowledge, such as knowledge about meat or vegetables, to generate a new burger. To finally realise the new burger, additional processing knowledge is needed. However, the more complex products and the more comprehensive supply chains are, the more important appears this knowledge category. Thus, it can be seen as extremely relevant for B-to-B firms.

The category (3) direction distinguishes between market and technology knowledge. A link to innovations can be derived from the sources of an innovation. Subsequently, the source of an innovation arises either from a market-demand and thus starting from market knowledge or from technology-push (Johnson et al. 2011; Weiber/Pohl 2016) and therefore, technology knowledge. A possible market-demand could be to know that there is a huge interest regarding hover-boards in the market, for instance. Therefore, the way market demand can be used by firms is via knowledge. Technologies themselves are defined as a knowledge combination of a means/target-relationship (Bullinger/Warnecke 2003; Gersch et al. 2005). Thus, technology push could be seen as based on technological knowledge. Using market knowledge to

generate new products bears the risk, that a new product is possibly not realisable from a technology perspective (Weiber 2002). Subsequently, regarding the hover-board example there is so far no technology on the market to realise it (Wiesener 2016). On the other hand, if a new product is based of technology knowledge there is a risk that the market won't accept it (Lambin/Schuiling 2012). Consequently, market as well as technology knowledge bear similar chances and risks in regard to innovations. Thus, these attributes have a clear relation to innovations. However, the attributes don't seem to be applicable to define a reasonable scale of different innovation values. Since market as well as technology knowledge could be located within a firm and also within the external environment, this knowledge appears to be relevant for internal and external knowledge. Furthermore, this can be seen as independently of B-to-C and B-to-B firms, since both could profit from market and technology knowledge. A limitation might be that B-to-C firms typically dispose of more market knowledge, since they are in direct contact with the end market. From this perspective, technology knowledge seems to be of higher innovation value.

Tacit knowledge out of the category (4) articulation describes knowledge that cannot be articulated (Nonaka/Takeuchi 1997) and therefore, it is difficult to transfer it from one person to another. As a consequence, that kind of knowledge can hardly be used to generate innovations, as from a knowledge perspective, new knowledge consists in particular of the combination of new and existing knowledge (Wiesener 2014). If knowledge isn't explicable it appears impossible to combine it with other knowledge. In regard to external knowledge, it seems difficult to acquire tacit knowledge whereas explicit knowledge can be acquired from a speech, for instance. However, there are ways to integrate tacit, external knowledge via design thinking, for instance. Following that method, users are watched to understand their way of doing things (Keuper et al. 2013). Thus, problems and possible solutions can be identified. However, using this method it would be easier to find new solutions if the users also could explain their problems. Therefore, the category articulation can be seen as relevant for innovations due to possible knowledge combinations based on articulation of knowledge. In regard to the effect on the innovation value it appears evident, that the more explicable knowledge, the higher is its innovation value. Therefore, articulation of knowledge can be seen as an applicable category for defining the innovation value of knowledge. Subsequently it appears more effective, if a firm acquires explicit knowledge, since explicit knowledge seems easier to be integrated in the innovation context of a firm. This can be seen as valid for B-to-C and B-to-B in the same way. Differing between (5) internal and external knowledge is one of the main arguments to distinguish between closed and open innovation (Chesbrough 2003; Kodama 2016). Therefore, there seems to be relevance in regard to innovations. In particular external knowledge is argued to be a key driver of innovations (Simard/West 2006). External knowledge could be customer knowledge, for instance. Based on that knowledge it is possible to learn from customer problems and thus, to generate new ideas. On the other hand it can be argued that internal knowledge is as important in regard to innovations since in particular the combination of internal and external knowledge lead to new knowledge (Wiesener 2014) and therefore, also possibly to new ideas. From a process-based perspective, the combination of these attributes are described by the so-called outside-in process of open innovation (Enkel 2009). As a result, both knowledge types can be seen as important for innovations and it appears difficult to rate, whether external or internal knowledge has more innovation value. Furthermore, the focus of the current article is on external knowledge so that this category will be neglected in the further progress to define the innovation value of external knowledge. Since knowledge in general can be seen as one of the most important resource of a firm, the category (6) authenticity of knowledge seems to have a clear correlation to innovation. As shown in the previous sector, knowledge is spread heterogeneously over several market stages. Thus, receiving knowledge via several market stages results in losing authenticity and therefore in derived knowledge. Consequently, the attributes derived and original knowledge seem to be applicable to scale the innovation value of external knowledge, since original knowledge can be seen as more valuable to generate innovations in comparison to derived and thus falsified knowledge (Wiesener 2014). Thinking of a supply chain consisting of a raw material supplier R, three suppliers S3 to S1 and a manufacturer M, for instance, it is even thinkable to develop a kind of a gradation of different innovation values. If a supplier firm S3 acquires knowledge K1 about market needs from his direct customer S2 according to a typical supplier-demander relationship, original market knowledge can be seen as three times derived since this knowledge starts at the manufacturer M. In case S3 acquires furthermore original technological knowledge K2 from the raw material supplier R, this knowledge is derived only once. As a consequence, K2 could be classified as of higher innovation value in regard to its authenticity. Therefore, this category offers grades within an innovation value scale consisting of n-1 levels within a supply chain



consisting of n market stages. Since the authenticity of knowledge is based on several market stages, this category can be seen as applicable in the B-to-B-sector.

In summary six knowledge categories for external knowledge could be identified that can be seen as relevant in an innovation context. Five out of those are relevant in the context of external knowledge, as shown in figure 1. Three out them seem to be applicable to enable a scalability in regard to the innovation value.

Knowledge Category	Relation to innovations	Scaling of the innovation value
<b>(1) Dispersion</b> individual - common	Important category since a resource has to be rare to contribute to innovation success	the less knowledge is spread outside a firm the higher the innovation value
<b>(2) Object</b> process-based - component-based	Both attributes comparably significant to innovation success	-
<b>(3) Direction</b> technology - market	Both attributes comparably significant to innovation success	-
<b>(4) Articulation</b> tacit - explicit	New knowledge combinations only possible, if knowledge gets articulated	the more explicit, the higher the innovation value
<b>(5) Authenticity</b> derived - original	Knowledge as important resource of a firm, therefore authenticity necessary	the more original, the higher the innovation value

Figure 1: Knowledge categories and their innovation value

## 7. Discussion

The knowledge categories as shown in figure 1 correspond to the first research question of this article. The columns two and three of same figure show, whether and in which way these categories respectively their attributes influence the innovation value. This answers the second research question. Consequently, it appears more valuable to acquire explicit rather than tacit knowledge, for instance. In cases where no scalability is given, there is also an innovation value in regard to the category with the limitation that no grading can be reached with the category's attributes. As an example, the category location consists of the two attributes market and technology knowledge. Both attributes are of value in a similar way and thus do not allow scaling the innovation value as shown in the previous section. The innovation value of external knowledge can be finally defined by the sum of the innovation values of its categories, as shown in figure 2.

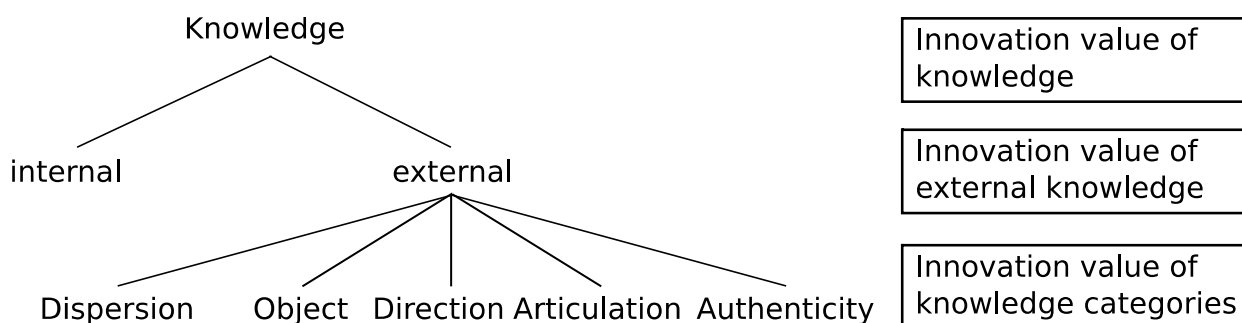


Figure 2: Hierarchy of knowledge categories

For instance, if a supplier acquires knowledge from a conference speech of a manufacturer regarding market trends of smartphones, it could be acquired also from others since it is presented on a conference with numerous persons listening to the speech. Therefore, the acquired knowledge can be classified as (1) common. Furthermore, the knowledge is (2) component-based, as the speech is about a product as well as (3) market-orientated due to the topic of the speech. Since the knowledge is transferred to the supplier via a speech, it can be classified as (4) explicit. In regard to its (5) authenticity, the knowledge seems to be nearly original since a manufacturer with direct contact to the end market talks about the market. As a conclusion, the innovation value of that knowledge is defined by all categories whereas each of these categories seems to favour the innovation value except the category dispersion. In that regard the innovation value could be even increased by arranging a personal innovation meeting with the manufacturer, for instance. This way, also the attribute of the category dispersion would be individual and thus, of high innovation value.

This single view in an univariate manner arises the question how a multivariate use will affect the innovation success. For instance, particularly the combination of market and technology knowledge seems to favour innovation success (Weiber/Pohl 2016) and therefore to have a high innovation value. In consequence, it could be argued that the combination of both is of higher innovation value than the single use of either market or technology knowledge. This appears to be analogously the same for the category object. Both, process and component knowledge contribute to the innovation value. Therefore, the combination of both would lead to an even higher innovation value. Subsequently, the current work can be seen as a base for further evaluation on a multivariate perspective.

## 8. Implications

There seems to be the need to further define the term external knowledge within the open innovation context since not every kind of external knowledge can be seen as of high innovation value, as shown in this paper. The evaluated knowledge categories could be a starting point for further conceptualisation and based on that, for an empirical study. This could be realised, for instance, via a survey in the B-to-B-sector related to innovation sources, tools and strategy. In the next step, that information should be converted to the knowledge categories. Finally, the success of the categories can be tested by analysing the criteria of the categories in innovative respectively non-innovative firms. From a resource-based perspective there seems to be the need for further research to refine the resource property valuable within the VRIO approach in regard to different resources. This could be realised for instance by mapping the value property of a resource on specific contexts. Subsequently, the current article can be seen as an example for defining the value of a resource in a knowledge context and the target innovation success, since the value definition should not end in itself.

Knowing the innovation value of external knowledge opens up the question how to integrate the innovation value of external knowledge into open innovation. Since this article is based on the open innovation outside-in process, the concept of innovation values could be integrated into the knowledge acquisition phase. One approach could be, for instance, to install a pre-phase to plan the acquisition of external knowledge based on the innovation level. Thus, the resource input could be focussed on acquiring only external knowledge with high innovation value. During the actual acquisition phase the question arises, how to boost the innovation value via open innovation tools. Applying tools such as customer or supplier integration doesn't lead to the maximal innovation value because using these tools within the B-to-B environment cannot comply the (5) authenticity for all kind of knowledge. Because of derived knowledge within supply chains, the only way of getting original knowledge seems to be a multi-stage approach. Such a method of multi-stage knowledge acquisition is appropriate to integrate customers, customers of customers as well as suppliers and suppliers of suppliers (Wiesener 2014). In summary, there seems to be the need for further research in particular related to the integration of the innovation value into open innovation tools.

From an overall firm's innovation perspective, the key resource knowledge doesn't only consist of external but also of internal knowledge, as shown in figure 2. In particular the combination of internal and external knowledge leads to new knowledge (Wiesener 2014). Subsequently, it appears reasonable to adapt the knowledge category concept to internal knowledge. Notable that the innovation value of the category dispersion seems to be contrary in regard to internal and external knowledge. Related to external

knowledge dispersed knowledge means that knowledge isn't rare and thus cannot be seen as a promising resource in the innovation context (Barney 2010). Looking at internal knowledge it appears more successful to spread knowledge within a firm (Wiesener 2014). As a result, an additional evaluation of internal knowledge related to knowledge categories would help to define the effect of knowledge on the innovation success even more concrete.

## 9. Concluding Observations

Based on the results of the present paper knowledge can be seen as a key resource in the innovation context. However, at the same time it seems to be important to differentiate knowledge based on its contribution to a firm's innovation success. For that purpose, a concept of classifying knowledge into categories is proposed. The innovation value for each knowledge category is defined to enable open innovators to plan their activity in regard to favour the innovation success. This could be realised by integrating a knowledge rating before starting the acquisition of external knowledge, for instance. Thus, the probability of innovation success can be increased. From a resource-based perspective such a knowledge rating would also lead to a more efficient resource-input.

Overall five knowledge categories could be identified that are relevant related to external knowledge and suited for the B-to-B-sector. The categories object and direction didn't lead to a scaling possibility of the innovation value. But nevertheless those categories can be seen as highly important for a firm's success since all corresponding attributes contribute to the innovation success. Three out of these five categories enable a rating of the innovation value based on its attributes. In particular the category authenticity seems to be significant in regard to the B-to-B environment, since derived knowledge can be seen as the consequence of several market stages within a supply chain. Regarding knowledge exploitation possibilities by typical open innovation tools it appears that none of the tools solely applied enable a maximum innovation level. Rather a combination of different tools seems to be the only way to maximise the innovation value. As to derived knowledge, appropriate B-to-B methods to get original knowledge are the multi-stage knowledge acquisition or also an adapted lead user concept with a wider stakeholder integration, for instance. Such a lead stakeholder respectively stakeholder-sourcing method should integrate not only customers but also customers of customers as well as suppliers of suppliers (Wiesener 2014).

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**Sub-theme 5:**  
**SMEs and Economic Development**

## **An Empirical Study of Net Job Creation, Firm Size and Firm Age in China - With the Panel Data from Chinese Industrial Enterprises**

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### **1. Abstract:**

The employment issues are related to people's livelihood of a country. Nowadays, China is under a severe employment pressure. In this regard, the promotion of employment has great benefits for the economic operation, social development and demotic living standard in China. In this context, it's very essential to investigate the relationships between firm characteristics and job creation. The progress of studying will help researchers to identify which specific type of enterprises is the major force on job creation. Then the government can formulate efficient employment regulations to avoid policy failure or resources wasting. Researches among job creation in China have been extensively reported in the literature. However, empirical studies of job creation versus to firm size and firm age with the practical panel data from Chinese industrial enterprises are an open area for investigation.

With the 6-year panel data from 2003 to 2008, this article studies the job creation issues occurred in the modern society in China. Utilizing three sorts of methods, including two traditional statistical methods and the latest method called dynamic method, this article mainly discusses the statistical relations and mathematic models between the net job creation and the firm size or the firm age.

The research is divided into two parts. In the first part, the net job creation in China among the 6 years is quantified by three sorts of methods in terms of firm size. Based on the 6-year panel data quoted from Chinese industrial enterprise database, the job creation statistics in terms of firm size is presented respectively with each method while the difference and bias existed among the three methods are compared. It is shown that the small and medium enterprises (SMEs – job number less than 250) create most jobs among the 6 years. This reveals the SMEs are the major force in job creation in China.

In the second part, this article discusses the mathematical models between net job creation and the firm size or firm age, which is based on the statistical results obtained in the first part. It is surprisingly to found that these statistical relations fit a lognormal model very well instead of the conventional linear model. The similar results are furthermore obtained as regard to the statistical relations between the net job creation and the firm age, firm average salaries and also firm assets, respectively. A multivariate regression with the proposed lognormal models is conducted to confirm that our hypothesis is appropriate.

The details of the statistical results obtained in this article are finally summarized with several impressive conclusions: 1) The SMEs have contributed 77.5% to the national net job creation, which proved that the SMEs are the main force of China's job creation; 2)The net job creation provided by the SMEs have a logarithmic relationship with the firm age, which means young firms are available to contribute more jobs than older ones; 3)There exists a typical logarithmic relationship between net job creation, firm average salaries and also firm assets, which implies that firms with low salaries and assets may create the largest proportion of the national employment.

## 2. Introduction

The employment issues are related to people's livelihood of a country. China as a populous developing country has a huge employment pressure. In this regard, the promotion of employment has great benefits for the stabilized economic operation, sustainable social development and continuous improvement of people's living standards. In the end of 2013, there were 232.41 million employees in industrial enterprises among total employment of 767.04 million working people in China, accounting for 30.3% of the total employed population. It is expected that 12 million of new employment staffs need to be settled in 2016. In this context, it's very essential to study the relationship between firm characteristics and job creation. This will help us to identify which specific type of enterprises is the major force in job creation. In addition, we can develop the targeted employment policies to avoid policy failure or wasting of social resources.

## 3. Objectives

The main research objective of this article is to reveal the correlation and mathematical models between the job creation and firm by exploring the panel data characteristics of Chinese industrial enterprises. The research herein is mainly divided into two parts. In the first part, the net job creation in China among the 6 years from 2003 to 2008 is quantified by three sorts of methods in terms of firm size. Based on the 6-year panel data quoted from Chinese Industrial Enterprise Database, the job creation statistics in terms of firm size is presented respectively with each of the three methods while the difference and bias existed among these three methods are compared. It is shown that the small and medium enterprises (SMEs – employees less than 250) create 77.5% of the net job creation among the 6 years. This reveals the SMEs are the major force in job creation in China, which is quite similar to that in other regions of the world.

In the second part, the article discusses the mathematical models between net job creation and the firm characteristics, including firm size, firm age, firm average salaries, and firm assets, which are based on the quantitative analysis results obtained in the first part. Surprisingly the study found that these statistical relations fit a lognormal model very well instead of the conventional linear model.

The details of the statistical results obtained in this article are finally summarized with several interesting conclusions and implications: 1) The SMEs have contributed 77.5% to the industrial net job creation, which proved that the SMEs are the main force of China's job creation; 2) The net job creation provided by the SMEs have a logarithmic relationship with the firm age, which means young firms are available to contribute more jobs than older ones; 3) There exists a typical logarithmic relationship between net job creation, firm average salaries and also firm assets, which implies that firms with low salaries and assets may create the largest proportion of the national employment. A multivariate regression with the proposed lognormal model is further conducted to confirm that our idea is correct.

## 4. Literature Review

David Birch (1979, 1981&1987) was the first person to study the relationship between firm and job creation. His studies by taking the US enterprise data as an example indicate that small enterprises are the most important source of job creation. According to Birch's (1979,1981), 66% of new jobs in the United States during the 1969-1976 were provided by those small enterprises with 20 employees or less, 81.5% of new jobs were offered by those small enterprises with 100 employees or less. Later, Birch (1987) further emphasized those enterprises with 20 employees or less provided 82% new jobs and 88.1% employment growth during 1981-1985. Birch's views fully fit abovementioned US government's practice and gradually became the traditional mainstream thinking. His views also had a lasting impact on the US policy (Neumark et al., 2011, p.16), becoming the theoretical cornerstone of a series of US policies, such as the adjustment of government regulations, tax incentives and the projects supporting the development of small business, etc.

Due to the influence of Davis Birch's et al (1993; 1996), many scholars have re-inspected David Birch's research result of small enterprises, but the findings are not consistent. For example, Wagner J (1995) used the annual data of Germany, Broersma and Gautier (1997) used the annual data of Netherlands,



Genda (1998) used the annual data of Japan, Hohti (2000) used the annual data of Finland to test the relationship between firm size and job creation, all the results obtained support David Birch's view. In other words, the firm size was negatively correlated to the job creation. However, Borland and Home's (1994) research conclusions on Australia, Konings' (1995) study of British and the research conclusions obtained by Tsouet al.(2002) through the study of Taiwan were an exact opposition to the research conclusions of David Birch. They believed big enterprises were the major force in absorbing employment.

The researches on employment of SMEs in China are roughly about the exposition and analysis of the employment importance of SMEs. Wang Weihong (2006), Xiong Furong (2007) and Xu Deyouet al (2007) pointed out that under the situation of economic globalization, SMEs play a growing role in the economic development, employment and social coordination, which can effectively relieve employment pressure brought by the newly-added college graduates with an annual growth rate of 20% roughly. Ou Xinqian (2008) pointed out that SMEs have become an important force in promoting development of social productivity and becoming the main channel of expanding the employment, providing more than 75% of jobs. Through the comparison of the SME differences between Xi'an and Wenzhou, Yuan Wenqian (2011) proved that the regions in China have different impacts on enterprise job creation.

It's noted by the author that firm size is varied from a few number to hundred thousands of employees, such a large dynamic range makes the traditional linear model inapplicable. Secondly, there is a significant turning point (or peak point) among the job creation amount, the firm size and firm age in China. This inspires us to use lognormal model to describe their relationships. The results of this article also confirm this idea available.

## 5. Quantification Methods

### 5.1 Definition of Firm Size

The current firm size classification in China is to take the enterprise business revenue and number of enterprise practitioners as the standard, but it is unfortunately too rough to be explored in a quantitative way. Since China is a country with large population base, this article takes the reference of the classification methods among the similar countries, e.g., American firm size, as the standard (Neumark, David; Wall, Brandon; Zhang, Junfu, 2011). According to Neumark's classification method, 20,50, 100,250,500,1000,2500,5000,10000,25000, 50000, with their left limits, are considered as the boundary of the classified ranges of firm size. The corresponding classified ranges are shown as follows in the Table 5-1.

Table 5-1 Classified Ranges of Firm Size

N	Range
1	[0,20)
2	[20,50)
3	[50,100)
4	[100,250)
5	[250,500)
6	[500,1000)
7	[1k,2.5k)
8	[2.5k,5k)
9	[5k,10k)
10	[10k,25k)
11	[25k,50k)

12	[50k,100k)
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## 5.2 Data Source

The data source of this present research comes from the Chinese Industrial Enterprises Database. As of 2007, there were a total of 330,000 Chinese enterprises included in this database, accounting for about 95% of China's total industrial output value. This database covered more than 40 major categories of Chinese industries, more than 90 medium categories, and more than 600 subcategories, which is currently the most comprehensive and authoritative firm-level data in China. This article focuses the industrial section data of this database for the duration 2003-2008, which covers more than 200,000 samples.

## 5.3 Three Quantification Methods

### 5.3.1 Base-year-method/End-year-method

Both the base-year-method and the end-year-method were proposed by three papers of David Birch in 1979, 1981, and 1987. The data processing of these two methods is very simple, namely, it is to select a year as the base year to classify the corporate employment volume.

We define the total job creation value of the n-th category enterprise in y year as  $JC(n, x, y)$ , where n is the size category shown in Table 5-1, and there's a total of 12 categories; x is an enterprise index, and y is the year. We define the number of employees of the x-th enterprise in the y year as  $A_{xy}$ , and  $x_n$  as the total number of enterprises in the n-th category, respectively. Thus we have the base-year-method as follows:

$$JC(n, x, y) = \sum_{k=1}^{x_n} (A_{k(y+1)} - A_{ky})$$

As to the end-year-method, it can be considered as a sort of the base-year-method which chooses the end year as its base year.

### 5.3.2 Average-year-method

The average-year-method was discovered by Davis et al in 1996. This method was proposed because Davis believed that the base-year-method may produce error of mean regression. This method is to sum the number of enterprise employees during two successive years, which is then divided by 2, thus to define the belonging issue of the corresponding job creation contribution value under the situation that the number of the enterprise employees is a cross-border one. The calculation formula of the average-year-method is similar to that of the aforementioned base-year-method except that  $\frac{A_{xy} + A_{x(y+1)}}{2}$  is chosen as the base to replace  $A_{xy}$  in the above formula.

### 5.3.3 Dynamic Method

The dynamic method was proposed by Davidsson (1998), and subsequently conducted by Butaniet al (2006). Its main idea is to divide the job creation contribution of cross-border companies into two or more blocks based on the established boundary values. In addition, different sub-blocks are accumulated to different category intervals of companies, so as to avoid the obvious problem of the base-year-method and the average-year-method when dealing with the cross-border data. Although this method has relatively complex statistical process, it is with very accurate if a credible database is utilized.

Here we present an alternative way to intuitively describe the mathematical method in Figure 5-1 when calculating the data with the idea of the dynamic method.

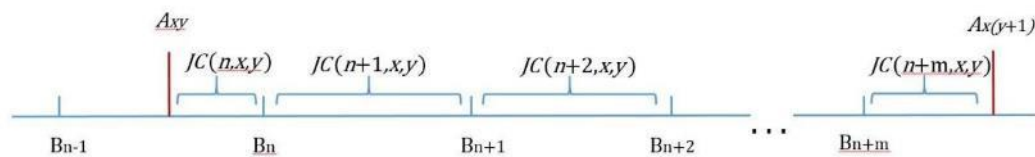


Figure 5-1 The Graphical Description of the Dynamic Method

wherein,  $B_n$  is the boundary value of divided category of firm size  $n$ ,  $n = 0, 1, \dots, N$ . For the employee number  $A_{x(y+1)}$  of the  $x$ -th enterprise, if its value is greater than  $A_{xy}$  and crosses multiple boundary values from  $B_n$  to  $B_{n+m}$ , then the value is divided into  $m+1$  segments as shown in Figure 5-1, which are then respectively accumulated to  $JC(n+k, x, y)$ , with  $k = m, \dots, 1, 0$ . Furthermore, the situation above can be described as the following formula:

$$A_{x(y+1)} - A_{xy} = (A_{x(y+1)} - B_{n+m}) + (B_{n+m} - B_{n+m-1}) + \dots + (B_n - A_{xy})$$

Then we add the first part  $(A_{x(y+1)} - B_{n+m})$  to  $JC(n+m, x, y)$ , the second part  $(B_{n+m} - B_{n+m-1})$  to  $JC(n+m-1, x, y)$ , ..., and finally  $(B_n - A_{xy})$  to  $JC(n, x, y)$ , respectively. Similarly, the above analytical and statistical methods are still applicable for the situation that  $A_{x(y+1)}$  is less than  $A_{xy}$  while crossing one or more boundaries.

### 5.3.4 Advantage of the Dynamic Method

Compared with three kinds of quantification methods, the base-year-method is widely used in the early literature to quantify the net job creation, but there's a serious deviation when using this method to estimate corporate job creation amount. For example, as it shows on Table 5-2, firm A has 30 employees in the base year and 60 employees in the following year. Thus, to cross the boundary of firm size 50, the obtained result is that the company contributes 30 job creation amount for the size category of  $[20, 50)$ . In contrast, firm B has 60 employees in the base year and 30 employees in the following year. In similar, this data crosses the boundary value of 50, the obtained result is that the company contributes -20 job creation for the size category of  $[50, 100)$ . It is obvious that when the job creation is quantified by using the base year method, its positive value on job creation is more often attributed to the small category, but its negative value on job creation is more often attributed to the large category. Thus it can be drawn that how inversion proportion relationship between the firm size and job creation amount are incorrectly calculated.

Table 5-2An Example with Two Firms for Job Creation

Firm A with employees change from 30 to 60:

Methods/Range	[20,50)	[50,100)
Base Year Method	30	0
Average Year Method	30	0
Dynamic Method	20	10

Firm B with employees change from 60 to 30:

Methods/ Range	[20,50)	[50,100)
Base Year Method	0	-30
Average Year Method	-30	0
Dynamic Method	-20	-10

Talking about the average-year-method, although, it avoids to some extent the corporate issue of cross-border volatility, as it shows in table 5-2, when the net job creation is quantified by the average-year-method, the corresponding size of firm A and firm B are both  $(30 + 60)/2 = 45$ , that is, there's a contribution of 30 job creation amount made by size category [20,50), but there's no contribution made by the category [50, 100). It is apparent that this quantified method is also not rigorous enough.

When it comes to the dynamic method, the results are quite specific. Whenever an increase or a decrease happened among firm A and firm B, the net job creation remains same in value: firm A contributed  $50-30=20$  to the category [20,50) and  $60-50=10$  to the category [50,100) while firm B contributed  $30-50=-20$  to the category [20,50) and  $50-60=-10$  to the category [50,100). This simple example may let us know how much bias exists with the base-year-method and average-year-method and how effective the dynamic method is.

Figure 5-2 is another example to further reveal the difference when using the practical Chinese database. Here we used the end-year-method instead of the base-year-method, because there are far more firms existed in 2008 than 2003 and therefore the base-year-method is unavailable to be evaluated specifically. In the figure 5.2 we can see that when it comes to the end-year-method, the net job creation in the category [0,20) are much underestimated while the net job creation of larger firms are overestimated. The average-year-method indeed fixed a part of the bias, however, error caused by mean reversion still cannot be avoided in the first half of the curve. The curve for the dynamic method seems much more stable. The first half of the curve remains inside the waving range of the average-year-method curve and the second half remains almost overlapped onto the average-year-method curve. This illustrates to some extent the precise of the dynamic method.

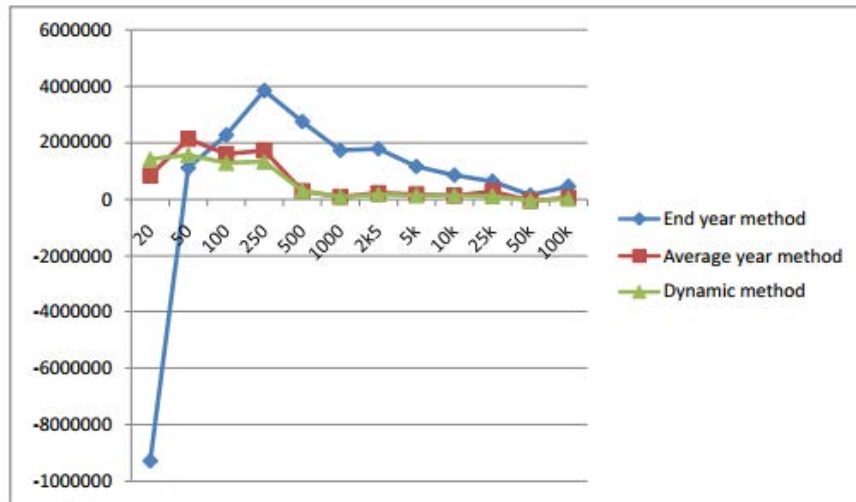


Figure 5-2 Comparison among Three Methods with Data from 2007 to 2008

### 5.4 Quantitative Results for Practical Database

Utilizing the balanced panel data from 2003 to 2008, we work out the final quantitative statistics with the dynamic method which is shown in the table 5-3.

Table 5-3 The Final Data with Dynamic Method

	03-04	04-05	05-06	06-07	07-08	Sum
[1,20)	1285645	-254210	625425	996870	1417824	4071554
[20,50)	1612474	-262300	819414	1314608	1568833	5053029
[50,100)	1591630	-239296	882574	1399157	1289884	4923949
[100,250)	1795500	-326014	1214275	1915815	1333010	5932586
[250,500)	830258	-223133	752612	1085277	308180	2753194
[500,1000)	391551	-26776	585258	824785	91442	1866260
[1k,2.5k)	178410	192256	626061	615879	177232	1789838
[2.5k,5k)	91499	170094	326286	196624	139715	924218
[5k,10k)	53033	218679	234462	164931	142216	813321
[10k,25k)	24003	212321	68502	130473	117604	552903
[25k,50k)	95850	77312	46179	24127	-39502	203966
[50k,100k)	234715	160611	-4048	29929	26376	447583

The table 5-3 implies that the net job creation data at the year level from 2005 to 2008 has a stabilized increasing trend in most majority of the ranges. However, at the year 2003-2004 there exist an obvious descend happened in the range [1,1000). We infer that it might be influenced by the SARS in China at the year 2003 which leads to the temporary shutdown of SMEs.

In terms of range level data it is clear to see that the net job creation in the range [1,250) is significantly higher than the job creation in other ranges, which contributes 77.5% to the sum of net job creation in the

6 years. Therefore, the idea that SMEs are the most important leading power of job creation in China among industrial level is proved.

## 6. Empirical Analysis, Data Fitting and Findings

### 6.1 Model Establishing and Data Fitting

We start from establishing the mathematical models between the net job creation and the firm size, which is based on the statistical results obtained above. As we observed, the firm size has a very large dynamic range, e.g., from a few number to hundred thousand employees, thus it is obviously inappropriate to explore the linear model. Secondly, there's significant turning point (or peak point) for the quantified statistical results of job creation amount versus to the firm size or firm survival ages in China. This inspires us to use the tool of a lognormal distribution commonly seen in economic theory. In doing so, we intent to build a lognormal model to describe the mathematical relation of the net job creation versus to the firm size, which is shown as follow:

where  $K_T$  is the sum of the  $JC(n) = \frac{K_T}{n \cdot \sigma \sqrt{2\pi}} e^{-\frac{(\ln(n)-\mu)^2}{2\sigma^2}}$ ,  $n \geq 1$  net job creation among all ranges and  $n$  is the firm size category.

Next we will try to investigate how the practical statistics data obtained in section 5 can fit the lognormal model proposed above. First, we observed the job creation amount obtained in the previous part of this article is a cumulative amount within each of the category interval of firm size, and additionally the category classification of firm size is with a set of non-regular intervals. Therefore in order to obtain the corresponding distribution function, it's necessary to make normalized processing of the corresponding job creation amount by using its corresponding category interval size. Secondly, we found that such set of firm size intervals proposed originally by the US scholars changes from small to large, which is roughly in line with the successively increasing manner based on exponential power of 2.1734.

Therefore,  $n = \log_{2.1734}(A) - 2.9763$  can be used for fitting, wherein,  $n$  is the enterprise category, and  $A$  is the number of enterprise employees. After doing these normalization and scaling, the final data fitting results are showed in the figure 6-1, where  $\sigma = 0.51258$   $\mu = 0.59142$ ,  $K_T = 526559.7$ .

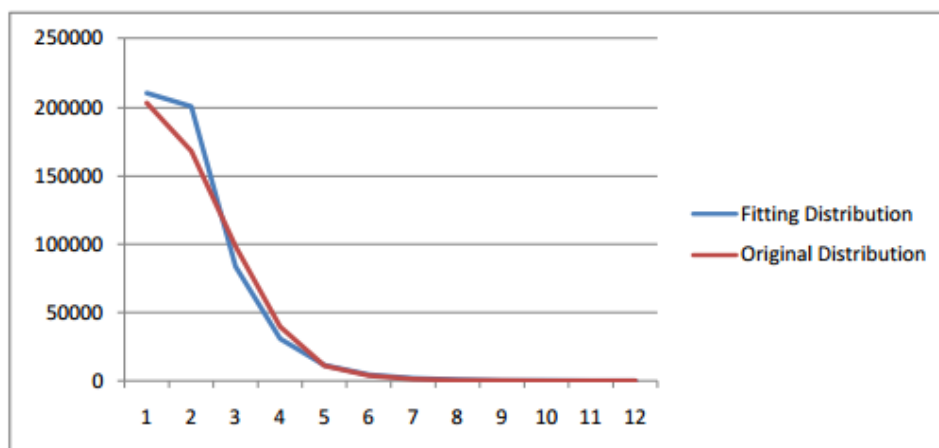


Figure 6-1 The Relationship between Firm Size and Net Job Creation

By noting that above formula is distribution function of net job creation versus to firm size, the usage of creating such a lognormal model is that it would be possible for us to estimate the net job creation in an arbitrary range with the  $\sigma$  and  $\mu$  we got. For instance, once we need to estimate the net job creation in an arbitrary range  $[A_1, A_2)$ , we can proceed as follows:

Where  $y_1 = \log_{2.1734}(A_1) - 2.9763$   $JC[A_1, A_2] = \int_{y_1}^{y_2} \frac{K_T}{y\sigma\sqrt{2\pi}} e^{-\frac{(\ln y - \mu)^2}{2\sigma^2}} dy$  and  $y_2 = \log_{2.1734}(A_2) - 2.9763$ .

## 6.2 Further Results Regarding Other Firm Characteristics

In this subsection, we would like to further investigate the mathematical relationships between the job creation amount and other firm characteristics, including firm survival age, average salaries, and firm assets, respectively. The same practical database and quantified methods are used as above, and similar lognormal models are explored in order to achieve these relationships. The main results are summarized as follows.

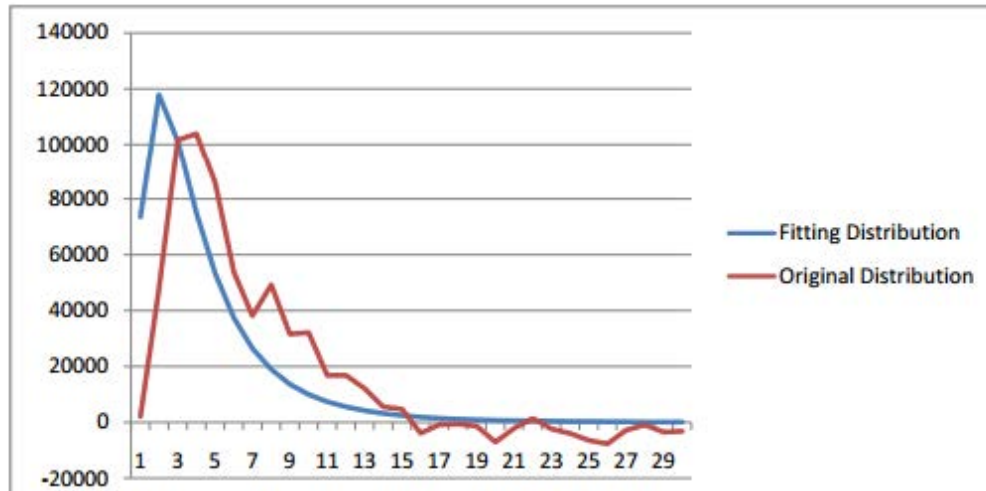


Figure 6-2 The Relationship between Net Job Creation and Firm Age

Figure 6-2 shows the relationship between the net job creation and the firm age. It is clear to see that at the age range [0, 5), which can be inferred as the start-up period of firms, there exists a significant positive relationship between the net job creation and the firm age. However, when the firm age exceeds 5 year, the relationship is turned out to be negative. We can find out that the range [0,5) accounted for 62.6% of the total net job creation, which supported the our initial hypothesis: in considering the factor of firm age, it is probably to be the start-up enterprises rather than the SMEs that are the major source of job creation in China and further studies will be proceeded in section 6.4. Furthermore, we fit the data with a lognormal model and the result is showed as follows and the corresponding fitting curve is also depicted in

$$JCs(y) = \frac{K_T}{y\sigma\sqrt{2\pi}} e^{-\frac{(\ln y - \mu)^2}{2\sigma^2}}, y > 0$$

Figure 6-2 for comparison:

where  $y$  is the firm age, and  $\sigma=0.72137$ ,  $\mu=1.22024$ ,  $K_T = 556159.7$ .

As to the relationships of the net job creation versus to the average salaries of SME employees and the registered assets of SMEs, it is found out that they can still be very well described by a lognormal model. Figure 6-3 and Figure 6-4 shows the relationship between each of them.



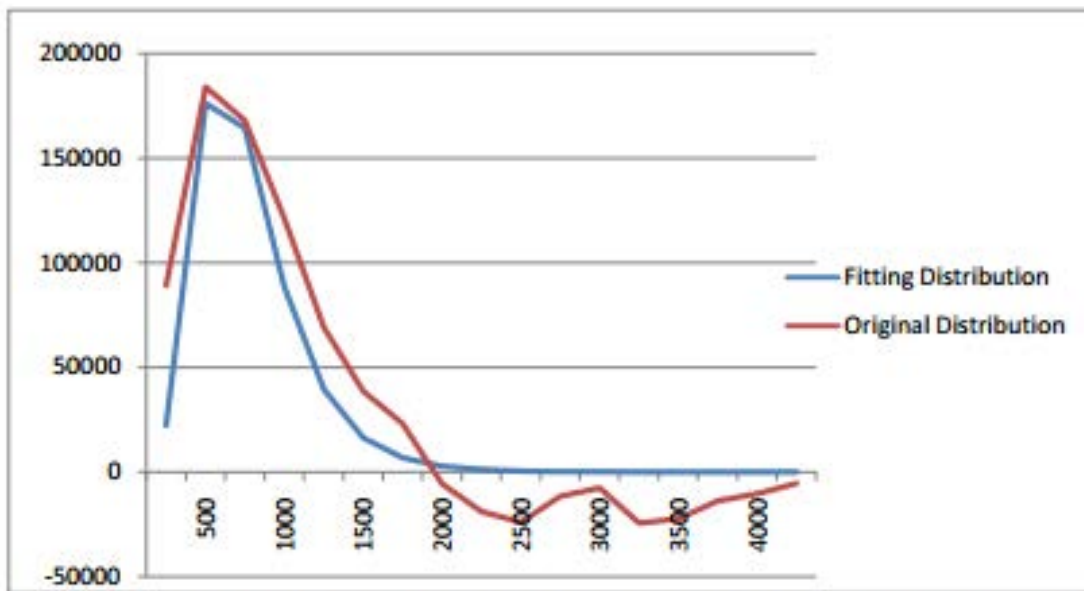


Figure 6-3 The Relationship between Net Job Creation and Average Salaries(CNY)

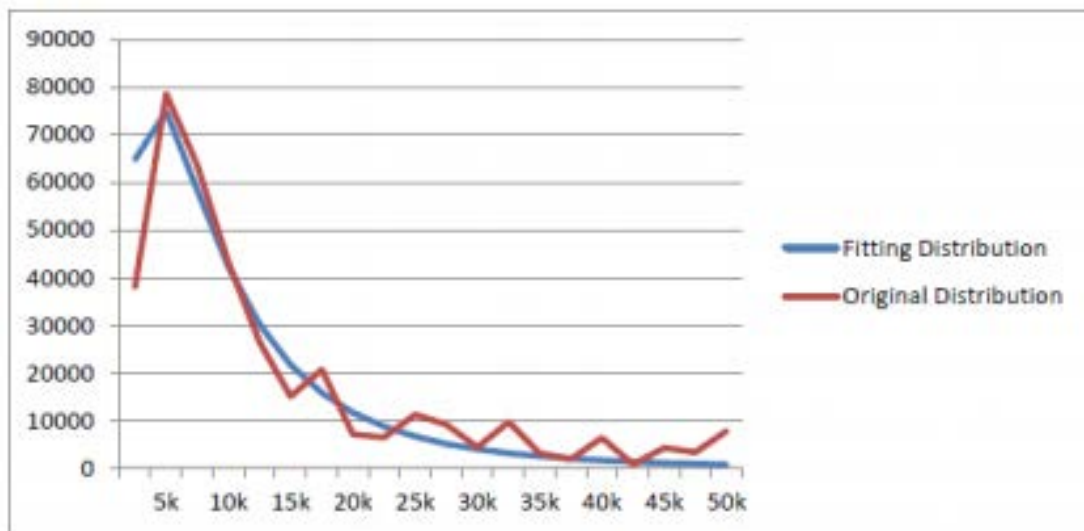


Figure 6-4 The Relationship between Net Job Creation and Firm Assets  
(in Hundred CNY)

To summarize, the results in Figure 6-3 and Figure 6-4 show that the relationship between the net job creation and the average salaries can be considered following a lognormal model with  $\sigma=0.41763$ ,  $\mu=1.04066$ ,  $KT=521267$ , and  $y=SLY/250$  while the relationship between the net job creation and the firm assets follows a lognormal model with  $\sigma=0.81812$ ,  $\mu=1.15579$ ,  $KT=360372$ , and  $y=AST/2500$ . Furthermore, we can check out in the figures that almost all the positive net job creation is contributed by the salary range  $[0,2000)$ , and in addition 81.2% of net job creation is contributed by the SMEs with less than 2 million CNY of their assets. Apparently we can see that the SMEs with low salary level and low registered assets are leading force of creating jobs in China. Nevertheless, this result can also be interpreted as the most majority of jobs created by small and medium industrial enterprises in China are of low salaries and poor in quality. We insist that this result should be taken into consideration while the government formulates beneficial policies for SMEs.



### 6.3 Multivariate Regression with Lognormal Model

Based on the findings above, we intend to further figure out the correlation of net job creation with respect to firm size, firm age, average salaries and firm assets. In order to proceed our study, a multivariate lognormal model is initialized as follows:

$$\begin{aligned}
 JC = & A_{size} \sum_{k=1}^{n_1} \left( \frac{K_1}{x_1 \cdot \sigma_1 \sqrt{2\pi}} e^{-\frac{(\ln x_1 - \mu_1)^2}{2\sigma_1^2}} \right) + B_{age} \sum_{k=1}^{n_2} \left( \frac{K_2}{x_2 \cdot \sigma_2 \sqrt{2\pi}} e^{-\frac{(\ln x_2 - \mu_2)^2}{2\sigma_2^2}} \right) \\
 & + C_{sly} \sum_{k=1}^{n_3} \left( \frac{K_3}{x_3 \cdot \sigma_3 \sqrt{2\pi}} e^{-\frac{(\ln x_3 - \mu_3)^2}{2\sigma_3^2}} \right) + D_{ast} \sum_{k=1}^{n_4} \left( \frac{K_4}{x_4 \cdot \sigma_4 \sqrt{2\pi}} e^{-\frac{(\ln x_4 - \mu_4)^2}{2\sigma_4^2}} \right) \\
 & + \varepsilon
 \end{aligned}$$

where  $x_1 = \log 2.1734(A) - 2.9763$ ,  $A$  is the number of firm employees,  $K_1$  is the total number of net job creation in terms of firm size and  $n_1=12$ ;  $x_2$  is the firm age variable,  $K_2$  is the total number of net job creation in terms of firm age, and  $n_2=80$ ;  $x_3$  is the average salary variable divided by 250,  $K_3$  is the total number of net job creation in terms of average salary, and  $n_3 =20$ ; and finally  $x_4$  is the firm assets variable normalized by 2500,  $K_4$  is the total number of net job creation in terms of firm assets, and  $n_4=20$ , respectively. Table 6-1 gives the explanations of the variables in the model.

Table 6-1 Explanations of the Variables in the Regression Model

	Code	Name	Variable Explanation
Dependent Variable	$JC$	Net Job Creation	The net job creation of the year.
Independent Variable	$A_{size}$	Firm Size	Firm size is dependent upon the number of employees
	$B_{age}$	Firm Age	Firm age=Shut down year-Establishing year+1, If a firm still exist in 2008, the shutdown year equal to year 2008.
	$C_{sly}$	Firm Salary	Average salary paid by the firm, cumulative amount of credit with a measurement unit CNY.
	$D_{ast}$	Firm Assets	Total assets owned by the firm with a measurement unit hundred CNY.

### 6.4 Findings and Implications

We use a random effect model presented above to work out the results with our 6-year panel data. Especially, our overall data is divided into two separate parts in a random way. The first part data is used to estimate the model values of  $\sigma$  and  $\mu$ . The rest part of the data is utilized to make the aforementioned multivariate regression to check out the coefficients of each variable. Each part contains the 5-year panel data with 28917 firms which are constantly existed from 2003 to 2008.

In the table 6-2, Re1 is the gross regression result, in which we can see that the firm size indeed influences the net job creation with a negative effect, while the firm age, average salaries and the firm asset have a positive effect on net job creation after the lognormal transformation is utilized. Re2 eliminates the variable firm size and Re3 eliminates the variable firm age, respectively. It can be inferred from the results that after eliminating one of the variable among firm size and firm age, the coefficient of another variable has merely a slight change, which indicates that it is not only start-up enterprises but also small and medium enterprises who created most jobs in China and this refutes our previous hypothesis in section 6.2.

Table 6-2 Results of the Regression

Variable	Re1	Re2	Re3
size	-.00020643***	-	-.00020686***
age	.00004447***	.00005593***	-
asset	.00008423***	-.0000223***	.00008967***
salary	.00011521***	.00003204***	.00011636***
_cons	13.12548***	-.7891556***	13.849804***

legend: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

## 7. Concluding Observations and Discussions

In this article, utilizing the 6-year panel data from 2003 to 2008 quoted from Chinese industrial enterprise database, we finished the quantification of the net job creation created by Chinese industrial enterprises respectively with the end-year-method, average-year-method and dynamic method. Compared all three methods, the dynamic method is obviously superior to the other ones when quantifying the net job creation especially in China.

In the empirical analysis section, the firm size indeed influences the net job creation and it is much more specific to fit the relationship with a lognormal model rather than a liner model. With the new model our results re-confirms the idea that small and medium industrial enterprises are the main force on creating jobs in China.

The survival age of SMEs in China is also a factor on influencing net job creation. This effect starts with a positive impact within 5 years and then turns out to be negative in the following years. This conclusion indicates that the start-up enterprises in China contribute most on net job creation. To fit this relationship, apparently a lognormal model can do much better than a liner model. After that, we use two similar lognormal models to describe the relationship between net job creation, firm average salaries and firm assets.

With this study we insist that, to focus on promoting both quantity and quality of the employment in China, it would be wise for government to support SMEs and start-up enterprises. Although numerous jobs are created by these enterprises, the most majority of jobs are of poor in salaries and stabilities especially in China. Therefore, policies should be initialized to help SMEs sustain the high-quality jobs.

At the same time, our research has not been perfected. Multiple problems came out when proceeding our study. First is that there are much mergers and acquisitions happens among Chinese enterprises. To making further progress, we intend to eliminate the influence caused by these two factors and making quantification of net job creation more precisely. Secondly, our lognormal models have problems on fitting the negative values. Although these values merely exist under the current SMEs circumstance in China, it is irresponsible to getting them ignored. In further study we intend to try our best to fix these weak points and devote ourselves on analyzing the employment circumstances in China.

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# **Trade Offensive Of Emerging Asian Countries In Democratic Republic Of Congo, China And India Cases**

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## **1. Abstract**

The last democratic demands of Western countries to Africa sounded the death knell of preferential and secular trade relations that have prevailed between the North and the black continent. Accordingly, for its commercial transactions, African countries have chosen quickly to be under the control of Asian and South American emerging countries. The Democratic Republic of Congo is not an exception.

Indeed, China is present in Congo - Kinshasa since the Mobutu years. She came to the construction of public buildings and the implementation of the rice project. At that time, the Chinese were invited immigrants and came as part of bilateral cooperation. President Laurent-Désiré Kabila who succeeded President Mobutu has made China the main supplier of the Congolese army in non-lethal military equipment including vehicles and uniforms. China's presence in the DRC intensified after the arrival to power of President Joseph Kabila who needed her as part of the implementation of its two electoral programs " 5 yards and Revolution of modernity". To achieve, the two countries had to sign contracts, the famous "Chinese contracts", which gave the Chinese private companies the right and permission to exploit Katanga minerals in return for which the duty to fund works infrastructure of government. A few years later, the contracts between private Chinese and Congolese government have shown serious limitations. The Chinese have nevertheless continued their mining. In this wave, another category of Chinese emigrated to the Congo. This has therefore embarked on the exercise of small business by opening stores in every corner of cities, towns and other villages of the DRC. While having the reputation of sleeping on their workplaces, Chinese operators do not build for that purpose. They are mostly tenants unlike Indians who take care to build first large buildings before starting operations. Chinese shops selling mostly the same categories of property. Obviously they have almost all the same suppliers. This is an opportunity to find out:

- 1) The immigration process is described as noted above, it fits into any form of internationalization?
- 2) What is the link between the desire for expansion of these two Asian BRICS countries and shape of entrepreneurship practiced by their nationals in the Congo?
- 3) What is the economic and social impact of their intervention on Congolese territory?

## 2. Introduction

### a. PROBLEM

The latest Western democratic demands on African countries may be the cause of the biggest trade turn of the present millennium on the African continent. In the name of cooperation, formerly all the former western colonies used to trade with former metropolises and their friends. Today, due to the refusal of a large number of African countries to comply with the Western democratic diktat, trade relations are now intensifying between Asia and Africa.

In the Democratic Republic of Congo, everything began with the entry on May 17, 1997 of the AFDL in power, Mzée Laurent Desiré Kabila in mind. The latter had made China one of the main sources of supply of non-lethal military equipment. Thus, during its three years of reign, the Congolese have accustomed to the noises of vehicles of Chinese brand jiefang in the main arteries of Kinshasa and the interior of the country.

In 2001, when Joseph Kabila took power after his father's assassination, Lebanese and Indo-Pakistanis were the largest group of immigrant entrepreneurs along with West Africans in the DRC. It took the launch of the electoral programs "5 projects" and "revolution of modernity" to see the number of Chinese people increase considerably and almost suddenly in the streets of Kinshasa. They came to the Democratic Republic of Congo first to work on the major works projects selected in the two successive presidential programs mentioned above. But beside these masons and other workmen emerged a group of Chinese who began to engage in small business. The latter have applied a different approach to that of Lebanese and Indo-Pakistani. Some with Congolese nominees, they opened shops in the city close to the final applicant and went beyond the regulation of small trade in the DRC since they were resolved to sell in detail while their predecessors lived and had their shops in the city center while devoted to wholesale and semi-wholesale trade. And in Kinshasa, Lebanese and Indo-Pakistanis had mainly taken up their quarters in the commune of Gombe on the outskirts of the main market and on the Trade Avenue (Avenue du Commerce). It is also important to point out that the compatriots of President XI did not bother to build shops. They preferred to rent already existing houses by modifying them with some modifications.

The Indians came. They copied the Chinese only by choosing to settle in the city near final consumers (final demand) and by retailing. However, their approach strategy differs. They negotiate with landowners plots located in the main arteries and roundabouts in different cities across the country. They build large, compartmentalized buildings at two or three levels after signing contracts to dispose of them for about 20 years. Beyond that they return the parcel to its first owner (that is to say the one with whom they signed the contract). However, they can become tenants if they want to stay. Indians invest mainly in supermarkets, supermarkets and department stores selling machine tools, building materials and other goods.

It is therefore an opportunity to seek out: "What do these Asian immigrant traders really and essentially sell? What are their main sources of supply? What were their statutes before setting up in the DRC? Are there Chinese and Indian policies of internationalization or their nationals migrate in scattered order? What are their local partners? What are their disappointments? Are they in order with the tax authorities? What are the wage policies of their companies? Do they achieve significant margins? How do they organize themselves in case of conflict with nationals? Are they in tune with local culture? What is the impact of their implementation on the neighboring community? Apart from the general trade in which other sectors invest Indian and Chinese in the Democratic Republic of Congo? ". These are the questions we will try to answer.

### b. HYPOTHESES

To the questions posed we assume to answer that the Chinese and Indians sell manufactured products from their countries of origin. Many Chinese nationals practicing the trade profession in the Congo were either unemployed at home or working in sectors other than retail trade. Despite high import rates, some Chinese and Indian entrepreneurs have succeeded in forging strong ties with local producers. The difficulties they face are supposed to be cultural. Expatriates are often afraid of having clashes with the political power in place.

So, they make an effort to honor their tax commitments. Chinese and Indian stores are experiencing a significant influx of customers. This suggests a significant daily turnover, considerable inventory turnover and a significant profit margin. The sustained influx of Congolese customers into Indian and Chinese stores can also prove that Congolese are satisfied with products sold, reception and the price system practiced.

### c. INTEREST OF THE SUBJECT

This work arouses interest in the fact that very few studies are carried out on these new immigrants on their ambitions, their system of implantation and integration and on the policy put in place by the respective states to push them to the " immigration. This study will enable the Congolese to set up reception strategies and to draw inspiration from their fellow expatriates or candidates for expatriation.

### 3. Objectives

Our aim is to clarify the conditions in which Asian and Indian immigrants settle in the DRC and understand the relevance of the activity and draw inspiration from it to develop Congolese entrepreneurship and its internationalization in a structured way.

### 4. Literature review

Work exists on the internationalization of SMEs, immigrant entrepreneurship, globalization and the regulation of international trade. First Pierre Latulippe (2002) defines globalization as a process that is the product of human innovation and technical progress. It refers to the increasing integration of economies around the world through trade flows and financial flows. The term is commonly used since the 1980s, ie. Since technical progress makes it easier and faster to carry out commercial, financial and international operations. It reflects the continuation of the market forces that have operated for centuries at all levels of economic activity (village markets, urban industries or financial centers) beyond the borders of countries. According to some analysts, the economy was as globalized 100 years ago as now. It is important to note that the integration of financial markets has been made possible through electronic means of communication. Globalization has accentuated, strengthened and modernized the phenomenon of internationalization of SMEs. Thus, for the sake of theorization, Imane Kayat (2004) and Josée Saint Pierre (2008) establish three approaches to better grasp the phenomenon of internationalization. These are the behaviourist approach, the resource approach and the network approach. The behaviorist approach put in place by the Swedish school has two models: the Uppsala model and the model of internationalization through innovation.

Maria Forsman, Susanna Hinttu and Sören Kock abound the question in the same sense by saying:

« The theory of the internationalization process is broadly accepted. Later though, a need for development of the original model as it was created in the 70's was acknowledged. Firstly, when for example large firms have surplus resources, they can be expected to make larger internationalization steps. Secondly, in a situation when market conditions are stable and homogeneous, it might be possible to acquire important market knowledge in other ways than through experience. Thirdly, a firm may have considerable experience from markets that have similar characteristics and may thus generalize this experience to the specific market (Johanson & Vahlne 1993). Rasmussen et al (2000) state that the factors leading to a more accelerated internationalization are: (1) new market conditions, increased specialization demanding larger markets and quick spread of innovations, (2) i.e. technological developments in the areas of production, transportation and communication, and (3) more elaborate capabilities of people, i.e. more mobile personnel and increased knowledge about foreign cultures and markets”.

In the same vein, Pairrault and José St Pierre (2008) admit that since the Marrakech agreements, the conditions of the internationalization of the companies have undoubtedly changed. Despite the "new frontiers" of the International Development Strategy (SDI), the temptation remains to reduce the internationalization of enterprises to export activities alone. That is, to maintain a mercantilist vision of the international development process, whereas the internationalization of SMEs has become an activity with diversified modalities.

Internationalization, which is no longer limited to outgoing flows, is now defined on the basis of more complex approaches, borrowing three dimensions: mercantile internationalization (input-output), technological internationalization (ability to control and maintain the advantage Technological) and organizational internationalization (modalities of organization, management and control).

So, to give an answer to the questions "What are the necessary conditions for the international success of SMEs? And How to achieve "apologia for the clarinet"? "Pairrault and José St Pierre (2008) argue that" despite the attempts at definition, notably by the OECD (Torres, 1998), the internationalization of SMEs offers a particular analytical difficulty. Moreover, for years, analyzes of this internationalization have referred to the approaches characterized by the Johanson-Vahlne model, or the Uppsala model (Johanson and Vahlne, 1977); Or, by the Bilkey-Tesar I-model (Bilkey and Tesar, 1977). However, SDI SMEs, although still largely dominated by exports but also imports (Knudsen and Servais, 2007), have revealed for several years more complex approaches, such as the complexity of the environment (David, 2002, Etemad and Wright, 2003). This complexity requires refining the notion of internationalization; But beforehand it is necessary to distinguish the main theories of this mechanism. In an attempt at clarification, we wish to distinguish three major representations of the dynamic modalities of internationalization: determined internationalization, organized internationalization and internationalization of genes ".

This term of internationalization appears so complex insofar as it is differently understood according to whether the analyst is in the country of the outgoing flows than that of the incoming flows. Thus, in this article, we show a particular interest in the beneficiaries' reading of the flows vis-à-vis suppliers and especially insofar as we want to understand the merits of the offensive of Asian countries (China And India) in the Democratic Republic of Congo. Hence the relevance of the concept of foreign direct investment (FDI). Cited by Fodé Siré Diaby (2014), the World Investment Report of the United Nations Conference on Trade and Development (UNCTAD) defines Foreign Direct Investment (FDI) as "an investment involving a relationship of LT and reflecting an interest purpose and control of an entity resident in an economy (foreign direct investor or parent company) in an enterprise that resides in an economy other than that of the investor (affiliate or subsidiary 'foreign).

The same Fodé Siré Diaby (2014) argues that, according to the IMF's Balance of Payments Manual (2003, 152), foreign direct investment is defined as "an activity whereby an investor residing in a country obtains a lasting interest and A significant influence in the management of an entity residing in another country. A foreign investment is considered as Foreign direct investment when the foreign investor holds at least 10% of the ordinary shares or voting rights of a company and has some influence on its management ". An investment whose share in total assets is less than 10% is considered as a portfolio or investment investment (OECD, 2008b). According to Hymer (1960), the difference between an FDI and a portfolio investment is explained by the difference in interest rates. While portfolio investment is seeking direct profit through higher interest rates, FDI is capital flows that are part of the international operations of transnational corporations in order to control production. FDI is always expressed in terms of flows or stocks. Better understood, this concept better explains China's trade strategy in Africa. China is aiming for world leadership by seeking to defy politically and economically the first and other Western economic powers, its strategy of the Softpower diverges somewhat with India which has essentially commercial aims and whose stake of leadership is to " Initially subregional. It is therefore clear that India is looking for some grandeur while China is making headway on power.

However, before discussing Chinese strategy, it is a good thing to pay tribute to the theorization effort that some authors have had to make on the purely technical understanding of foreign direct investment.

Fodé Siré Diaby (2014) points out that since globalization, FDI has become more and more important and has become a key element in the internationalization strategy of transnational corporations. While these FDI have grown strongly in recent decades, the international market is witnessing a growing influx of new companies from emerging countries, such as China, Brazil, India, Russia, and so on.

To understand this new phenomenon, we will answer the question: why do companies invest abroad?

To answer this question, Fodé Siré Diaby (2014) made a search worthy of Egyptologist. He attests that researchers such as Caves (1971), Dudas (2007), Vernon (1966) have already proposed answers to this question. The different answers reflect the theories explaining foreign investment. These theories are based on different approaches according to the elements contributing to the realization of FDI. According to Dudas (2007), the theories of the FDI can be classified into 4 analytical approaches:

- The macroeconomic approach
- The approach based on the theories of the development of the FDI
- The microeconomic approach
- The eclectic paradigm-based approach to international production.

By referring to the presentation of the Dudas approaches we can evoke several theories on FDI based on the macroeconomic approach. Initially, FDI was determined by the Capital Market Theory or Dynamic Macroeconomic Theory. It then depended on the macroeconomic environment. FDI was also seen as a tool to reduce exchange rate risk. FDI flows were therefore determined by the change in the exchange rate. Then in a gravitational approach on FDI, geographical, economic or cultural proximity can also determine. Finally, according to the same approach, theories of FDI can be based on an institutional analysis. Thus, the flows of FDI are determined by the institutional level of the host country, ie political stability becomes the key factor determining FDI flows.

The second approach to analyzing FDI. One of the earliest theories of FDI based on this approach is the product lifecycle theory. This theory was interpreted by Vernon (1966) in one of his articles as a form of production for mature products. She explains that there is a relationship between the life cycle of a product and the flow of FDI. According to the same theory, when a product reaches its maturity of design and production, companies spread it through international production. Following life cycle theory, some authors have analyzed the relationship between the evolution of a country's inflows and outflows and its level of economic development. Among these authors, there is the American Michael Porter (1986 and 1993). He is the author of the diamond model of competitive advantage. He argues that each level of economic development in a country is associated with a particular characteristic of inward and outward FDIs in the country. It distinguishes 4 stages in the economic development of the country. The first stage of development is based on the exploitation of factors of production (extraction of natural resources or intensive use of the labor force).

The second stage is based on investments such as the intermediate goods manufacturing industry and the construction of infrastructure. The transition from the first to the second stage is accompanied by a flow of capital from the country to countries offering the lowest wage costs. Capital is invested in the extraction of the raw material. L in manufacturing-intensive industries. The third stage of development is based on innovation through research and development activities and the abundant use of human capital. The shift from the second to the third stage is accompanied by an increase in outward FDI for investment in the intermediate goods industries. Finally, the fourth stage of development is based on the wealth of the country. Companies in a country that has reached this level have a lot of capital to make FDI.

Under this approach, firms in one country decide to invest abroad primarily because the country has a high level of economic development. This leads to an increase in the wage bill in the country, thus obliging its companies to internationalize in countries where production costs are lower. The economic development of the country is then accompanied by a gain in competitiveness (thanks to the technological development) which pushes the companies of the country to go to the conquest of market abroad.

The third approach analyzes theories of FDI is the microeconomic approach. In this approach the study focuses on the motivations of the company to invest abroad. According to Mundell (1957), companies to invest abroad because there are trade barriers. Transnational corporations (TNCs), to circumvent these protectionist barriers, substituting international flows of goods through FDI flows. This means that companies basically invested abroad because trade was not fully liberalized.



In order to fully understand this phenomenon, the Canadian economist made a study of the nature and causes of FDI in 1960. His theory explains the causes of FDI by market imperfections. To overcome these shortcomings companies, use FDI to control the production of their products abroad. The control of the production then makes it possible to gain competitiveness vis-a-vis the local companies and thus acquire the monopoly.

Hymer's theory of monopolistic competition shows that FDI is the result of market imperfections, as foreign investors have a specific advantage (monopolistic advantage) that local firms do not have.

China being a populist democracy with a highly-centralized power, it is understandable that its economic and commercial expansion is finely distilled from the central organs of the Communist Party and therefore from power. The temptation is great to think that it is the central power that orchestrates the emigration of its own citizens.

In this regard, Ndubisi Obiorah (2007) questions the following: "Does China's increased presence in Africa refer to an ideological alliance, an economic partnership or disinterested aid? He concludes that while Sino-African relations seem to offer the possibility of unconditional development and the return to multi-polar cooperation. For local civil society mobilized for the respect of human rights and democracy, it is a serious challenge that must be addressed.

## 5. Methods

To achieve this, we will proceed by observation, interview and survey of the expatriates concerned, their employees, consumers and public authorities. Thus, we have made questionnaires and grids of interviews. Concerning the expatriates, a sample of 68 expatriates (34 Chinese and 34 Indians) was the subject of our investigation. The flat and cross sorts were used to process the data. It must be recognized, however, that at this stage of the study the analysis is essentially documentary and exploratory. The facts analysed have resulted in accepted results through induction and deduction. Descriptive and explanatory methods have also been used.

## 6. Findings

### 6.1. HISTORY OF ASIAN TRADE OFFENSIVE IN AFRICA

Ndubisi Obiorah (2011) states that the first direct trade and political contacts between China and Africa date back to the 15th century when China's attempts to conquer China The fleet of Admiral Zheng He landed in East Africa, during a legendary sailing expedition around the world. However, communication and indirect trade between China and Africa can be traced back more than 3,000 years, as evidenced by the remains of Chinese ceramics discovered in various scattered parts of Africa, such as Timbuktu in the Sahel, ruins Of Greater Zimbabwe or in the Mozambique Channel in southern Africa. The relationship between China and Africa began to build up after the 1949 revolution that brought Mao's Communist Party to power. From 1950 to 1980, China supported African liberation movements and funded more than 800 projects in Africa, including initiatives in the fields of agriculture, fisheries, textiles, energy, infrastructure, Water conservation and energy production. The 1980s marked the end of the first Sino-African commitments based on a principle of ideological solidarity or "third-world solidarity", following a decline in development efforts and reforms announced by Deng Xiaoping.

During the 1990s, China intensified its aid to African governments and restored its old rhetoric of "mutual respect" and interest in diversity ", a speech resonating in a continent sensitive to everything related to neocolonial reflexes of the former powers in power.

In return, Beijing receives recognition of its sovereignty over Taiwan, a certain indifference to its violations of human rights, and the support of African countries in international organizations.

In 2000, the new Forum on China-Africa Cooperation saw the creation of a bilateral social and economic program. China canceled \$ 10 billion of debt held by African states. At the second ministerial conference of the Forum on China-Africa Cooperation in December 2003, China offered to cancel the debt of thirty-one other African countries and considered the establishment of a zero tariff on exports.

As has been seen in Nigeria, Chinese trade and investment in Africa has increased rapidly, especially in the oil and natural resource sectors. During his visit to Nigeria in April 2006, President Hu Jintao and his Nigerian host Olusegun Obasanjo signed an agreement to grant four drilling licenses to China, which in return pledged to invest 4 billion Dollars in oil infrastructure. The state-owned China National Petroleum Corporation (CNPC) received pre-emptive rights over four blocks of oil exploration. China has agreed to become a majority shareholder in the Kaduna oil refinery, whose daily output is 110,000 barrels, and to build a power plant. Another agreement provides Nigeria with technology cooperation, a \$ 500 million export credit to China Exim Bank, as well as funds to pay for malaria and Help Nigerians fight bird flu.

## 6.2. INDIAN AND CHINESE FOREST EXPLOITATION IN AFRICA

Over time, China and India have had to increase their hold and control over the African forest (Chaponnière J.-R., 2013).

For India, Southeast Asia is the main supplier of wood. It accounts for over two thirds of imports against less than 10% from sub-Saharan Africa. Among the countries in the Congo Basin, Gabon is its main supplier, accounting for 3% of its imports in 2010 (see Chart 19).

According to Lawson and Mafcaul (2010), China is the largest importer of illegal timber by volume (about 20% of its imports). Following strong growth during the period 2000-2004, these illegal imports decreased as a result of reduced supplies to Indonesia and Burma. According to Dieter (2009), illegal imports from China are between 39 and 69 million m<sup>3</sup> and, according to NGOs [26], this illegal timber trade represents more than half of China's imports.

Overall, the Congo Basin countries export over two-thirds of their timber, especially raw wood, to China and Hong Kong, while exporting more and more sawnwood, Plywood to Europe. Given that the volume of sawnwood is only half that of logs, why does China import raw wood in spite of high transport costs, while the gap between Chinese tariffs on logs and Sawn timber is low? Several reasons have been put forward, including: the very large size of Chinese factories, which facilitates the use of processing residues for other uses such as pulp; The competitiveness of the workforce in a labor-intensive sector that plays an important role in rural areas; The profit generated by the exploitation of raw wood which exceeds the fines in case of non-respect of the environmental rules (Kerstin et al., 2008, Kozak and Canby, 2007). This preference gives priority to a rapid exploitation which does not accommodate the sustainable management of the forests, while the Chinese factories can treat resources of poor quality. This leads to low-selective logging while maintaining exporters at the primary extraction stage (Kaplinsky, 2010). France has long been the largest market for logs exported by Gabon and its imports have declined as a result of increased purchases of processed wood.

The Chinese, which bought several French companies, control half of the concessions and absorb 80% of log exports, compared with only 10% for India. As the government has demanded the local processing of 100% of the exported wood, many Chinese companies are investing and according to the Mofcom, ten processing plants are under construction and have created some 1,500 jobs.

In the Congo, while wood exports have decreased in volume since 2000, the share directed to China has exceeded 60% since 2008. Chinese companies control almost a quarter of the timber concessions they have sometimes bought from European groups Or Congolese. Since 2006, China has absorbed, on average, more than 60% of Cameroon's total exports of raw timber. Chinese companies now hold more than half of the concessions, sometimes bought back from French and European farms. Vicwood-Thany, the largest group, holds 800,000 hectares of forest concessions and has six sawmills and a processing capacity of approximately 320,000 m<sup>3</sup> per year. The DRC has regained its production level before the civil wars that broke out between

1997 and 2003. European concessions are the most important and until 2008 the DRC was exporting little to China. The Congolese regulation limits the percentage of cuts that can be exported to logs to 15%. A limit that would be little observed by the Chinese companies present in the South where Shu Shanxin operates two concessions in the province of Ecuador. In 2010, the company was joined by Huzhong Forestry, which increased China's share of exports (40%). Also active in Congo, the Indonesian Indonesian group Olam is present in Gabon.

Malaysian companies are also very present, in particular the Rimbunan Hijau group, which has been operating since the 1990s, which is also present in Gabon and which exports to China.

### 6.3. INDIA-AFRICA COMMERCIAL COOPERATION AND TRADE

Pavithra Rao and Franck Kuwonu (2016) report that, according to figures from the Indian government and the African Development Bank (AfDB), bilateral trade between India and Africa increased from \$ 1 billion in 1995 To 75 billion in 2015.

From 2010 to 2015, Nigeria was India's largest economic partner in Africa with an import-export volume of \$ 1.6 billion, followed by South Africa with \$ 1.1 billion, followed by Kenya and Mozambique.

Over the period as a whole, India's exports to Africa increased by 93% and imports by 28%, according to the Africa-India Facts and Figures 2015 report published jointly by the Economic Commission For Africa (ECA) and the Confederation of Indian Industries (CII). The report indicates that Africa's share of Indian exports has increased from \$ 17.9 billion in 2010 to \$ 34.6 billion in 2015.

According to a report published in 2015 by the South African Institute of International Affairs, Mauritius is the preferred destination for foreign direct investment (FDI) of \$ 64.2 billion for the period 2000 to 2012.

If this amount represents three-quarters of India's FDI in Africa, the figures are distorted. The investments are primarily linked to the activities of US companies that take advantage of the island's beneficial tax laws and invest in India through Mauritian companies.

As is well known, the Democratic Republic of the Congo (DRC) and India develop close ties of cooperation in a number of areas, including health and energy.

In the latter area, Indian companies and banks are supporting ongoing construction projects for the Katende (formerly Kasai province) and Kakobola hydroelectric power stations in the former Bandundu province.

### 6.4. CHINA-DRC TRADE COOPERATION AND TRADE

According to Stanislas Ntambwe (2015), the Chinese are ubiquitous in all the sectors of the national life of the DRC. They are pulling out major markets in the construction and / or rehabilitation of road and property infrastructures. Chinese shops, boutiques and restaurants also flood large Congolese cities.

Congolese exports to China have also increased at a rapid and steady pace. This proves the growing interest between two nations seeking mutually beneficial opportunities in various sectors.

According to a report by the independent research and information center, RAND Corporation, the DRC corresponds to only 2% of China's economic exchanges with Africa. Growing steadily in 2008, these exchanges between the DRC and China concluded on infrastructure development projects in exchange for Sino-Congolese industrial mining projects.

Between 2008 and 2014, China invested in ten infrastructure projects in the DRC. The total expenditures on these projects running, are about 459,764,000 USD. And in 2015, planned projects include the development of public spaces, roads, solar projects and more. The total expenditure for these projects planned for 2015 is 250,000,000 USD.

Improved economic relations between the DRC and China are contributing to the growing volume of DRC exports. The deficit in 1991, 68.34 million USD (63.24 from China to the DRC and 5.08 million from the DRC to China), the Congolese balance of trade became surplus from 2003.

Out of a total of 51,710 million USD, there were 25,420 million USD from China to the DRC, and USD 26,300 million from imports from the DRC to China. These figures have evolved considerably in 2014 and are estimated at 4.185 billion USD (1.362 billion USD from China to the DRC against 2.823 billion USD from the DRC to China).

## 6.5. CHINESE MINING EXPLOITATION IN THE DRC

Under the terms of the Chinese contracts, the DRC negotiated the acquisition of road infrastructures against the transfer for exploitation of several mining deposits in Katanga in compensation. Unfortunately, the contract had been misrepresented that the Chinese had stopped financing the road construction works while they continue to operate minerals to date. With these contracts, China relies heavily on the DRC for the mining products needed to satisfy the greediness of its heavy industry.

According to Stanislas Ntambwe (2015), by the end of 2014, a total of 14 mining projects have enabled the capacity building and economic development of the country. The total investment for mining projects is US \$ 3.72 billion, including US \$ 320 million for the construction of a hydroelectric power station.

The president of the AF ECC, Jiang Qingde, which operates a diamond mine in Mbuji-Mayi (Kasaï Oriental), has already invested via its subsidiary SACIM, "more than 100 million USD". And China Railway (CRCC14) specializing in the construction of large infrastructure, is candidate for the construction of the deep-water port of Banana (Central Kongo), a tramway in Kinshasa and new railway lines, Kinshasa- Matadi and Lubumbashi-Ilebo.

But the China-DRC honeymoon is likely to fade in the medium term. China, so greedy, does not stop to negotiate in the back of an enthusiastic partner that is the Democratic Republic of Congo.

More recently, the US group Freeport-McMoran announced on Monday that it had reached an agreement on the sale of the Congolese mine from Tenke Fungurume (Congo-Kinshasa) to the Chinese group China Molybdenum for more than \$ 2.6 billion (Le Monde, 2016). And this agreement was negotiated without the knowledge of the Congolese government, as evidenced by the declaration of Valery Mukasa, Director of Cabinet of the Minister of Congolese Mines, Martin Kabwelulu, to AFP (2016): "We just had I We were not involved "in the dealings between Freeport and China Molybdenum, told AFP Valéry Mukasa, cabinet director of Congolese mines minister Martin Kabwelulu" and added laconically: "the state Congolese will receive "rights" at the sale, which Freeport wants to close before the end of the year.

Freeport McMoran holds 56% of the copper and cobalt mine it operates in Katanga (southeastern Democratic Republic of Congo), making it one of the largest Contributors to the Congolese state budget. The deal must pass through the sale of the \$ 2.65 billion parent company of Tenke Fungurume Mining (TFM) TF Holdings, registered in Bermuda, Freeport-McMoran said in a statement. This amount could be increased by 120 million depending on the evolution of copper prices in 2018 and 2019, adds the group based in Phoenix, capital of Arizona (State of the southwest of the United States).

In addition to TF Holdings, the other shareholders of TFM are Lundin Mining, a corporation incorporated under Canadian law, and the Congolese public mining company Gécamines.

## 6.6. THE HIGH TECH

High-Tech products have conquered the hearts of the Congolese. Mobile phones are sold at affordable prices and defy any competition. On this list we find ZTE and HUAWEI. HUAWEI Vice President Ami Lin, who provides telephony equipment, has reassured the company that it will make new investments. She announced that "Huawei will equip the administration with new means to facilitate its communication and the modernization of its functioning".

## 6.7. GENERAL TRADE

### 6.7.1. Nature of activities and products sold

According to Olivier Delefosse in Economists' letter n ° 15 (January 2007), Chinese exports to Africa - mostly manufactured goods - are much more diversified. Textile clothing occupies first place - China accounts for half of imports of fabrics and clothing imported by Africa - and yarn and fabric are sometimes used by exporters of clothing. Next comes a wide variety of consumer goods: leather goods, shoes (two thirds of African imports come from China), furniture, plastic goods and consumer electronics. China is also beginning to emerge on the capital goods market, particularly turbines, public works equipment and telecommunications. Chinese products penetrate homogeneously into all countries.

Seen from Beijing, trade with sub-Saharan Africa is in deficit and this deficit has widened in the last two years. The oil countries have surpluses in their trade with China while most of the others are in deficit. The balance of the trade balance of West Africa with China would thus be slightly negative and clearly positive for Central Africa.

In the DRC, Chinese-owned shops sell mostly the same manufactured goods and prices are relatively low and similar. Despite their dubious quality (Chinese junk), these items are well accepted and prized by consumers. These are clothes, shoes, receivers with multiple functions (radio-phone-flashlight), music chains and built-in cabinets, suitcases, kitchen utensils, sheets and curtains, household appliances. These Chinese stores have mainly specialized in selling point-of-sale troubleshooting products with no hope of keeping them for long. This is confirmed by the survey of 34 Chinese. In fact, 88.2% of Chinese respondents admitted selling manufactured products for domestic use, compared with 11.8% selling agricultural and food products.

### 6.7.2. What about Chinese and Indian policies of internationalization

The recent Chinese presence in the DRC has several motivations. As much as the Chinese government has put in place a strategy to push some of its compatriots towards commercial immigration, a group of illegals has taken advantage of this wave to settle in the DRC.

At the same time as groups of Chinese came to build road infrastructure and buildings of public interest, other Chinese nationals were interested in retailing, micro-commerce such as the preparation and sale of donuts. Still others especially girls have not hesitated to engage in prostitution and resourcefulness. It thus appears that Chinese migrations in Africa are driven by major projects. They are also justified by the flexibility and opportunism of migrants. Many Chinese people landing in Africa are adventurers with no particular mandate. Creating an SME in China is now very expensive and migrants choose Africa for want of a better one. (Antoine Kermen, Benoit Vulliet, 2008). The survey conducted on the ground revealed that 29.41% of the Chinese interviewed worked in China before emigrating to the DRC. However, 23.53% were unemployed, 14.7% were unemployed and 11.76 were unemployed.

In the interest of rapidly strengthening economic and political ties between states and unlike the West, China soon gave guarantees of political non-interference in African states in general and in the Democratic Republic of Congo in particular. So the Chinese citizens were initially welcomed by the Congolese. However, being

officially immigrants invited by the government, their status vis-à-vis the population has evolved and metamorphosed according to the socio-political climate of the country. It was enough that the population lends to the majority in power of the wishes of change of the constitution or specifically of electoral law, so that in January 2016, their stores are plundered by an angry crowd while those of other expatriates Had not undergone the same treatment.

The government, moreover, did not hesitate to compensate them as soon as calm had been restored.

The Indians, Indo-Pakistanis and Nepalese established in the DRC also reveal a strategy of particular approach and integration. They have massively invested in the Congolese territory by embedding themselves in the pharmaceutical sector. Companies like Zenufa, Shalina, .. first proceeded to import the pharmaceutical products of India before constructing factories of local manufacture of the products like ampicillin, chloramphenicol, aspirin, .... Beside them, car manufacturers and other dealers settled first in Kinshasa selling only Indian-brand vehicles. This is the case of Tata-Mahindra. On this wave, it is also worth mentioning the telecommunications sector in the Indian group Barhi acquired the company AIRTEL which is also present in several African countries.

Now another form of entrepreneurship characterizes this category of immigrants. In their group are operators of the real estate sector who sign in strategic points and near the main arteries of the city of Kinshasa, leases-subdivision and leasing with owners of Congolese plots. For a period of 20 years they rent to Indian, Indo-Pakistani and Nepalese entrepreneurs compartments on the ground floor of the buildings they build on own funds and on loans from Indian banks. The rooms on the first floor serve as their accommodation. What is impressive is the speed with which these commercial buildings emerge from the ground in the nooks and crannies of the major cities of the country. The Congolese parties to these agreements report that after 20 years they will revert to owning these facilities, even if they are to be leased back to the current occupants. However, this operation is accompanied by an initial payment before the resumption of the work 20 years later. The operators of these stores own the factories established a few years ago. These include mattress manufacturing plants (Complast) and manufacturing plants for building materials. There are also marketing units for women's wicks, biscuits, soaps and other toiletries and household products. With the Nepalese, the Indians also occupy the field of the supermarket. They plant frenzied supermarkets and supermarkets. This is the case of "New lys" and "Maxi-food".

### 6.7.3. Main sources of supply

Each category of immigrants is mainly sourced in their country of origin and in Chinese and Indian subsidiaries based in Africa. They also import their goods from certain Asian countries in secular trade with their countries of origin. This is the case for Asian dragons and NICs. And the statistics are clear on that. It should be noted 58.8% of respondents import their goods from China. However, 23.5% do their shopping in China and other countries in the region.

### 6.7.4. Local and foreign partners

79.41% of the Chinese respondents are first in business with their compatriots established before them in the host country. Nearly half (47.05%) deal with Congolese producers and 35.29% with Congolese traders.

### 6.7.5. Tips and Difficulties

The most common difficulties are cultural. Language, for example, poses serious problems for Indians and Chinese. Although they quickly mastered local languages such as Lingala, Kikongo, Swahili and Tshiluba, these communities still have many difficulties in speaking French, which is the working language in the DRC. Fortunately, the Democratic Republic of the Congo is a secular state, with its Christian predominance, it sometimes poses serious problems of integration with these two great communities under study. The Chinese are Confucian, Buddhist, ... while the Indian, Indo-Pakistani and Nepalese nationals are predominantly Hindus, Brahmanists, Muslims and Sikh Tamul. Thus, the difference of days of prayer contrasts with that of

Sunday which the Christian majority devoted to prayer. This explains why the Chinese and Indian stores are open while those belonging to the Congolese remain closed. Our respondents also mentioned the tax harassment of which they are victims, as well as the cases of theft orchestrated here and there. They also admitted to having no difficulties with their eating habits. The commodities and spices of tropical countries they need are sold in local markets. Also for education, the Indians enroll their children in consular and private schools of Indian language held by their compatriots. In Kinshasa, however, the Chinese do not hesitate to register their descendants in good schools Congolese mainly located in the administrative commune of Gombe. The survey also revealed that 47.05% of Chinese respondents sometimes suffer hatred from some opposite to wage demands.

#### 6.7.6. Wage policy

Guilain Babs (2014) attests that Congolese working with Chinese and Indians are poorly paid. As proof, he tells us the following: "Treasury Tshovu, 25, has been working in a business for nearly three years. For him, the problem of Chinese traders is not only in terms of their presence in petty trade, but also in the way some of them treat the Congolese workers. "I worked for a couple of months with one of them, but I do not get paid as it should be," he complains. Fifty dollars is the amount he receives each month. He indicates that some of his colleagues who have made more than 4 years have \$ 60 or even 120 according to the employer. And says that it is difficult for him to make ends meet with this remuneration. "I made the decision to go and work there and I thought I would leave the family home and take care of myself. I realize this is impossible, "he regrets".

#### 6.7.7. Attitude to the taxation of the host country.

Despite the harassment they continue to deplore (70.59%), Indian and Chinese companies established in the DRC normally and correctly pay their tax burdens. They work with local fiduciary companies to develop their financial statements.

#### 6.7.8. Annual results of their activities

Although not very talkative about it, Chinese and Indian companies established in the DRC come back in their expenses at the end of the accounting year. This explains their longevity in the market since their first establishment.

#### 6.7.9. Community organization in the event of conflicts

Since the riots of January 2016, the Chinese working in Kinshasa have been guarded by police officers during the fateful red dates of 19 September, 19 October and 19 November. Following the incidents in New Delhi where a Congolese national married to an Indian was shot dead by jealousy, during the period of retaliation, several Indian shops remained closed. The survey says that 88.24% do not dare to open their stores during social and political upheavals.

#### 6.7.10. Social Integration

Even though they speak local languages, the Indians and Chinese live in community. They go out entertained together. The Indians even organize intracommunity cricket matches. 82.35% of Chinese respondents said they lived comfortably in the DRC.

#### 6.7.11. Impact of Indian and Chinese activities on local communities

With the integrative option of presting and living in the city, Congolese people find the Chinese and Indians closer to them than the Westerners and Lebanese. As a result, Congolese citizens testify on a daily basis to some form of sympathy for these two communities under analysis. With their low-priced items accepted by Congolese consumers but written by Congolese retailers, the surrounding population generally judges the impact of their activities very positive. They now find it amazing that a Congolese household could for example

miss an iron. Small objects such as light bulbs, sockets, extensions and other electrical cables can be acquired without considerable physical effort around the corner.

## 7. Discussion

The results of this study reveal that China and India have intensified their grip on the black continent and are even competing. Although the figures for the DRC are by far weak compared to transactions with Nigeria, South Africa and Algeria, relations have strengthened significantly over the past 25 years. While China exports manufactured goods and innovative technologies to the DRC, the latter mainly supplies raw materials to China. The Chinese and Indians living in the DRC are happy and constantly increasing their activities.

## 7. Concluding Observations

In the course of this study, we sought to establish the validity and importance of the Chinese and Indian offensive in the DRC, using the theory of internationalization and foreign direct investment. The aforementioned axes corroborate the attitude and behavior of China and India vis-à-vis Africa. Traders from these two large emerging countries established in the Congo by selling manufactured goods mainly from their respective countries of origin have made the DRC a real market for Asian manufacturing. China has too often been accused of pushed its citizens to expatriation. If this is possible in inter-state trade, for example in infrastructure works and mining, large numbers of Chinese businessmen emigrated by individual will. The honey agreements signed with China mean that African states can not discuss the question of democracy and human rights vis-à-vis this world power. Internationalization has the advantage of increasing trade between China, India and the DRC. It appears, however, that in the course of our analysis this partnership has not always been a win-win situation.

From the foregoing, it is advisable to advocate:

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### A. ENQUETE AUPRES DES CHINOIS PRATIQUANT LE PETIT COMMERCE EN RDC QUESTIONNAIRE D'ENQUETE N°...../2016

#### I. IDENTIFICATION DE L'ENQUETE

Nom de l'entreprise\* : .....

Nom du propriétaire (si différent du gérant): .....

Nom du gérant : .....

Age du gérant\* : .....

Statut matrimonial du gérant\* : .....

Nom du cogérant : .....

Age du cogérant\* : .....

Statut matrimonial du cogérant\* : .....

Nombre d'enfants du gérant : .....

Adresse de l'entreprise\* : .....

Nombre d'agents à charge\* : .....

#### II. ENQUETE PROPRESMENT DITE

##### 1. Nature de la marchandise

1.1. Quels types de marchandises vendez-vous ?

- a) Produits manufacturés de consommation domestique
- b) Produits agricoles ou alimentaires
- c) Matières premières
- d) Produits pharmaceutiques
- e) Autres, à préciser.....

##### 2. Sources d'approvisionnement

2.1. Quelle est la provenance de vos marchandises

- a. Produites localement
- b. Importés du pays d'origine
- c. Importés d'autres pays que le pays d'origine
- d. Produites localement et importées du pays d'origine

e. Produites localement et importés d'un pays autre que le pays d'origine

### **3. Profils sociologiques des migrants**

3.1. Que faisiez-vous en Chine avant de venir au Congo démocratique ?

- a) Chômeur sans titre académique
- b) Employé
- c) Etudiant
- d) Diplômé sans emploi
- e) Chômeur et candidat à l'immigration
- f) Prisonnier
- g) Patron d'une PME

### **4. Stratégie des dirigeants vis-à-vis de l'émigration de leurs dirigeants**

4.1. Pensez-vous que les autorités chinoises ont été favorables à votre sortie du pays ?

- a) Oui, ils l'ont souhaité et préparé
- b) Non, c'était mon intention personnelle
- c) Je ne sais pas

### **5. Les partenaires locaux**

5.1. Avec qui faites-vous affaires en RDC ?

- a) Les chinois précédemment établis au Congo
- b) Les producteurs locaux congolais
- c) Autorités politiques congolais
- d) Commerçants congolais
- e) Autre à signaler : .....

### **6. Les difficultés et déboires**

6.1. Quels problèmes connaissez-vous dans l'exercice de vos activités ?

- a) Haine de la population
- b) Tracasseries policières
- c) Tracasseries fiscales
- d) Vols de marchandises
- e) Revendications et grèves des agents.

### **7. Situation fiscale**

7.1. Payez-vous correctement vos impôts ?

- a. Oui
- b. Non 0

7.2. Que pensez-vous de la pratique fiscale en RDC. ?

- a. Bonne et acceptable
- b. Trop lourde et pénible
- c. Complexe
- d. Mauvaise et difficile à comprendre
- e. Rien à dire

### **8. Politiques salariales**

Combien payez-vous en moyenne à chacun de vos agents ?.....

### **9. Résultats d'exploitation**

9.1. Comment trouvez-vous votre chiffre d'affaires journalier

- a. Médiocre
- b. Mauvaise
- c. Assez bon
- d. Bon
- e. Très bon
- f. Excellent

9.2. Comment trouvez-vous le résultat que vous réalisez annuellement

- a) Non Satisfaisant
- b) Pas du tout satisfaisant
- c) Satisfaisant

d) Très satisfaisant

**10. Situation sécuritaire**

Que faites-vous en cas d'émeutes, revendications populaires ou insurrections ?

- a) Je n'ouvre pas le magasin
- b) J'ouvre prudemment le magasin
- c) Je sollicite la garde d'un policier
- d) Je passe outre et vend normalement.

**11. Intégration socioculturelle**

Etes-vous vraiment à l'aise en RDC ?

- a. Oui
- b. Non

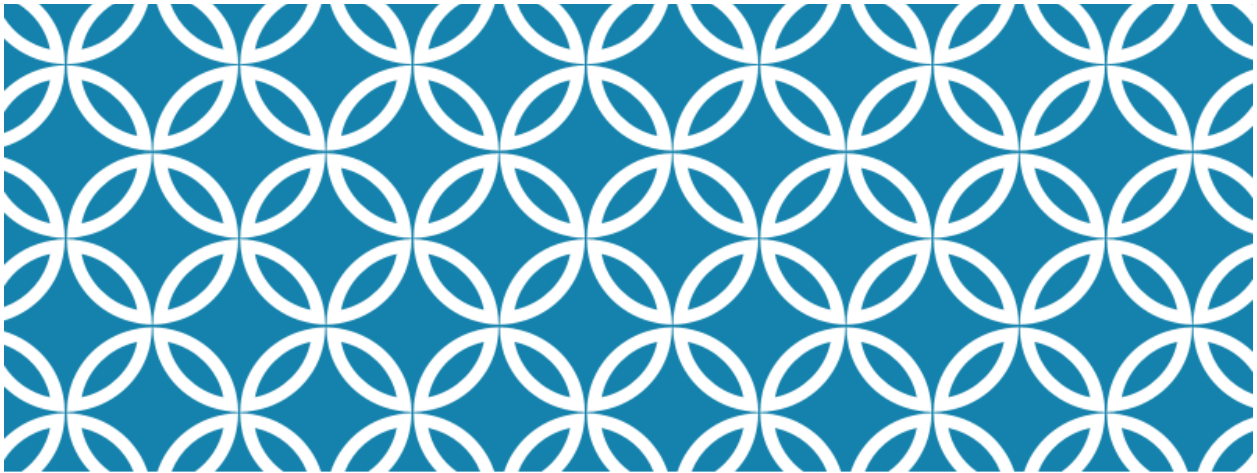
**12. Impact de leurs activités sur l'environnement immédiat**

12.1. Comment estimez-vous l'impact de vos activités sur la communauté

- a. !
- b. Médiocre
- c. Assez bon
- d. Bon
- e. Très bon
- f. Excellent

Nous vous remercions !

Reference 19 (Presentation)



**TRADE OFFENSIVE OF EMERGING ASIAN COUNTRIES IN  
DEMOCRATIC REPUBLIC OF CONGO  
CHINA AND INDIA CASES  
BY  
JEAN DENIS MIALA NDOMBELE  
SENIOR LECTURER AND PHD STUDENT**

**15th International Entrepreneurship  
Forum  
Venice, 14-16 December, 2016**

## MAIN THEORETICAL ISSUES

In our study, we discuss theories of internationalization and foreign direct investment (FDI).

A. Concerning internationalization, we first mentioned the studies carried out by Imane Khayat and Josée Saint Pierre (2008), who established three approaches to better understand it. It is :

- The behaviorist approach (with the Uppsala model and that of internationalization through innovation)
- The Resource Approach
- The network approach

Then, Pairreault and Josée Saint-Pierre (2008) noted the change in internationalization conditions from Marrakech. There, there is a great temptation to reduce the internationalization of companies to exports alone.

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## MAIN THEORETICAL ISSUES

And yet, today, internationalization has become an activity with diversified modalities. Apart from exports, there are currently three approaches:

Mercantile internationalization (inputs, outputs)

Technological internationalization (ability to control and maintain technological advantage)

Organizational internationalization (modality of organization, management and control).

Thus these two authors evoke the conditions of success to the internationalization of the SMEs evoking first the first acceptance of the concept by referring:

To the world of Johanson-Vahlne or the Uppsala Model (Johanson and Vahlne, 1997)

To Bilkey-Tesar's I-model (Bilkey-Tesar, 1977),

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## MAIN THEORETICAL ISSUES

On the basis of the industrial development strategies (SDI) of SMEs, internationalization approaches have become more complex. Hence they wish to distinguish three major representations of dynamic modalities of internationalization:

- Internationalization determined
- Internationalization agenced
- Internationalization of genes

Alongside these great names of Francophone research on internationalization, we must add Maria Forsman, Susanna Hinttu and Sören Kock who approach the question in the same direction:

- Firstly, when for example large firms have surplus resources, they can be expected to make large internationalisation
  - Secondly, in a situation when market conditions are stable and homogeneous, it might be possible to acquire important market knowledge in other ways than through experience.
- 

## MAIN THEORETICAL ISSUES

Thirdly, a firm may have considerable experience from markets that have similar characteristics and may thus generalize this experience to the specific market (Johansen Vahlne, 1993).

B. As for the theory of Foreign Direct Investment (FDI), Fodé Siré Diaby (2014) reveals that FDI is becoming more and more important and has become a key element in the internationalization strategy of transnational corporations. To support his remarks, he mentions the following authors:

Caves (1971), Dudas (2007) and Vernon (1966).

Dudas Approach (2007) Dynamic Macroeconomic Theory): Here FDI is determined by the interest rate on capital markets. It depends on the macroeconomic environment and is also considered to be an exchange rate tool. According to the same approach, FDI theories can be based on an institutional analysis, ie. FDI flows are determined by the institutional level of the country (political stability).

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## MAIN THEORETICAL ISSUES

The second analysis approach of FDI was interpreted by Vernon (1966), This is the life cycle theory of the product. There is a relationship between the life cycle of the product (mature product) and the flow of FDI, Compared to life cycle Michael Porter distinguishes 4 steps:

- The step based on the exploitation of the factors of production
- The step based on investments (manufacturing industry of intermediate goods and construction),
- The stage of innovation through research and development activities and the abundant use of human capital.
- The stage based on the wealth of the country,

The third approach is called microeconomic. In this approach, the study focuses on the motivations of the company to invest abroad. According to Mundell (1957), companies invest abroad in productive assets because there are protectionist barriers (market imperfections). Hymer's theory of monopolistic competition shows that FDI is the result of market imperfections,

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## MAIN THEORETICAL ISSUES

The key concepts of the study were circumscribed in this way:

1. Globalization
2. internationalization
3. Direct Foreign Investment

Globalization is a process that is the product of human innovation and technical progress. It refers to the increasing integration of economies around the world through trade flows and financial flows. The term is commonly used since the 1980s, ie. Since technical progress makes it easier and faster to carry out commercial and financial operations.

According to UNCTAD, FDI is an investment involving an LT relationship and reflects an interest purpose and control of an entity resident in an economy (FDI or parent company) in an enterprise that resides in an economy other than That of the investor (affiliate or foreign subsidiary).

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## METHODS OF RESEARCH

To achieve this, we will proceed by observation, interview and survey of the expatriates concerned, their employees, consumers and public authorities. Thus, we have made questionnaires and grids of interviews. Concerning the expatriates, a sample of 68 expatriates (34 Chinese and 34 Indians) was the subject of our investigation. The flat and cross sorts were used to process the data. It must be recognized, however, that at this stage of the study the analysis is essentially documentary and exploratory. The facts analysed have resulted in accepted results through induction and deduction. Descriptive and explanatory methods have also been used.

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## KEY FINDINGS

### HISTORICAL

The main question arising from our curiosity is "Why a Chinese and Indian offensive generally in Africa and particular in the DRC". Otherwise, what are the motivations behind such an offensive?

In response, according to Ndubisi Obiorah (2011), the origin of direct trade between China and Africa goes back to the 15th Century? However, the indirect exchanges are 3000 years old.

But the present relations began to be forged from 1949 with the arrival of President Mao Zedong.

From 1950 to 1980, the first Sino-African commitments were based on a principle of ideological solidarity or "third-world solidarity". More than 800 projects on agriculture, fisheries, textiles, energy, infrastructure, water conservation and energy production.

During the 1990s, the intensification of Chinese aid was dictated by the principle of "mutual respect" and the interest in diversity. This discourse is echoed in a context of African resistance to the neocolonial diktat. In return Beijing receives recognition of its sovereignty over Taiwan, a certain difference in its violation of human rights and the support of African countries in international organizations.

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## KEY FINDINGS

### PROOF OF THE OFFENSIVE

In 2000, the new forum on China-Africa cooperation saw the creation of a bilateral social and economic program, China canceled \$ 10 billion of debts held by African countries,

In December 2003, at the ministerial conference of the Forum on China-Africa Cooperation, China offered to cancel the debt of thirty-one other African countries and considered the establishment of a zero tariff for exports.

In April 2006, during his visit to Nigeria, Chinese President Hu Jintao and his host President Olusegun Obasanjo signed an agreement to grant 4 drilling licenses to China. Investing \$ 4 billion in oil infrastructure.

The state-owned China National Petroleum Corporation (CNPC) received pre-emptive rights over four blocks of oil exploration. China, meanwhile, has agreed to become a majority shareholder in the Kaduna oil refinery, whose daily output is 110,000 barrels.

In terms of logging, although small, the DRC is gradually increasing its timber exports to China. This weakness is linked to the Congolese logging restriction to 15% of cuts that can be exported to logs.

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## KEY FINDINGS

In terms of trade between India and Africa, according to Pavithra Rao and Franck Kuwunu (2016) quoting the ADB and the Indian government, they have gone from 1 billion in 1995 to 75 billion in 2015.

Between 2008 and 2014, China invested in 10 infrastructure projects in the DRC that cost US \$ 459,764,000.

By 2015, projects to develop public spaces, roads, solar projects and others cost US \$ 250,000,000 to China.

As for Chinese mining in the DRC at the end of 2014, a total of 14 mining projects have enabled the capacity building and economic development of the DRC. These projects cost US \$ 3.72 billion, including US \$ 320 million Creation of a hydroelectric power station.

However, we must deplore the lack of knowledge of the Congolese state in the 2016 agreement to sell the Congo-Kinshasa Tenke-Fungurume mine to the China Molybdenum group for more than \$ 2.6 billion (The world, 2016).

As for High Tech, the Huawei and ZRE groups are present in the DRC, Congo Chine Télécom having been bought by the French group Orange. Huawei will equip the Congolese administration with new means to facilitate its communication and the modernization of its operation

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## KEY FINDINGS

As for general trade, China exports manufactured goods to Africa. These include textile products (clothing), fabrics and clothing, leather goods, footwear (2/3 of African imports come from China), Furniture, plastic products and consumer electronics.

China also exports capital goods such as turbines, "equipment for public works, and telecommunications.

Chinese products penetrate homogeneously into all African countries.

Seen from Beijing, China would be in deficit in sub-Saharan Africa. The oil-producing countries have surpluses while the others are in deficit. China would be slightly in deficit in West Africa and positive in Central Africa.

In Kinshasa, 88.2% of Chinese surveyed admitted selling manufactured goods mainly domestic, compared with 11.8% selling agri-food products.

Does China push its citizens to emigration? The answer to this question is mitigated insofar as cooperation on mines and major works imposes an emigration of labor. However, the cities of companies having won the contracts have accompanied these official migrants with a group of unofficial migrants. They are the ones who engage in small business.

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## KEY FINDINGS

In short, Chinese migrations in Africa are motivated by major projects and the flexibility and opportunism of migrants. Many Chinese disembarking in Africa are adventurers without a particular mandate. Creating an SME in Africa is now very expensive and migrants choose Africa for want of something better (Antoine Kermen and Benoit Vulliet, 2008).

As for the profile of migrants, 29.41% of Chinese migrants surveyed worked in China before their expatriation in the DRC, 23.53% were unemployed, 14.7% unemployed and 11.76% unemployed candidates for emigration .

The Indians also flock to the DRC, but according to their own model of settlement,

Chinese and Indians are mainly supplied in their respective countries of origin. There is, however, a fringe that is sourced from their own countries and in other Asian countries.

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## KEY FINDINGS

As for local partners, 79.41% of Chinese do business with their compatriots in the DRC, 47.05% with Congolese producers and 35.20% with Congolese traders.

Integration in the host country is easy notwithstanding cultural, religious and linguistic difficulties.

Workers complain about the mediocrity of wages paid by Chinese shopkeepers. At the beginning \$ 50, thereafter between \$ 60 and \$ 120 depending on the employers. The Chinese and Indians strictly respect fiscal responsibility. Their business is profitable and they feel comfortable in the DRC. According to consumers, the Chinese and Indian presence in the DRC has an overall positive impact.

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## IMPLICATIONS OF FINDINGS FOR POLICY AND PRACTICE

The intensification of trade between the emerging Asian countries and the DRC is a commendable initiative. It devotes multipolarity to the planet and gives pride of place to China and India in the concert of nations. However, if on paper this cooperation is desired win-win, in fact China and India make the most of it. Many Agreements disadvantaging Africa are to be revisited. These agreements show limitations in the creation of jobs, they kill creativity and local industry, it sometimes flouts the rules of global governance including democracy and respect for the rights 'man. The Chinese and Indians have achieved a high level of dignity and global respectability. Their voices now count towards the united nations, even if the Chinese exalt the softpower and the Indians the search for economic, commercial and cultural greatness. The DRC by freeing itself of the postcolonial diktat regains a certain prestige which showed a certain arrogance vis-a-vis the western countries.

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## ABOUT FUTURE RESEARCH ON THE TOPICS

Future research on this issue should focus on the causality between the economies of these Asian countries that are members of BRICS and the Congolese economy in particular as well as the economies of African countries in general,

It will also be necessary to study the impact of the Asian emerging countries' offensive on the direction and conduct of economic policy in the DRC

Future studies should also focus on the process whereby the DRC could draw inspiration from the model of international trade migration and development of the emerging Asian countries that are members of BRICS.



*MY WISH IS THAT ENTREPRENEURSHIP WINS!*  
**THANK YOU!**

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## **Macroeconomic Policies and Institutional Entrepreneurship Competitiveness in the Colonial Divides of West Africa**

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*Keywords: Macroeconomic Policies, Institutional Entrepreneurship, Performance, Sustainability, West Africa*

### **Abstract**

The paper focuses on the effects of macroeconomic policies on institutional entrepreneurship in Anglophone and Francophone West African countries. We review the monetary and fiscal policies to derive their implication for business related entrepreneurship. We adopt a measure of entrepreneurship at country level using the Global Entrepreneurship Monitor (GEM) indicators beginning with a cluster analysis to classify countries in the region into entrepreneurship-enhancing or entrepreneurship-inhibiting divides. An Autoregressive Distributed Lag (ARDL) panel estimation was used to examine the macroeconomic drivers of entrepreneurship. Lastly, using a Data Envelopment Analysis (DEA) we measure the efficiency of macroeconomic policies on entrepreneurship in the divides. From the results, we deduce policy implications and recommend policy options for entrepreneurship growth in West Africa.

## 1.0 BACKGROUND

On the premise that a vibrant entrepreneurial climate provides new jobs, increases competitiveness, and produces novel goods and services (UN, 2013), it is expected that policymakers attempt to increase entrepreneurial activities in numerous ways. To this end, government all over recognizes the nature of their economy and advance public policies capable of addressing peculiar challenges and opportunities within the economy. Policy makers in many countries make attempts to improve the entrepreneurial environment (OECD, 2007, Lundstom and Stevenson, 2005, Hart, 2003) by designing favourable policies to suit business environments (Ahmad and Hoffman, 2007). However, achieving optimal outcomes in macroeconomic management which has been linked to the relationship between monetary and fiscal policies in an economy is instrumental for that purpose (Muscatelli & Tirelli, 2005). According to Alan and Stuart (1999), the two main instruments by which government institutions all over the world stimulate market conditions is through their monetary and fiscal policies.

These policies are inextricably linked in macroeconomic management. Just as fiscal policy is central to the health of any economy, as governments' power to tax and to spend affects the disposable income of citizens and corporations, monetary policy regulates the general business climate. However, monetary policy and fiscal policy have very different economic effects. Fiscal policy can be distinguished from monetary policy, in that fiscal policy deals with government spending and revenues, it is often administered by an executive under laws of a legislature, whereas monetary policy deals with the money supply, lending rates and interest rates and is often administered by a central bank for certain reasons. The issue of appropriate designs of both policies is an important old debate because they determine the feasibility and sound environment for enterprise development (GEM, 2010).

However, economists have long claimed that institutions<sup>1</sup> perform important functions in development process, particularly through their role in allocating resources to their most productive uses (Lewis, 1955; Myrdal, 1960; Gerschenkron, 1962) such as entrepreneurship activities. Baumol (1993) specifically recognizes the importance of entrepreneurship process within an appropriate institutional framework. Likewise theorist such as *North, Rosenberg, Nelson and Williamson* supports the notion that an institution is one of the many variables that influence entrepreneurship development. We acknowledge that there are wide variety of institutions. The term institutions can refer to agencies or established organizations, yet the meaning used in determining the level of entrepreneurship includes formal institutions such as the government legislations and public policies. These types of institutions further pinpoint institutional entities such as central banks and other government authorities. According to Sanusi (2012), policies have indeed gained significant attention as a new paradigm of bridging the market failure gaps; it also complements the private sector's efforts especially in developing countries. The financial system plays a vital role in analyzing monetary and fiscal policies particularly in emerging economies. The duo's relationship depends strongly on the development and function ability of market based operations by central banks (Hilbers, 2004). However, the amount of entrepreneurial outcomes generated from a given amount of economic inputs depends primarily on the rules of the game, or policies, under which entrepreneurs operate. However, such policies on their own do not create enterprises; they only regulate the environment in order to provide opportunities for entrepreneurship.

The term institutional entrepreneurship then refers to the activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones (Maguire, Hardy & Lawrence, 2004). The term is most closely associated with DiMaggio (1988), who argued that new institutions arise when organized actors with sufficient resources see in them an opportunity to realize interests that they value highly. The role of institutions in enterprise development was first recognized by Max Weber (1905) who probed the entrepreneurial phenomenon from a socio-cultural perspective. Schumpeter (1934) also followed suit with the role of entrepreneurship in his theory of economic development. Likewise, various studies have contributed to this debate by investigating the relationship between institutional structure and the level of development such as Cochran (1960), Dana (1990) and Tiessen (1997).

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<sup>1</sup> Institutions are agencies, establishment, laws that influence government actions. According to North (1990) institutions affect the performance of the economy. They are set of regulations in form of policies (Furubotn & Richter, 1997).

A number of studies refer to entrepreneurs as creators of institutions (Child, Lu and Tsai 2007; Clemens and Cook 1999; Fligstein 2001; Garud, Hardy and Maguire 2007; Garud, Jain and Kumaraswamy 2002; Levy and Scully 2007; Lounsbury and Crumley 2007; Mutch 2007; Perkmann and Spicer 2007; Wijen and Ansari 2007; Zilber 2007). The actions of entrepreneurs have been widely felt because they create a whole new system of meaning that ties the functioning of disparate sets of institutions together (Garud, Jain and Kumaraswamy, 2002). For instance, the GEM analysis are based on a harmonized assessment of the level of national entrepreneurial activity for all participating countries; it represents one of the rare sources of data on entrepreneurship conducive to cross-country comparison. Institutional entrepreneurship is therefore a concept that reintroduces agency, interests and power into institutional analyses of countries. It thus offers promise to researchers seeking to bridge what have come to be called the “old” and “new” institutionalisms in organizational analysis (DiMaggio and Powell, 1991; Greenwood and Hinings, 1996).

Furthermore, entrepreneurship is a global phenomenon that is central to economies across the world and has gained rapid attention of public policies makers because of its abilities to create wealth, generate income, output and employment (OECD, 2011). Entrepreneurship is driven by the presence of certain factors and a sound macroeconomic environment, especially when it operates within an appropriate institutional framework. Audretsch and Thurik (2001) assert that, it has been increasingly recognized as a major driving force for innovation and economic growth in all economies. This importance is correspondingly reflected in the level of entrepreneurial activity around the globe (Bosma, Acs, Codurs & Levie, 2009).

This study considers the historical antecedents in West Africa as a ‘divide’ to classify the economies within into two groups. The aftermath of colonialism which swept across Africa grouped countries within the Region into British’s Anglophone and the French’s Francophone countries. Although the classification into colonial divides appears static and already predetermined by history, there are elements of varying competitiveness within. Basically, the broad trade-offs within the two divides are: the difference of colonial master, language, membership of unions, currency and, of particular interest to this study is the existence of the capital market in the francophone countries which have developed steadily over the years evidenced by the establishment of BRVM (*Bourse Regionale des Valeurs Mobilieres*)<sup>2</sup>, physically located in Code l’voire which serves the countries of the West African Economic and Monetary Union (WAEMU). Although, the market remains relatively small and illiquid, our aim objective is to determine the entrepreneurial competitiveness of the divides taking equity portfolio into consideration as one of the measures of institutional entrepreneurship. According to North (1981) and Jones (1981), countries with efficient institutions and less distortionary policies will achieve a greater level of income. For instance, could the dependency of the central banks in the francophone countries or the independency of the Anglophone countries make or mar entrepreneurship? Perhaps, this factor may enhance entrepreneurship in francophone divide given the operations of the regional market in existence. This notion could be corroborated by the dictates of structural economics approach<sup>3</sup>, which presumes that financial markets enhance development<sup>4</sup> in economies.

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<sup>2</sup> BVRM is a regional stock market serving the countries of the West African Economic and Monetary Union (WAEMU). It is physically located in Abidjan – Côte d'Ivoire

<sup>3</sup> Structuralist economics measures policies by identifying specific rigidities, lags as well as other characteristics of the structure of developing countries (Dutt and Ros, 2003).

<sup>4</sup> Bearing in mind that economic development comprises of entrepreneurship according to the Joseph Schumpeter’s (1934) theory of economic development.

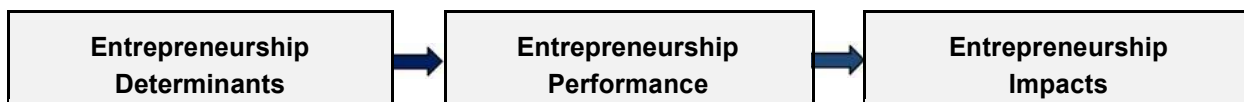


	Colonial divides	Divide 1	Divide 2
		Anglophone countries in West Africa	Francophone countries in West Africa
1	Language	English	French
2	Currency	Individual currencies exist in each county	Common CFA –hedged to the franc
3	Colonialist	Great Britain	France
4	International affiliations	Common wealth of Nations	International Organization of La Francophonie
5	Colonial ideology	Policy of indirect rule	Policy of assimilation
6	Regional capital market	No joint stock exchange but exists in individual countries	BRVM operating across French West African Economic and Monetary Union (WAEMU)
7	Number of countries in group	5	11

Source: Authour compilation (2016)

It is important to note in this study that there have been debates on the focus of competitiveness in regional economics (Schumpeter (1934), Grossman-Helpman (1991), Krugman (1991) and Lambooy (2002). It is not part of this paper’s intention to jump into the ocean of definition of competitiveness. But for the purpose of coming to terms with the perspective of this paper, it is necessary to state that we will measure entrepreneurial competitiveness through the effects and efficiency of fiscal and monetary policies on entrepreneurship in the two divides. Harper (2003) reiterates that a prominent feature of a competitive enterprise economy is the ability of people to continually seek out and seize opportunities for profitable new activities in local and world markets. These opportunities are made possible by the dictates of macroeconomic policies in countries. However, giving the peculiarities within the Region bordering on insufficient data, lack of contemporaneous data in some instances, and because most countries were found ranking low on innovation criteria, it makes it impossible to adopt the full indicators of entrepreneurship activities as measured by the Global Entrepreneurship Monitor (GEM) and the knowledge economy indicators<sup>5</sup> across country level. However, we adopt a specific entrepreneurship measure for the study using OECD indicators in Ahmad and Hoffman (2007), along with some indicators of GEM and knowledge economy.

Figure 1: OECD/EUROSTAT framework for Entrepreneurship indicators



Source: Ahmad and Hoffman (2007)

We adopt the cardinal points for measuring entrepreneurship as: the determinant of entrepreneurship; the entrepreneurship performance and entrepreneurship impact in countries. The framework in Figure 1 identifies three separate but interconnected flows, all of which are important in the formulation, assessment and appraisal of policy measures. The study looks at the impact of a variety of factors within each theme, taking into account country differences which affect their relevance to institutional entrepreneurship. The aim is to look at changes over time as well as analyze and investigate the interactions between the entrepreneurship indicators and the two macroeconomic policies.



<sup>5</sup> A knowledge economy is an economy driven by science and technology in the pursuit of innovation.

## 1.1 Problem statement

The gap between research evidence and policy interventions is wide in Africa as a whole. There is often a communication barrier between those parties interested in policy. Policy makers, researchers and practitioners do not appear to effectively share their knowledge or experience with each other. However, the lack of sufficient evidence to make informed and reliable evaluations of policy interventions as supported by Storey (2008) makes it difficult to develop policies based on systematic analyses of previous interventions. In some cases, policy interventions miss the point through being poorly conceived, fail for lack of take-up, or are sometimes overly complex to administer (Bennett, 2008; Greene, Mole & Storey, 2008).

Financial institutions such as central banks in the region are still trying to grapple their regulatory functions (Aremu, 2010). Just as Hayek (1976) highlights the problems generated by the fiscal constraints to monetary policy which are typically prevalent in Africa. This school believes all monetary problems and inflation are due to political mismanagement. This in turn has hampered the effectiveness of monetary policy. Some countries within the region still have to nurture a budding financial system as well as pursue the objective of price stability. However, evidence abounds that central banks' independence from fiscal authorities, impacts minimally on low inflation. For instance, Posen (1993) reiterates the illusory impact of central bank independence on inflation. Interestingly he points to properly construed democratic politics, which garners support from interest groups for a low-inflation drive by central banks, as opposed to mere central bank independence.

Indeed, the stability and efficiency of the financial sector, particularly the banking system, has now become a major concern of central banks both in the industrial and emerging economies (Ncube, 2015). For instance, the questions of whether government budgeted deficits are inflammatory and why central bankers worry about government budgets have been arguably found to depend on how the monetary and fiscal policies are interacted. Hence, having stable and low inflation requires proper coordination of fiscal and monetary policies in every economic management endeavour. Achieving low inflation, as well as high and sustained output depending on the monetary framework, is a cardinal function of central banks in engendering economic growth. The degree of the central banks' independence in performing its functions notwithstanding, there is a high level of interdependence with the fiscal authorities and actions. Concerning effectiveness of the monetary policy vis-a-vis its statutory macroeconomic goals, there exists a large quantum of both theoretical and empirical studies<sup>6</sup>. Despite the wide volume of literature that central bank independence and monetary policy are positively correlated, the monetary policy is not and can never be isolated from other economic authorities such as fiscal policy in its role of promoting entrepreneurship.

In the same vein, by implication, fiscal policy actions, responses and overall well-being of citizens as well as have been found to be positively related to entrepreneurship growth (Gali, 2008; Hermawan and Munro, 2008; Monacelli *et al.*, 2004) and implies that when fiscal discipline is ensured, price management may become convenient. In other words, government effort at improving economic welfare could be either be entrepreneurship enhancing or inhibiting depending on its policies. A common criticism of policies geared towards entrepreneurship is that of a re-inventing wheel, or a poor accumulation and sharing of knowledge and experience (Dennis, 2005). Despite the wide range of policy measures implemented to accelerate economic growth, the empirical evidences on the relationship between macroeconomic policies, central banks' operations and entrepreneurship growth remain unresolved. In reality, the lacuna between policy and research does not appear to be closing especially in West Africa (Onwuka *et al.*, 2014). How effective and efficient macroeconomic policies are on entrepreneurship in the West African divides are subject to questions which this paper attempts to answer in order to contribute knowledge to the nascent studies in institutional entrepreneurship in the region.

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<sup>6</sup> see Taylor (2004), Sims (1994) and (2007); Gali and Gertler (1999); and Gali *et al.*, (2012)

## Objectives of the study

The broad objective of the study is to examine the effects of macroeconomic policies on entrepreneurship competitiveness in West Africa. This objective is split into the following specific objectives, which are:

- i. to classify the two divides in West Africa into entrepreneurship enhancing and entrepreneurship inhibiting.
- ii. to examine the effects of macroeconomic policy instruments on entrepreneurship in the West Africa.
- iii. to determine the efficiency of macroeconomic policies in the West Africa divides.

### 1.3 Justification of the study

*'..but many dont know that Africa's Western region breeds a powerful entrpeneurial ecosystem that could rival America's West'* (African Entrepreneurship Award). First, it is imperative to clarify what is meant by entrepreneurship in this study. A thorough historic and analytical treatise on the perception of entrepreneurship cannot be provided here (see Schumpeter, 1934; Binks & Vale, 1990; Storey, 2004; Shane & Venkataraman, 2000; Naudé, 2007; Acs & Minniti & Lévesque, 2008; Kanothi, 2009). Nevertheless, a clear definition of the concept is indispensable in the context of this paper because there is a host of heterogeneous definitions to be found in the literature. As can be seen in the works cited the definition of entrepreneurship are not exactly the same because it has been viewed from different perspectives. Taking a cue from an institutional attempt, the UNDP (2010) defined entrepreneurship as the process of using certain initiatives to transform a business concept into a new venture or to grow and diversify an existing venture or enterprise with high growth potential. Entrepreneurship is however often linked to economic growth.

This complements the works of notably economists, such as Bagehot (1873), Schumpeter (1934) and Gurley and Shaw, (1955, 1960 and 1967) who have long recognized the role of entrepreneurship in economic development. The search for the relationship between entrepreneurship and economic growth is not new. There are various strands in the empirical literature between the two using different measures of entrepreneurial activity. For instance, while one strand of empirical studies measures entrepreneurship in terms of the relative share of economic activity accounted for by small firms, other studies use data on self-employment, the number of market participants (competition) or firm start-ups as an indicator of entrepreneurial activities (OECD 1998 and Carree & Thurik, 2002). Together with recent studies on OECD countries, the analyses of the Global Entrepreneurship Monitor (GEM)<sup>7</sup> represent one of the most important sources for statistical analysis of the links between entrepreneurial activity and economic growth. However, not all the countries in West Africa are represented at the time of this study. GEM report (2002) shows that the national level of entrepreneurial activity has a statistically significant association with subsequent levels of economic growth. Hence, GEM data also suggests that there are no countries with high levels of entrepreneurship and low levels of economic growth (Reynolds, Bygrave, Autio, Cox & Hay, 2002). Until now, the GEM data have had to be viewed with caution. It can however, be assumed that an analysis of more countries over a longer period of time will accumulate evidence of a positive link between high rates of entrepreneurship and economic growth. Schumpeter argued that entrepreneurship is very significant to the growth and development of economies (Keister, 2005). This assumption is supported by a variety of other empirical studies using different indicators of entrepreneurial activity. Likewise, the theory of economic development highlights entrepreneurship evolution, factors that influence the emergence, behavior and performance of entrepreneurs as contributory to economic growth and development. This study fills the gap by measuring cross country effects of entrepreneurship in economies vis-a via monetary and fiscal policies.

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<sup>7</sup> The GEM is a research programme launched in 1999 that provides annual assessments of the national level of entrepreneurship.

## 2.0 REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

### 2.1 Theoretical framework

<sup>8</sup> According to Albert Einstein, it is theory that decides what we can observe. Keynes' General theory is the first to take a more general equilibrium perspective on macroeconomics and look at the interaction between goods, labour, money and financial asset markets. Specifically, three out of the Index of Leading Indicators<sup>8</sup> namely; the money supply, the interest rate spread and stock prices are clear indication of the financial conditions in economic management. For instance, broad money supply indicator which is procyclical (Knopp, 2008) could reflect to different situations. It could either mean that the central bank is actively expanding the money supply in order to spark expansion, or the money supply is responding endogenously to increases in economic activities. Both situations have implications for institutional entrepreneurship. However, to a large extent, the financial capital theory<sup>9</sup> explains how financial institutions through macroeconomics policy instruments affect entrepreneurship. According to North (1990) institutions affect the performance of the economy. It interprets how institutions determine the level of economic activities and development in various geographical spaces. However, while institutions are set up to reduce uncertainties in economies, the structures available may not always be efficient, they may either encourage or deter productivity. Studies have showed that access to finance makes the establishment of new firms possible (Evans & Jovanovic, 1989; Holtz-Eakin *et al.*, 1994 and Blanchflower *et al.*, 2001). This theory implies that the availability of financial capital empowers people to acquire resources and to exploit entrepreneurial opportunities effectively (Clausen, 2006). Schumpeter who was probably the first scholar to theorize about entrepreneurship argued that the agents that drive innovation and the economy are large companies which have the capital to invest. However, Aldrich (1999), Kim *et al.*, (2003), Davidson and Honing, (2003) Hurst and Lusardi (2004) contest this theory stating that most entrepreneurs with little or no capital at all and that financial capital is not significantly related to the probability of being a start up entrepreneurs. This different view is attributed to the fact the latter studies were focused on liquidity constraints, aimed to resolve whether a founder's access to capital is determined by the amount of capital employed to start a new venture (Clausen, 2006). It further explains that having access to capital at the beginning of an enterprise is a condition for predicting whether a new enterprise will grow but not necessarily important for the founding of a new venture (Hurst & Lusardi, 2004).

### 2.2 Monetary and Fiscal policy implications

Monetary and fiscal policies are both commonly accorded prominent roles in the pursuit of economic growth. Monetary rather than fiscal policy exerts a great impact on economic activity and has greater influence on economic growth (Ali, Irum, and Ali, 2008, Adefeso (2010), Ajisafe and Folorunso, 2012, Alanvinasab (2015). Monetarist strongly believes that monetary policy exact greater impact on economic activity as unanticipated change in the stock of money affects output and growth. The stock of money must increase unexpectedly for central banks to promote entrepreneurship. In fact, they are of opinion that an increase in government spending would crowd out private sector and such can outweigh any short-term benefits of an expansionary fiscal policy (Adefeso and Mobolaji, 2011). On the other hand, the concept of liquidity trap introduced by Keynesian economics<sup>10</sup> keeps the monetary authorities in check. Hence, at liquidity trap an increase in the money supply would not stimulate economic growth because of the downward pressure of investment owing to insensitivity of interest rate to money supply. Keynes theory recommends fiscal policy by stimulating aggregate demand in order to curtail unemployment and reducing it in order to control inflation. However, a country's monetary authority can neglects its inflation targeting objective to stabilize the debt of fiscal authority, even in policy makers operate in different countries (Leith and Wren-Lewis, 2000). Also, Nunes and Portugal (2016) found that if monetary policy was to be active, it must seek to adopt an inflationary policy. While there are several studies on this debates between Keynesian and Monetarist in developed countries, only fragmented evidence have been provided on this issues in the West African countries.

<sup>9</sup> The index of leading economic indicators is an American economic tool which predicts future economic activity

<sup>10</sup> Financial capital is any economic resource measured in terms of money used by entrepreneurs and businesses to buy what they need to make their products or to provide their services to the sector of the economy upon which their operation is based which is a situation in which real interest rates cannot be reduced by any action of the monetary authorities

Economic theory postulates a very clear role of monetary and fiscal policy to improve economic growth. However, the empirical findings in this regards have been mixed. Economic theories resort to explaining the nature of interactions between fiscal and monetary policies. The existing literature is largely theoretical ranging from game-theoretic models (for instance Dixit and Lambertini, 2000 & 2001); Australia, 2011) to New-Keynesian dynamic general equilibrium models (see Leith and Wren-Lewis, 2000; Peres and Hiebert, 2002; Zagaglia, 2002; Schmitt-Grohe and Uribe, 2002; Benigno and Woodford, 2003; Gali and Monacelli, 2005; Lubik and Schorfheide, 2007; Ortis et al 2009, Philippoulos *et al.*, 2012 and others). The line of debate among these studies includes the assumption of the degree of competition, flexibility or stickiness of prices, existence or non-existence of debts and lots more. One major position in economic theory is that when prices are flexible and market is perfectly competitive, the interrelation between fiscal and monetary blocks tends to be different when compared with a model which assumes nominal imperfect and perfect market conditions among other things. Conventional practice reveals that both policies are in most times in the control of two different agents, yet the two policies are interdependent when employed as instruments to achieve national economic objectives in countries. Therefore any shock resulting from one policy would necessary influence the other, as a result of this, there is the possibility of tension resulting between what each player would do to contribute to entrepreneurship development.

The cyclical behaviour of fiscal policy over the business cycle has been a contentious issue among generations of economists. The traditional Keynesian view has been that fiscal policy should be countercyclical, so that the budget is used actively to stabilize the economy. Empirical evidence has it that discretionary fiscal policy in EMU countries has become more countercyclical over time, which happens to be a trend that affects other industrialized countries (Gali and Perotti, 2003). In contrast, the German view as presented by Giavazzi and Pagan, (1990) holds that fiscal retrenchment is a premise for an expansion by absorbing a smaller share of GDP, the public sector makes room for the private sector to expand, which cannot be achieved solitarily. This thus establishes the fact that it is imperative to pursue consistency of monetary - fiscal policy interactions, as well as coordinate these policies to avoid tensions and inconsistencies. In particular, if the governments embark upon expansionary fiscal policy by financing the same through the financial markets, it could lead to high interest rate or low credit availability which might crowd out entrepreneurs. Consequently, the goal of entrepreneurship growth would be hampered. This situation becomes a concern to the central banking authorities.

Thus, the role of financial market in the fiscal-monetary interactions could not be overemphasized and is explored accordingly.

The relevance of fiscal policy on the other hand cannot be relegated. According to Iwamoto (2005), the interactions between monetary and fiscal policy crucially depend on the specific policy variables utilized by fiscal policy. Taking on the fiscal theory of the price level framework, Sims (1994) finds that various virile anti-inflationary policies introduced in the United State of America were largely successful due to the fiscal adjustment that characterised the economy, during the subsequent periods after high inflation. Fiscal policy objectives are consistent with the empirical findings of Andersen and Jordan (1968), Ajayi (1974) and Elliot (1975). Likewise, studies on the usefulness of fiscal policy as tools for promoting growth and development in less developed countries remains inconclusive, given the conflicting results of current research. For instance, Darrat (1984) suggests that fiscal policy significantly lead monetary policy in explaining changes in nominal income. Olaoye and Ikhida (1995) are of the opinion that fiscal policy is more effective in depression economy. On the specific fiscal policy instrument, Muscatelli, Tirelli and Trecroci (2004) opine that macroeconomic stabilization based on taxation policy seem to combine more efficiently with forward-looking inertial monetary policy rules than feedback government spending rules. Likewise, Mountford and Uhlig (2002) reiterate that the best fiscal policy to stimulate the economy is a deficit-financed tax cut and that the long term costs of fiscal expansion through government spending are probably greater than the short term gains. In addition, cuts in tax rate might in some cases be the optimal policy response to a rise in government spending. However, numerical fiscal rules are not efficient in altering the behavior of the agents as they do not change the path of the economy (Chronis and Strantzalou, 2008). In addition Caldara and Kamps (2008) reiterated the uncertainty of tax cuts stating that the estimated effects of unanticipated tax increases ranges from non-distortionary to strongly distortionary. This could also be attributed to an automatic response of tax revenues to the business cycle in the countries. Based on time basis, Ali *et al.* (2008), later found that fiscal policy has

an effect only in the long run, though insignificant. While Nordhaus (1994) have earlier affirmed that the effects of the coordination and independence of fiscal policies cannot be seen in the short run. This implies that poorly timed fiscal policies may have an adverse effect on the economy in terms of output and consumption loss. But Prakash and Cabezon (2008) maintains that there is a positive and significant correlation between public financial management quality and fiscal balances. On the contrary, Olomola and Oseni (2013) are of the opinion that an increase in government spending and debt does not response to increase in private consumption.

On the debate of the effectiveness of both monetary and fiscal policies in the economy, Darrat (1984) investigates the relative influence of the policies; the results suggest that fiscal policy significantly lead monetary policy in explaining changes in nominal income. Dixit and Lambertini (1999) suggests that if fiscal and monetary policy makers agree about the levels of output and inflation, the level will be attained despite differences in objectives . In the opinion of Leeper (1991) a policy is either active or passive depending on its responsiveness to government debt shocks. More recently, Ajisafe and Folorunso (2002) investigates the relative effectiveness of monetary and fiscal policies in an economy and found that monetary policy rather than fiscal policy has significant effects on economic growth but that both policies should be complementary. Also, Lombardo and Sutherland (2003) adds that welfare gains from fiscal cooperation do exist provided monetary policy is set cooperatively. Ali, Irum and Ali (2008) examine that whether fiscal stance or monetary policy is effective for economic growth in case of South Asian. The results suggest that the monetary policy rather than fiscal policy has greater influence on economic growth. Khosravi and Karimi (2010) investigated the relationship between monetary, fiscal policy and economic growth in Iran. The results confirm that there is an existence of co integration between growth, monetary and fiscal policy. The results further identifies that the effects of inflation and exchange rates on growth are negative, but government expenditures have significant and positive effect on economic growth. It is suggested that the policy makers must have to diminish inflation rate and exchange rates to find the stability of both policies in the future. Adefeso (2010) re-examines the relative effectiveness of monetary and fiscal policy on economic growth. The result suggests that the effect of monetary policy is more dominant than fiscal policy on economic growth in Nigeria. It was recommended that there should be more focus on monetary policy in the country for economic stabilization. However, Muscatelli *et al.*, (2003) and Buti (2003) find that the role of both policies in the economy depends essentially on the types of shocks hitting the economy as well as the assumptions made about the underlying structural model. Having viewed the importance of both policies, Levy (2001) asserts that credibility is crucial to successful macroeconomic policy and that confusing signals must be avoided, both to the public and among policymakers.

Table 2.1: Summary on literature on fiscal and monetary policies

s/n	Author & Year	Title	Country & Scope	Methodology		Findings
				Variables	Estimation Methods	
1	Darrat (1984)	The Dominant Influence on Fiscal Actions in Developing Countries.	5 Latin American countries 1950 to 1981	Gross national Product, money stock, government spending and exports	St. Louis single-equation approach	The results suggest that fiscal policy significantly lead monetary policy in explaining changes in nominal income
2	Leeper (1991)	Equilibria under active and passive monetary and fiscal policies	United States of America	Price level, prices, Interest rates, Taxes, Interest rate, Inflation rate, and real debt.		Policy is active or passive depending on its responsiveness to government debt shocks.
3	Nordhaus (1994)	Policy Games: coordination and Independence in Monetary and Fiscal Policies	United States of America 1955 to 1994 and 1979-1994	Interest rate, Inflation, Unemployment, Growth of potential output, GDP	Game-theoretic model, VAR	The effects of the coordination and independence of the policies cannot be seen in the short run. Poorly timed policies may lead to steep price in terms of output and consumption loss.
4	Olaoye and Ikhide (1995)	Economic Sustainability and the Role of Fiscal and Monetary Policies in a Depressed Economy.	Nigeria 1986 to 1991			Fiscal policy is more effective in depressed economy
5	Dixit and Lambertini (1999)	Symbiosis of Fiscal and Monetary policies in a monetary Union	EMU, European countries	GDP, expansionary fiscal policy, Inflation, Natural private output, taxes/ Production subsidy, Interest rates	Barro-Gordon type models	If fiscal and monetary policy makers agree about the levels of output and inflation, the level will be attained despite differences in objectives
6	Leith and Wren-Lewis (2000)	Interactions Between Monetary and Fiscal Policy Under Flexible Exchange Rates	US/ Euro	Probability of death, current prices of goods, Bonds, money balances	New-Keynesian DSGE model	A country's monetary authority can neglects its inflation targeting objective to stabilize the debt of fiscal authority, even if policy makers operate in different countries
7	Levy (2001)	Don't Mix Monetary and Fiscal Policy: Why return to an old, flawed framework?	United States of America 2001	Review of theories and empirical case studies		Credibility is crucial to successful macroeconomic policy by avoiding confusing signals to the public by policymakers.

8	Ajisafe and Folorunso (2002)	The relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria	Nigeria 1970-1998	Money supply, government revenue and expenditure, budget deficits	OLS for stationarity. DF and ADF for cointegration	Monetary rather than fiscal policy exerts a great impact on economic Both monetary and fiscal policies should be complementary
9	Gali and Perotti (2003)	Fiscal policy and monetary integration in Europe	EMU, non EMU and non-EU OECD countries 1980 – 2002	GDP, output elasticity of tax revenues and spending,	New-Keynesian DSGE model models. Panel regression	Discretionary fiscal policy in countries has become more countercyclical over time, which happens to be a trend that affects other industrialized countries
10	Lombardo and Sutherland (2003)	Monetary and Fiscal Interactions in Open Economies	Europe	Private consumption, government expenditure, aggregate output of the home economy, foreign assets, prices of goods	A two-country sticky-price model. Static version of Beetsma and Jensen model	Welfare gains from fiscal cooperation do exist provided monetary policy is set cooperatively.
11	Favero (2004)	Comments on Fiscal and monetary policy interactions: Empirical evidence on optimal policy using a structural new-Keynesian model	United States of America (1970–2001)	Output, Inflation, Wages, Employment, Government expenditure, Government receipts, budget deficit, GDP	Classical statistical methods (GMM)	The complementarity or substitutability of the policies depends crucially on the types of shocks hitting the economy, and that countercyclical fiscal policy can be welfare-reducing if fiscal and monetary policy rules are not coordinated.
12	Muscatelli, Tirelli, and Trecroci (2004)	Can fiscal policy help macroeconomic stabilisation? evidence from a new keynesian model with liquidity constraints	United States of America 1970-2001	Inflation, Interest rate, Government spending, Employers, Taxes.	DSGE model. GMM	Macroeconomic stabilization based on taxation policy seem to combine more efficiently with forward-looking inertial monetary policy rules than feedback government spending rules.
13	Iwamoto (2005)	Interaction between Monetary and Fiscal Policy and the Policy Mix	OECD countries	Interest rate, Inflation rate, and price level. Tax rate	OLS regression results	Interactions between monetary and fiscal policy crucially depend on the specific policy variables utilized by fiscal policy.
14	Mountford and Uhlig (2005)	What are the Effects of Fiscal Policy Shocks?	United States of America 1955-2000	GDP , Tax revenue, government spending	VAR	Deficit-financed tax cut is the best fiscal policy to stimulate the economy. The long term costs of fiscal expansion through government spending are probably greater

						than the short term gains.
15	Horvath (2007)	Optimal Monetary and Fiscal Policy in an Economy with Non-Ricardian Agents	undisclosed	Consumption, interest rate, taxes, government spending, output	New-Keynesian linear-quadratic	Cuts in tax rate might in some cases be the optimal policy response to a rise in government spending.
16	Ali, Irum and Ali (2008)	Whether Fiscal Stance or Monetary Policy is Effective for Economic Growth	South Asian countries 1990 to 2007	Gross domestic product, broad money (M2) and. fiscal balance	ARDL and ECM model	Monetary policy rather than fiscal policy has greater influence on economic growth in South Asian countries.
17	Chronis and Strantzalou (2008)	Monetary and fiscal policy interaction: what is the role of the transaction cost of the tax system in stabilization policies?	Greece	Public expenditure, wage and tax levels.		Numerical fiscal rules are not efficient in altering the behavior of the agents as they do not change the path of the economy.
18	Caldara and Kamps (2008)	What are the effects of Fiscal Policy Shocks?	1955-2006.	Government spending, taxes, GDP, inflation rate and short-term interest rate	vector autoregressive comparative analysis	The effects of effects of fiscal policy shocks are uncertain in both empirical literatures in theoretical models.
19	Ali, Irum, and Ali (2008)	Whether Fiscal Stance or Monetary Policy is Effective for Economic Growth in Case of South Asian Countries?	Pakistan India Bangladesh Sri Lanka (1990 – 2005)	GDP growth rate, Fiscal deficit Broad Money supply	Autoregressive Distributed Lag model (ARDL)	Money supply was found significant in both short run as well as in long run. This shows that monetary policy is a powerful tool than fiscal policy in order to enhance economic growth
20	Prakash and Cabezon (2008)	Public Financial Management and Fiscal Outcomes in Sub-Saharan African Heavily-Indebted Poor Countries	Africa. 10 West African countries inclusive	Overall balance, Interest payments, expenditure, external Debt, government debt	Regressions using ordinary least squares	there is a positive and significant correlation between PFM quality and fiscal balances,
21	Jawaid, Arif and Naeemullah (2010)	Comparative analysis of monetary and fiscal Policy	Pakistan (1981 to 2009)	Gross domestic product (GDP), money supply and fiscal balance	Stationary analysis. Dickey-Fuller and Phillips Perron, Johanson-Juselius co-integration	Both policies were found to have significant and positive effect on economic growth in the long run. But the coefficient of monetary policy is much greater than fiscal policy which implies that monetary policy has more concerned with economic growth than fiscal policy.



22	Khosravi and Karimi (2010)	To Investigation the Relationship between Monetary, Fiscal Policy and Economic Growth in Iran	Iran 1960-2006	GDP, Consumer Price Index, Money stock, Government expenditure, Exchange rate	Autoregressive Distributed Lag (ARDL) cointegration	The impact of Exchange rate and inflation on growth was negative, government expenditure was found to have significant positive impact on growth.
23	Adefeso and Mobolaji (2010)	The Fiscal-Monetary Policy and Economic Growth in Nigeria	Nigeria 1970 -2007	GDP, Broad money (M2), Government expenditures and degree of openness	Error correction and cointegration	The effect of monetary policy is dominant than fiscal policy on economic growth in Nigeria.
24	Zestos, Geary and Cooksey (2011)	US Monetary-Fiscal Policy Mix Evidence from a Quartovariate VECM	United states of America		Quatrovariate Vector Error Correction Model and Granger causality tests	Monetary and fiscal policies are Jointly ineffective in influencing nominal national income. However, monetary and fiscal policies are jointly effective in influencing real national income
25	Moreira, Soares, Sachside and Loureiro (2011)	The Interaction of Monetary and Fiscal Policy: The Brazilian experience	Brazil (1995 -2008)	Money supply, GDP, Nominal Interest rate, Investments, consumer price index, exchange rate, direct tax	Johansen co-integration test and Unit root test. GMM	The ratio of public debt to GDP was found to be statistically significant, positively affecting the demand for and primary surplus but negatively affects the level of investment and output gap
26	Olomola and Oseni (2013)	Effects of Components of Fiscal Policy Shock on Private Consumption in Nigeria	Nigeria 1981-2012	Government expenditure, Government revenue, Government debt and Private consumption.	ADF and Phillips-Perron Methods of unit roots test	Increase in government spending and debt did not response to increase in private consumption
27	Huseyin Sen and Ayse Kaya (2015)	The relative effectiveness of Monetary and Fiscal Policies on growth: what does long-run SVAR model tell us?	Turkey	GDP,CPI Inflation, Unemployment, Bond Rate , Government Debt Stock, Exchange Rate Current Money supply	Structural Vector Autoregression (SVAR)	Although the relative effectiveness in boosting growth is different, both policies significantly influence growth, suggesting that they should be used jointly but in an efficient manner.
28	Chowdhury and Afzal (2015)	The Effectiveness of Monetary Policy and Fiscal Policy	Bangladesh	GDP, Money supply and Government expenditure	Augumented Dickey Fuller (ADF) method	Monetary and fiscal policies are equally effective in simulating economic growth

29	Adegboye, 2015	Effects of Fiscal and Monetary Policy Interactions on Inflation and Output in Nigeria	Nigeria	Terms of trade, Interest rate, Taxation, Government expenditure	New-keynesian DSGE model	Stabilization of policy of both policies are required to achieve highest level of economic outcomes
30	Nunes de Nunes and Portugal (2016)	Active and Passive Fiscal and Monetary Policies: An Analysis for Brazil after the Inflation Targeting Regime	Brazil 2000 – 2008	output gap, interest rate, inflation and expected shocks on aggregate demand	Bayesian econometric tools to estimate DSGE model	Monetary policy was found to be active and seeks to adopt an anti-inflationary policy while fiscal policy was found a passive, seeking a balanced debt to GDP ratio in the long run.
31	Alavinasab (2016)	Monetary policy and Economic Growth	Iran 1971-2011.	Total quantity of money, price level, velocity of money, and aggregate income for the economy.	Error-correction model	Money supply and exchange rate significantly impact on economic growth.

### **2.3 Summary of literature and gaps**

From the review of literatures, the concensus is that both fiscal and monetary policies significantly influence growth and are required to achieve highest level of economic outcomes. Although some strand of the literature supports that monetary policy is procyclical while the other supports that fiscal is counter cyclical. This makes it interesting for economic management. No doubt, macroeconomic variables are instrumental for economic growth and entrepreneurship by implication. Schumpeter argued that entrepreneurship is very significant to the growth and development of economies (Keister, 2005). We infer that the two policy blocks tend to be complementary and that proper policy mix is inevitable for efficient institutional entrepreneurship. Similarly, Alege (2009) and Orisadare (2012), in their empirical study conclude that appropriate and suitable macroeconomic policies would be required for sustainable growth. However, despite the key place the policies occupy in economic theory empirical evidence is minimal on their effects on entrepreneurship in West Africa. Candidly, there is no known published study to the knowledge of the author on the specific nature of the policy interactions on entrepreneurship development measured using an institutional approach in the region. Near-exception to this submission is the work by Folorunso and Ajisafe (2002) in Nigeria. At present, the direction of the fiscal reforms in most countries has been towards consolidation and re-engineering of the entire public finance and not to particularly encourage entrepreneurship. This suggests suspicion on the efficiency and sustainability or otherwise of the existing policies. Is there a need for government policies on entrepreneurship growth? If yes, what are the likely implications of these policies? This study provides empirical guide and assistance to policy makers to identify specific effects of macroeconomic policies.

From a methodological point of view, our empirical approach attempts to emphasize on some cogent issues overlooked by earlier studies that have attempted to estimate similar macroeconomics effects. We take the peculiarities such as the emerging trends and politics within the countries into consideration. This is because the complementarity or substitutability of fiscal and monetary policy depends crucially on the types of shocks hitting the economy (Favero, 2004). We restrict our analysis to measures that can be reasonably interpreted as indicators of fiscal and monetary policies that directly affects entrepreneurs. Taking all the variables previously considered in studies, first we introduce a political variable represented by a dummy for election years in countries to capture the credibility of policy makers as earlier stated by Levy (2001). This variable has been found by Braconier and Holden (2004) to be associated with fiscal expansion through lower taxes. Likewise, the theory of political business cycle suggests that fiscal policies tend to become more expansionary during election years. Hence, the variable explains whether fiscal policies are pro or counter cyclical on entrepreneurship growth. Second, we recognise the potentials of the emerging stock market operations in the region which is regulated by other financial institutions in countries. This variable could also pose a new end to the dynamics of the fiscal - monetary policy mix on entrepreneurship growth. We also infer that the two policies tend to be inevitable in determining which of the two colonial divides in West Africa are entrepreneurship enhancing or entrepreneurship inhibiting.

### **3.0 MACROECONOMIC POLICY OPERATIONS IN WEST AFRICA**

Macroeconomic policies have a wide and deep history in West Africa. However, the countries in the region are not all the same, individual countries have all under gone structural changes over time. Economies have been faced with changes due to the dynamics of their environment such as globalization, technological changes and politics. Others have witnessed the transformation from undeveloped economy to emerging economy. These changes can also be attributed to the aftermath effects of their historical antecedents. Therefore their macroeconomic stance and objectives differ. The macro environment, often used interchangeably with external environment encompasses variables that are not within the control of the entrepreneur. Entrepreneurship scholars have identified several of these external variables. For instance, principal among the factors identified are the influences of the markets (Thorntorn, 1999); public policies (Dobbin and Dowd (1997); regulations and polices (Baumol, 1990) and the physical infrastructure (Agboli and Ukaegbu, 2006). These forces that operate within the macro/external environment are of paramount importance to entrepreneurship because the knowledge of the environment will help the entrepreneur identify conditions that may impede the progress of the business and, therefore, plan ahead to forestall such occurrence.

However, there are several factors which constitute the notion of a sound institutional capacity for the conduct of macroeconomic policies in West Africa. Firstly, the major institutions responsible for macroeconomic policy in the countries are, the central banks, the ministries of finance and planning body which have clear mandates to perform respective functions properly. These functions include all the processes involved in the formulation and implementation of policies. Secondly, policy coordination among the triumvirate institutions, as well as with other government agencies responsible for sectoral policies, is important. This is because there is a need to ensure that cross-policy consistency is maintained and various policy conflicts are avoided, or at least minimized, in both the short and long term. Thirdly, the status and credibility of those institutions (and that of the government bureaucracy in general), particularly in terms of their relative autonomy from political interference, are significant in that their capacity to provide professional policy analysis and options for rational decision-making should be maximized. The ultimate decision-making authority rests, of course, with the legitimate political institutions in a country. Last but not least, fundamental market institutions such as property rights and contract enforcement must exist and function, and there must be an adequate degree of articulation of some key sectoral economic activities such as those in the financial sector. In the absence or malfunctioning of these enabling conditions, any market-based economic policy cannot perform properly, as the policy transmission mechanisms which are intended to create a certain structure of incentives are blocked or perverted. Institutional constraints to formulating and implementing macroeconomic policies can be interpreted as the absence or relative malfunctioning of any of the above mentioned factors.

Table 3.1: Summary of focus of Macroeconomic policy in selected West Africa countries

	<b>Fracophone Countries</b>	<b>Macroeconomic Policies focus and target</b>
1	Code l' Voire	The Primary objective of monetary policy in the French West African countries is to ensure price stability without prejudice to this objective, the Central Bank also support the economic policy of the West African Economic and Monetary Union for a healthy and sustainable growth.
2	Mali	
3	Burkina Faso	
4	Senegal	
5	Benin	

\* *Francophone West African countries have one common central bank that fellow countries depend on.*

	<b>Anglophone Countries</b>	<b>Macroeconomic policies focus and target</b>
1	Gambia	To achieve and maintain price and exchange stability underpinned by a sound and vibrant financial system to encourage and promote sustainable economic development
2	Ghana	Monetary policy objective is to ensure price stability, low inflation and to support the government's economic objectives including those for growth and employment.
3	Liberia	To maintain price stability and to ensure a sound banking and financial system, thereby contributing to sustainable economic development of the nation.
4	Nigeria	Attainment of price stability through external reserves to safeguard the international value of the legal currency.
5	Sierra Leone	To formulate and implement monetary and supervisory policies. To foster a sound economic and financial environment in the best interest of the country.

\* *Anglophone West African countries have independent central banks*

Historically, the monetary policy in Africa has evolved over the past decades contributing to a rich economic history. According to Honohan and O'Connell (1996) it has metamorphosed through the following stages, namely: (i) Currency Board which economize on the use of currency was operational both in English-speaking and French speaking countries in the 1960s;

(ii) Printing Press which responded passively to domestic and external shocks by managing money supply; (iii) Rationing Regime which controlled prices of goods and services, labour market wages, and also controlled interest rates as well as the exchange rates; (iv) Credit-Ceiling Regime this was an economic reform programs used to ration access to borrowing; (v) Market-Clearing Regime which paved the way for modern central bank operating in a market-based economic and financial system where the government can only borrow from the central bank at market rates determined rates just like any other borrower, and all seigniorage revenue vanishes.

Previously, most countries traditionally depended on the banking system, but more recently, capital markets have gained a prominent role (Andrianaivo & Yartey, 2009) but for the outbreak of the global financial crisis. One of the most pressing issues for Africa is to channel existing resources into the appropriate sectors to stimulate productivity, create employment, provide people and enterprises with basic utilities, and contribute to efficient natural resource management (Dahou, Omar, Pfister, 2009). As a matter of fact, financial flows to Africa in general have recorded unprecedented levels of growth over the past few years due to the surge of commodity prices, African exports have almost doubled between 2000 and 2006, from USD 159 billion to USD 290 billion. Meanwhile, ODA to the continent has tripled, reaching an all time high of USD 43.4 billion in 2006. Capital flows including Foreign Direct Investment (FDI), portfolio equity and loans have registered a fivefold increase over the period and exceeded USD 60 billion. And while FDI has reached a historical peak at USD 36 billion, portfolio equity has grown from virtually nothing in 2003 to USD 13.5 billion in 2006. Bank debt and bond flows have also increased substantially, to reach USD10 and USD 3 billion respectively. Finally, estimates put 2006 remittances to Africa at USD 22 billion.

### 3.1 Emergence of regional stock markets in West Africa

The *Bourse Régionale des Valeurs Mobilières* (BRVM) is a regional stock exchange that serves some West African countries. Physically located in the French speaking country of Code Ivoire, it is one of the few examples of regional financial cooperation and integration of Africa into the global financial economy. There are a few examples of regional financial integration on the continent which builds on existing regional economic communities, the most noteworthy being the BRVM. The emergence of the BRVM stock markets provides an important opportunity for

integrating Africa into the global financial market place and attracting global capital. It is encouraging that Africa has been receiving a growing attention from international investors, although international capital flows are still at a very low level. The Africa-oriented investment funds, which are now trading in New York and Europe, is currently about eighteen. In this context, regionalization is a vital mechanism for consolidating African stock markets and promoting financial globalization of Africa. The Abidjan-based market is bound to serve as a positive role model for other regions of Africa. It encourages the Anglophone countries of West Africa to form a regional stock exchange under the umbrella of the ECOWAS.

Empirical studies have evidences of the emergence of stock markets in West Africa as well. For instance, Enisan and Olufisayo (2009) investigated stock market development and economic growth in Sub-Sahara African countries - Nigeria inclusive from 1980 to 2004. They found that stock market has an unidirectional causality from finance to growth in Nigeria showing weak evidence of growth-led finance. Ezeoha *et al.*, (2009) investigated stock market development and private investment growth from 1970 to 2006 and found that stock market has a positive significant relationship with domestic private investment in Nigeria, while stock market development has a negative and non-significant impact on foreign private investment. N'zue

(2006) also investigated the stock market development and economic growth in Cote D'Ivoire from 1976 to 2002 and found that long-run relationship exist between stock market and development and growth only when control variables were considered i.e public expenditure, public investment, public development aid and FDI. Adjasi and Biekpe (2006) too investigated stock market development and economic growth in selected African countries - Ivory coast and Nigeria inclusive from 1975 to 2001, they found that the overall stock market development has a significant impact on economic growth and that stock market only play a significant positive role in the growth of African countries that are classified as upper middle income and in countries with moderately capitalized markets. Beck and Levine (2004) investigated stock markets, banks, and growth in 42 countries -West African countries inclusive from 1980 to 1989. They found that there were significant positive

relationship between external dependence and overall financial development on industry growth. Indeed there has been an emergence of stock markets in West Africa which calls on the attention of policy makers and entrepreneurship at institutional level.

## 4.0 RESEARCH METHODOLOGY

### 4.1 Model specification and techniques

Not many studies have investigated the relationship between macroeconomic policies and entrepreneurship at cross country level. However, the few that exist regress a measure of entrepreneurship on policy instruments along with other control variables. The recognition of entrepreneurship as a driver of economic growth has led policy analyst, researchers and economic theoreticians to improve on the measurement of entrepreneurship at national level. For instance, at an international level, programs by the World Bank, Eurostat and private organisations such as GEM have developed an internationally comparable data (Ahmad and Hoffman, 2007). Therefore, the entrepreneurial activities in countries was adopted as our dependent variable measured by the total entrepreneurship index (TEA) as measured by the GEM minus innovation measures and given the peculiarities of availability of data. This is because it is impossible to adopt the full indicators of entrepreneurship activities as measured previous studies, GEM and the knowledge economy indicators<sup>11</sup>. However, we adopt specific total entrepreneurship activities (TEA) for the study using OECD indicators in Ahmad and Hoffman (2007) along with some indicators of GEM and knowledge economy. From the study, we adopt three cardinal points to measure entrepreneurship (see figure 1): (i) the determinant of entrepreneurship which we adopted science and technology research i.e. innovative potentials; (ii) the entrepreneurship performance which we adopted revenue from export, domestic private investment and equity portfolio; and (iii) Entrepreneurship impact measured by GDP per capital.

Thus, given the focus of this study, we will apply a dynamic cross-country panel data approach to explain the effects of the macroeconomic policies on entrepreneurship in West African countries using annual data from 2000 to 2014. We have fifteen (15) years range and 1650 data points. This validates the robustness of our analysis, as well as minimizes biasness in the result to be generated. Our baseline model is as follows:

$$K = f(G, CV) \tag{1}$$

where:

K = Total entrepreneurship index (TEA)

TEA = Level of entrepreneurship activity

G = Vector of explainable variables reflecting fiscal and monetary policy instruments

CV = Control variables

In this study, the effects of fiscal and monetary policies on entrepreneurship is measured in the selected Anglophone and francophone countries in West Africa. Firstly, we classify the economies i.e. divides into two clusters using a hierarchical agglomerative cluster (HAC) analysis. The descriptive statistics was used to classify the divides to determine which of the cluster is entrepreneurship enhancing and which is entrepreneurship inhibiting. The descriptive statistics was analysed (TEA) using squared Euclidean distance is applied to categorize the ten countries into a two cluster solution based on data for 2013.

The HAC is used to characterize the selected countries within the West African region into two cluster solution based on the data generated in year 2013. One of the cluster groups is identified as Anglophone countries (Group 1) while the other is Francophone countries (Group 2).

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<sup>11</sup> A knowledge economy is an economy driven by science and technology in the pursuit of innovation.

The HAC squared Euclidean distance metrics represented as:

$$\|a - b\|_2^2 = \sum_i (a_i - b_i)^2 \quad (2)$$

The Euclidean distance between points  $\mathbf{p}$  and  $\mathbf{q}$  is the length of the line segment connecting them

( $\overline{\mathbf{PQ}}$ ). If  $\mathbf{p} = (p_1, p_2, \dots, p_n)$  and  $\mathbf{q} = (q_1, q_2, \dots, q_n)$  coordinates are two points in Euclidean  $n$ -space, then the distance ( $d$ ) from  $\mathbf{p}$  to  $\mathbf{q}$ , or from  $\mathbf{q}$  to  $\mathbf{p}$  is given by the Pythagorean formula:

$$\begin{aligned} d(\mathbf{p}, \mathbf{q}) = d(\mathbf{q}, \mathbf{p}) &= \sqrt{(q_1 - p_1)^2 + (q_2 - p_2)^2 + \dots + (q_n - p_n)^2} \\ &= \sqrt{\sum_{i=1}^n (q_i - p_i)^2}. \end{aligned} \quad (3)$$

The aim of using the cluster analysis is to combine variables to form groups in which the characteristics of the variable are as homogeneous as possible while ensuring that the characteristics of variables between groups are as dissimilar as possible. The discriminant function analysis is subsequently applied, specifying the groups as dependent variables that are significant in determining group membership.

Secondly, we deviate from the previous estimation used in examining the effects of public policies on entrepreneurship in the previous study by using the robust econometric technique of Autoregressive Distributed Lag (ARDL) proposed by Shin, Yu and Greenwood-Nimmo (2014) on panel data to examine the strength of monetary and fiscal instruments in determining entrepreneurship levels. This method is superior to other methods such as the error correction model (ECM), threshold ECM, Markov-switching ECM in modelling joint co-integration dynamics and asymmetries. The ARDL method makes estimation possible even when explanatory variables are endogenous. Unlike the ECM, the ARDL is used even when the variables are cointegrated at first level or fractionally cointegrated and when the variables have different number of lags. The ARDL model also allows the joint analysis of the issues of non-stationarity and nonlinearity in the context of an unrestricted error correction model (Katrakilidis & Trachanas, 2012).

We first consider the general form of the ARDL model:

$$\Phi(L)y_t = \alpha_0 + \alpha_1 W_t + \beta'(L)X_{it} + \mu_t \quad (4)$$

Where  $\Phi(L) = 1 - \sum_{i=1}^{\infty} \phi_i(L^i)$ ,  $\beta(L) = \sum_{j=1}^{\infty} \beta_j(L^j)$  ( $L$ ) is the lag operator,  $W_t$  is a vector of

deterministic variables such as intercept, seasonal dummies, time trend or other exogenous variables with fixed lags. This model uses negative and positive partial sum decompositions, which enable one to detect asymmetric effects in the short and long run. We consider the following nonlinear asymmetric co-integration regression:

$$y_t = \beta^+ x_t^+ + \beta^- x_t^- + W_t + \mu_t \quad (5)$$

Where  $\beta^+$  and  $\beta^-$  are long run parameters and  $x_t$  is a  $k \times 1$  vector of regressors expressed as

$$\text{follows: } x_t = x_0 + x_t^+ + x_t^- \quad (6)$$

Where,  $x_t^+$  and  $x_t^-$  are negative and positive changes on partial sum processes in  $x_t$  :

$$x_t^+ = \sum_{j=1}^t \Delta x_j^+ = \sum_{j=1}^t \max(\Delta x_j, 0) \text{ and } x_t^- = \sum_{j=1}^t \Delta x_j^- = \sum_{j=1}^t \min(\Delta x_j, 0) \quad (7)$$

Combining equation 2 and the ARDL (p, q) we generate an asymmetric error correction model (AECM)

$$\Delta y_t = \rho y_{t-1} + \theta^+ x_{t-1}^+ + \theta^- x_{t-1}^- + \sum_{j=1}^{p-1} \phi_j \Delta y_{t-j} + \sum_{j=0}^q (\pi_j^+ \Delta x_{t-j}^+ + \pi_j^- \Delta x_{t-j}^-) + e_t, \quad j = 1, \dots, q \quad (8)$$

Where,  $\theta^+$  is  $-\rho\beta^+$  and  $\theta^- = -\rho\beta^-$

We perform our analysis using the following function:

$$Y_{it} = \alpha Y_{it-1} + \beta(L)X_{it} + \mu_i + \varepsilon_{it}, \quad |\alpha| < 1, \quad i = 1, \dots, N; \quad t = 1, \dots, T \quad (9)$$

where  $Y_{it}$  is the dependent variable representing total entrepreneurship activities (TEA) indicators,  $\beta(L)$  is the  $1 * k$  lag polynomial vector,  $X_{it}$  is the  $k * 1$  vector of explanatory variables other than the  $Y_{it-1}$ ,  $t$  is time,  $i$  is the cross sectional dimension respectively,  $\mu_i$  is the unobserved heterogeneity and  $\varepsilon_{it}$  is the error term. We apply first the difference transformation

of equation 5 to allow us to eliminate the macroeconomic policies effects in both categories of economies.

$$\Delta Y_{it} = \alpha \Delta Y_{it-1} + \beta(L) \Delta X_{it} + \Delta \varepsilon_{it} \quad (10)$$

With  $\Delta$  as the first difference operator. Equation 7 takes the following variables:

$$\Delta TEA_{it} = \alpha_0 + \alpha_1 TEA_{t-1} + \alpha_2 FP_{t-1} + \alpha_3 MP_{t-1} + \alpha_4 ST_{t-1} + \alpha_5 EP_{t-1} +$$

$$\sum_{i=1}^4 \alpha_{6i} \Delta TEA_{t-1} + \sum_{i=1}^4 \alpha_{7i} \Delta FP_{t-1} + \sum_{i=1}^4 \alpha_{8i} \Delta MP_{t-1} + \sum_{i=1}^4 \alpha_{9i} \Delta ST_{t-1} + \varepsilon_{it}$$

Where  $\Delta$  and  $\varepsilon_{it}$  are the first difference operator and the white noise term respectively. The ARDL bound test approach for the long-run relationship between TEA and its determinants is based on the Wald statistics or F-statistics. ARDL follows the estimation of the regression but chooses an appropriate lag length using the Akaike Information Criterion (AIC). It imposes restrictions on the long-run estimated coefficients of one lagged period of TEA, MP, FP, ST and EP to be equal to zero, which is  $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ . Pesaran et al. (2001) assumed the explanatory variables to be integrated of order zero, that is,  $I(0)$  for values of the lower bound while an integration of order one, i.e.,  $I(1)$  are assumed for upper values. Based on the Pesaran et al. (2001) decision rule, if the computed F statistic exceeds the upper bound value, then it can be concluded that TEA and its determinants are co-integrated. On the other hand, should the computed F statistics falls below the lower bound value, then reject the null hypothesis (no co-integration). Thus, specifying the short-run dynamics of the bound test using Error Correction Model (ECM), we have:

$$\Delta TEA_{it} = \alpha_0 + \sum_{i=1}^4 \alpha_{1i} \Delta TEA_{t-1} + \sum_{i=1}^2 \alpha_{2i} \Delta FP_{t-1} + \sum_{i=1}^2 \alpha_{3i} \Delta MP_{t-1} + \sum_{i=1}^2 \alpha_{4i} \Delta ST_{t-1} + \sum_{i=1}^2 \alpha_{5i} \Delta EP_{t-1} + \alpha_6 ecm_{t-1} + \varepsilon_{it} \quad (12)$$



$ecm_{t-1}$  in the above equation long-time lagged residual term depicts the disequilibrium in the long-run while  $\alpha$  represents the rate of change of each variable in equation (12).

Thirdly, we measure performance through the efficiency of monetary and fiscal policy on entrepreneurship, by establishing the efficiency of the macroeconomic policies in the two homogeneous group using Data Enveloping Analysis (DEA) It is generally understood that efficiency is influenced by an extensive range of factors, and the observed findings depend upon both the methodological approach utilized and the geographical area investigated. However, this differs across countries. At least four different approaches are commonly employed: ratio analysis, regression analysis, frontier efficiency analysis, and other artificial intelligence techniques, such as neural networks, analytic hierarchy processes and balanced scorecards, just to mention a few (Paradi & Zhu, 2013). These approaches differ in the assumptions imposed on the specifications of the inefficiencies and random error (Berger & Humphrey, 1997; Thanassoullis, et al., 1996). The DEA approach developed by Charnes, Cooper and Rhodes

(1978) is intended as a method for performance evaluation and benchmarking against best-practice. This study will make use of the DEA approach after several considerations. First, the DEA model is able to include multiple inputs and outputs, and because it has the potential to provide information to policy makers to improve the productive efficiency in countries.

The Model Input and Output Specifications for the DEA are as follows. The inputs are the monetary and fiscal policies instruments used as well as other control variables that drive entrepreneurship, namely money supply ( $m_2$ ), interest rate, inflation, exchange rates and science & technology research respectively, while the outputs are the specified TEA.

## 4.2 Variables

The variables used was derived based on previous studies done on Global Entrepreneurship Monitor (GEM), measures and drivers of knowledge economy, reports of the technology and innovation foundation, Bergmann *et al.*, (2013): Murdock (2009), Saisana and Munda (2008), Atkinson & Correa (2007), Allen (2001) as shown on Table 4.1.

**Table 4.1: Summary of previous use of institutional entrepreneurship indicators and sources**

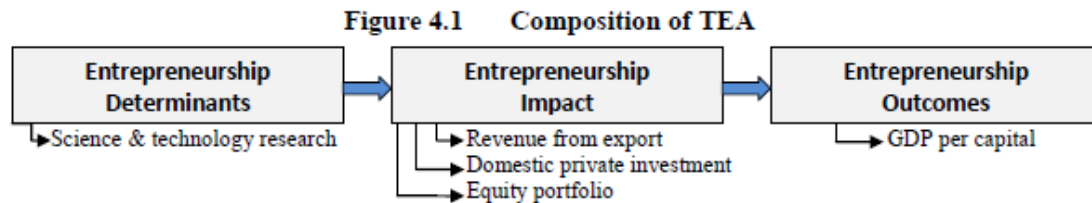
1	Globalization measures	FDI intensity*	Eurostat
		Total export*	Eurostat
		High-tech export	Eurostat
2	Technology Innovation capacity	Science and Technology graduates	Eurostat
		Research and development investments	Eurostat
		Venture capital investments	European Venture Capital Association
3	Economic dynamism	Patents and copy rights	Eurostat
		Fast growing firms	Deloitte
		Employed in science and tech jobs	Eurostat
		Researchers*	Eurostat
4	Digital economy	e-government availability	Eurostat
		ICT and broadband penetration	Eurostat
		Household internet access	Eurostat
		Per capita GDP*	World Bank Indicators

Murdock (2009) - Public policy for Entrepreneurship and Innovation. Trade-offs and impacts in Managed and Entrepreneurial economies. Saisana and Munda (2008) -Knowledge Economy: Measures and Indicators. Atkinson and

The variables used in the study are as follows:

The dependent variables that constitute our Total Entrepreneurship Activity (TEA).

The Total Entrepreneurship activity (TEA) is our dependent variable. It comprises of three categories used in various studies in figure 4.1. The TEA is the level of entrepreneurial activities in countries operationalized in three ways. It operationalized as variables representing entrepreneurship determinant, entrepreneurship impact and entrepreneurship outcomes at country levels.



*Science and technology research* – this variable determines entrepreneurship competence. It represents science and technology research made in countries which brings about innovation. Innovation has been argued to be an inventive entrepreneurial process which creates new economic value (Hindle, 2009). The variable has been found to be the driving force behind growth in scientific and economic communities (Lo, 2006). There should be a high correlation between science and technology researches and an entrepreneurial economy. In a climate of significant national and global economic restructuring, it is critically important that the nation's work force attain and maintain a state of technological and scientific readiness that will enable it to thrive in the global economy. This is because they constitute a critical mass of non-harnessed potentials in the country that if given the opportunity, it would contribute to national development (Aderemi *et al.*, 2013).

*Revenue from export*: this is the income realized from the exportation of creativity and innovativeness within the economy. According to Adesoji and Sotubo (2013) exportation is required by any economy to enhance revenue and usher in economic growth and development. Export is a catalyst necessary for the overall development of an economy (Abou-Strait, 2005). An increase of this variable in countries is an indication that the economy is entrepreneurial

*Domestic private investment*: there is a growing literature on the link between private investment and economic growth in developing countries due, largely, to the fact that developing countries are fond of formulating sound investment friendly policies to attract foreign investment studies by Khan and Reinhart (1990), Harigan and Mosely (1991), Greenway and Morrissey (1992), Serven and Salimano (992), Gunning (1994), Collier (1995), Akpokodje (1998), Dehn (2000), Lemi and Asefa (2001), Mamatzakis (2001), Rashid (2005), Tawiri (2010). This variable is represented by the Gross fixed capital formation of the, private sector in countries.

*Equity portfolio/stocks*: due to the emerging trend of the region stock exchange markets in West Africa, we deem it fit as a variable for measuring entrepreneurship. More so capital markets contribute to economic growth in studies (Enisan and Olufisayo (2009), Ezeoha *et al.* (2009), N'zue (2006), Adjasi and Biekpe (2006), Beck and Levine (2004)). This is because liquidity is the means by which entrepreneurship activities are financed. More liquid markets channel more savings and also encourage investment in long-term projects that potentially have higher yields. Therefore, using lagged values of total value traded as a percentage of GDP, we expect liquidity to be positively correlated with the measure of stock market development.

*GDP per capita*: this is a measure of the total output of a country that takes the gross domestic product and divides it by the number of people in the country. We use real GDP per capita instead of real GDP to measure domestic income in our model. According to literature, high growth in real GDP per capita signifies increased entrepreneurship outcomes.

### **Fiscal policy:**

*Government expenditure on infrastructure*: development economists have long acknowledged the centrality of public expenditure, particularly on infrastructure as an important instrument in the development process (Edame & Fonta, 2014). Spending on infrastructure has been an issue for policy discourse among scholars the world over. Studies have shown that investment in infrastructure such as road, power etc has tremendous positive impact on nation's economic growth and development. Such studies include that of Sanchez –Robles (1998), Aschauer (1989), Adenikinju (2005) and Agenor and Dodson (2006),

### **Monetary policies:**

*Money supply*: money supply cause changes in national income Friedman (1982) we use the broad money supply ( $m_2$ ) as our variable. The supply of money into a market system affects both demand-side and supply-side conditions conducive for entrepreneurship (Harper, 2003). The availability of money supply empower entrepreneurs to participate in entrepreneurial activities

*Inflation*: We calculate inflation using the consumer price index. We expect higher inflation to reduce real credit growth. The nominal interest rate on bank loans is typically fixed. Therefore, higher inflation lowers the real return on assets earned by the bank, thereby deteriorating its solvency. Furthermore, higher inflation compounds adverse selection since an inflationary environment attracts particularly low-quality borrowers (Boyd & Champ, 2003).

*Interest rate*: this variable represents the rates of interest charged on loans offered by the commercial banks. In other words, it is the cost of credit finance. High interest rates discourage farmers from borrowing as much funds as they would need for their farming activities because of the increase in the cost of loan. If the interest rate on the loan is reduced, farmers will be able to borrow enough funds for production. A low interest rate on farm credit is an incentive for loan borrowers; it encourages more investments in agricultural production. Hence, agricultural production will increase because the cost on finance is reduced. Thus, overall an inverse relationship between agricultural outputs and interest rate is expected

*Inflation*: the rate of inflation in Nigeria. Inflation reduces the purchasing power of a currency; it creates a situation where too much money will be chasing few goods. Given that inflation lowers the purchasing power of farmers, the demand for agric inputs will fall when inflation is high. Therefore, a negative relationship is expected between agriculture production and inflation rate.

*Exchange rates*: this variable represents the exchange value of local currencies to 1 US dollars; it has a dual effect on the entrepreneurship. First, a decrease in this variable, indicating an appreciation of local currencies, would make import of raw materials for production from abroad affordable. Entrepreneurs will be able to import more raw materials and equipment needed for production because the local currency is stronger and can purchase more goods from abroad thus will result in a positive effect. However, an appreciation of local currencies could also lead to lower export, which could affect output negatively. On the other hand, an increase in this variable, indicating a depreciation of local currencies, could lead to higher foreign demand for locally made products, which could have a positive effect on entrepreneurship growth.

### **Other factor that drive institutional entrepreneurship:**

*Election year (political variable)*: due to the political history of West Africa, this variable becomes of interest to this study. The gloomy picture of politics and elections have implications for entrepreneurship in the region.

For instance, Braconier and Holden (2004) election to be associated with fiscal expansion through lower taxes. Likewise, the theory of political business cycle suggests that fiscal policies tend to become more expansionary during election years.

### 4.3 Study population

The population for the study comprises of five countries within both Anglophone and Francophone countries in West Africa. The ten countries namely; the Gambia, Ghana, Liberia, Nigeria, Sierra Leone, Code l'voire, Mali, Burkina Faso, Senegal and Benin. These countries were purposively selected into the divides based on the hierarchy of their GDP performance.

### 4.4 Data sources

Cross-country Panel data will be used to analyze the phenomenon in West Africa. The study derived annual data from 10 selected countries from 2000 to 2014 period. We use publicly available data from various sources such as the World Bank Development Indicators, ECOWAS data base, the global economy, individual country central banks, the central bank of West Africa (BCEAO).

## 5.0 PRESENTATION AND ANALYSIS OF RESULTS

### 5.1 Introduction

This chapter presents, analyze and discusses the empirical results of the non-linear regression models specified in the previous chapter. The chapter begins with the analysis of the hierarchical clusters and later proceeds to the regression estimation, having the pre-diagnostic test which includes: the descriptive analysis, correlation matrix and two types of unit root test (Levin, Lin and Chen, and Im Pesaran and Shin) to check the unit root properties of the series, and the panel co-integration test was carried out. Also, the study carrying out the pooled regression, autoregressive distributed lag model (ARDL), while a data envelopment analysis (DEA) which is most appropriate measure of efficiency was employed. The sequences of results reported in this chapter follow the stated objectives of the study.

### 5.2 Hierarchical Cluster analysis

In order to achieve the first objective of this study which is to ascertain which of the divides is entrepreneurship enhancing or entrepreneurship inhibiting, HAC analysis with ward's method of clustering algorithms separated samples of countries, based on variables described earlier. The Anglophone countries used were Gambia, Ghana, Liberia, Nigeria and Sierra Leone (group 1), while the Francophone countries used were Code l'voire, Mali, Burkina Faso, Senegal and Benin (group 2).

**Table 5.1: Final Cluster Centers**

	Group 1	Group 1	F
	Mean	Mean	
Equity portfolio stocks	2153292433.00	5825943.38	54821.94
Domestic private investment	17.29	18.10	.012
Revenue on export	30.80	28.44	.029
Science & technology research	4063.10	99.33	2523.96
GDP per capita	2314.96	756.77	17.78

The dicriminant function analysis using the all the variables mentioned earlier as predictors of institutional entrepreneurship were performed. A single discriminant function was calculated which was statistically reliable at  $p < .05$  and accounted for more than 90% of the variability between the groups. The discriminant function separates the two groupings of countries presumably based on the comparison of the group centroids. All 100% of the original grouped cases were correctly classified except Domestic private investment and Revenue

on export which showed significant univariate *F*s for group difference. Equity portfolio stock (.000), Science and technology research (.000) and GDP per capita (.003), were the most discriminating for distinguishing between the two groupings of countries. Table 5.1 above shows that group 1 being Anglophone countries has higher mean values of Equity portfolio stocks, Revenue on Export, Science and Technology Research and GDP per capita this signifies that out of the five variable representing institutional entrepreneurship, the Anglophone countries' macroeconomic policies have been more entrepreneurship enhancing than the francophone countries except for Domestic private investment which has a slightly higher mean in francophone countries. This is due to the fact that regional integration and cooperation fueled by the common language, common currency i.e. the CFA and dependent central banks has promoted trade openness in the divide. The dependency of the central bank regulates the macroeconomic environment of the francophone countries. The divide performs slightly better than Anglophone countries in the Domestic private investment variable. The analysis suggests that policy makers in Anglophone West African countries should give more priorities to expenditures that compliment private investment rather than spending on expenditures that substitute for private investment. However, according to Nordhaus (1994), the effects of the coordination and independence of the policies cannot be seen in the short run, it expected for the domestic private investment perform better than that of the Franco phone countries in the long run which is beyond the scope of this study. Cumulatively, the (group 1) have a higher mean than group 2) which signifies that the Anglophone countries are entrepreneurship-enhancing while the Francophone countries are entrepreneurship inhibiting during the period reviewed .

In regards to the insignificant *F* GDP per capital for both divides, this might necessary not have a negative effect of entrepreneurship. For instance, Solow's model of economic growth assumes that the relationship between per capita income and the rate of economic growth is negative (Crafts and Toniolo, 1996). The justification is that countries with low per capita income have a weak capital formation and therefore, investment will achieve growing returns contrary to the countries with high per capita incomes. However, this leads to the conclusion that developing countries are able to converge in income with developed countries if they succeed in increasing domestic and foreign investment.

### 5.3 Autoregressive Distributed Lag (ARDL)

#### 5.3.1 Pre-Test Descriptive Analysis

	TEA	STR	RE	MS	INTR	INF	GEI	EXC	EP
Mean	1.79E+08	327.3333	27.09089	26.99019	13.01711	6.128751	21.90230	599.4216	0.200000
Median	553.6727	77.20000	25.20000	26.66987	7.730000	4.800000	22.40000	472.1900	0.000000
Maximum	9.96E+09	4456.100	53.80000	55.01001	40.56000	32.90000	52.20000	4349.160	1.000000
Minimum	-9.54E+08	0.000000	7.900000	0.000000	2.800000	-35.83668	3.590000	0.540000	0.000000
Std. Dev.	1.04E+09	839.9351	12.31866	10.30166	9.120472	7.194909	8.256191	889.4148	0.401490
Skewness	7.494248	3.571921	0.534000	0.098805	0.823230	-0.571303	0.550618	2.803342	1.500000
Kurtosis	65.30744	14.96636	2.343018	3.420375	2.770833	11.72130	4.196538	10.68578	3.250000
Jarque-Bera	23101.16	1092.534	8.843892	1.213674	15.54382	435.1874	14.87487	509.0965	50.97656
Probability	0.000000	0.000000	0.012011	0.545072	0.000421	0.000000	0.000589	0.000000	0.000000
Sum	2.41E+10	44190.00	3657.270	3643.676	1757.310	827.3813	2956.810	80921.92	27.00000
Sum Sq. Dev.	1.44E+20	94535795	20334.43	14220.63	11146.52	6936.741	9134.069	1.06E+08	21.60000
Observations	135	135	135	135	135	135	135	135	135

Source: Author's Computation 2016, E-view 8

Table 5.3.1, presents the descriptive statistics mean, standard deviation (Std. Dev.) and the coefficient of variation (CV) for variables employed in the analysis. Exchange rate which is measured as the ratio of a domestic currency to the dollar; has the highest mean value of (599), this high average exchange rate signalled huge cross border transaction amongst the countries under study. This is followed by science and

technology research with an average of (327) mean; this indicates that the two regions have constantly invested in sciences and journals.

Money supply with a mean value of (27), measured as M<sub>2</sub>, that is, broad money indicates that the average money in circulation during the periods under review in the two regions is extremely inadequate, Return on export revealed a mean value of (27), this is quite high, thus, indicates high inter-country trade activities and export dependence across the countries and regions under review. This corroborates the result from exchange rate that the regions engage in re have been increased cross border transactions.

Government expenditure infrastructure has a mean value of (21), thus, implies that the proportion of government spending on infrastructural development has not been way encouraging. Interest rate has a mean of (13), it shows that investment within the region has not been quiet impressive. On the other hand, Inflation has a mean value of (6); this means that the region's inflation rate has been moderately maintained, though this might be influenced largely by the unified currency target of Anglophone region and the quest for development.

Total Entrepreneurial Activities (TEA) (measured as the sum of Gross Domestic product per capita, Domestic Private Investment and Equity Portfolio Stock)) has a mean (1.79) among the countries studied, this shows that growth in entrepreneurial activities in both regions have been extremely low in the regions. Perhaps, the low performance might as a result of the late rise in the pursuit of entrepreneurship development in the region. Election and politics has the least mean of (0.2). Thus, implies that elections conducted across the two regions under the study period do not play significant role. The Jarque –Berra statistics which shows whether the variables are normally distributed or not, rejects the null hypothesis of normality for all the variables in terms of their distribution.

### 5.3.2 Correlation Analysis

#### Correlation Analysis of the Variables used in the Regression Analysis

	TEA	STJ	RE	MS	INTR	INF	GEI	EXC	EP
TEA	1.0000								
STJ	0.6837	1.0000							
RE	0.0263	0.1623	1.0000						
MS	-0.0987	-0.0172	0.2228	1.0000					
INTR	0.0787	0.1123	-0.0999	-0.2471	1.0000				
INF	0.1181	0.2019	0.1685	-0.1024	0.4794	1.0000			
GEI	0.1330	0.4408	0.4760	0.2025	-0.1995	0.1393	1.0000		
EXC	-0.0879	-0.1702	-0.1502	-0.2801	0.1153	-0.0983	-0.2867	1.0000	
EP	-0.0145	0.0333	0.0061	0.0413	0.0333	0.0226	0.0335	0.0299	1.0000

**Note: Pearson correlation coefficients are reported;**

**Source: Computed by the Author (E-view 8)**

Table 5.3.2 summarizes the results of the correlation analyses among the variables. From the estimated correlation analysis result, science and technology research exert the highest correlation 68 percent with Total Entrepreneurial Activities (TEA); this implies that across the countries, investment in science technical journals is strongly interwoven with Total Entrepreneurial Activities (TEA).

Also, inflation across the two regions exert a positive correlation of 48 percent with interest rate, while the correlation between government expenditure on infrastructure shows a relative positive correlation of 47 percent. Thus, it shows that innovation as evident by science technical journals and total entrepreneurial activities within the selected countries of study undoubtedly influence each other.

Money supply, exchange rate and return on export exert a negative correlation with total entrepreneurial activities. Hence, the effect of these variables on total entrepreneurial activities is infinitesimal.

The next section addresses the second objectives of the study which is to examine the aggregate effect of fiscal and money policies on TEA across the selected countries and to ascertain the most entrepreneurial activities seeking/improving region. This objective shall be realized using the Autoregressive Distributed Lag (ARDL) technique. However, the test for the Stationarity properties (or the level at which the series are stationary) using the Levin, Lin and Chen, and Im Pesaran and Shin approach is imperative as did not only confirms but also gives the justification for adopting of the ARDL technique. The panel unit root test is therefore presented below as table 5.5.

### 5.3.3 Panel Unit Root Test

As expected of any data with time series component, a panel unit root test is carried out on each of the variables in the model to determine their level of Stationarity (zero mean and constant variance); this is to ensure that the regression result is not spurious.

**Table 5.5: Panel Unit Root Tests (Data Properties)**

Variables	Levin, Lin & Chut t*				Im, Pesaran and Shin W-stat				Order of Integration
	(Common Unit Root process)				(individual unit root process)				
	Levels		1 <sup>st</sup> difference		Levels		1 <sup>st</sup> difference		
	T stats	P-values	T stats	P-values	T stats	P-values	T stats	P-values	
TEA	-1.8902	0.0294	-1.2923	0.0981	-2.7995	0.0026	-5.2183	0.0000	I(0)
STJ	-0.3486	0.3637	-1.5289	0.0631	0.65786	0.7447	-2.7816	0.0027	I(1)
EP	-6.9941	0.0000**	-1.4408	0.0748*	-3.7970	0.0001**	-4.0957	0.0000**	I(0)
EXC	-3.5016	0.0002	-12.222	0.0000	-0.5495	0.2913	-6.3096	0.0000**	I(0)
GEI	0.31145	0.6223	-8.3701	0.0000**	0.0249	0.5099	-4.1610	0.0000**	I(1)
INF	-6.1597	0.0000	-8.4403	0.0000**	-4.1300	0.0000**	-6.0997	0.0000**	I(0)
INTR	-3.7948	0.0001	-10.2258	0.0000**	-0.9072	0.1821	-4.1575	0.0000	I(0)
MS	-2.4043	0.0081**	-3.4571	0.0003	-0.5621	0.2870	-2.1163	0.0172	I(0)
		1% level (***)		-3.661661					
	Test critical values:	5% level (**)		-2.960411					
		10% level (*)		-2.619160					

**Source: Computed by the Author using E-view 8**

Table 5.5 above presents the result of the two unit root test, that is, Levin, Lin & Chut t\* and Im, Pesaran and Shin W-stat tests. The statistics of both tests permit to test formally the null hypothesis of presence, of common unit root (Levin, Lin & Chut,) and Individual unit root process (Im, Pesaran and Shin W-stat). The result of the panel unit root test shows that none of the variables are integrated of order 2, it also reveals that all the variables (TEA, EP, MS, INFL, INTR, and EXC) are stationary at levels, which meant that they are of order zero I(0), except science technical journal (STJ) and government expenditure on infrastructure (GEI) that are both stationary at first difference, hence they are I(1) variables. However, since all other series are of I(0), the test therefore do not reject the null hypothesis of no unit root. Although, the test result for individual unit root process shows country-specific heterogeneity.

#### **5.3.4 ARDL model**

Given the result above and base on econometric modelling intuition, the autoregressive distributed lag (ARDL) model is the most appropriate technique to be employed in analyzing the series. The autoregressive distributed lag model is a recursive model that uses both the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC) to ascertain the preferred optimal number lags length of the model. Based on our observations, a maximum lag length of four is used in this study; this is because it gives the least value in terms of Akaike Information Criterion and Schwartz Bayesian Criterion.



**Table 5.6: ARDL Model for the Relationship between TEA and other variables**  
**Dependent Variable: DTEA**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	77972144	2.52E+08	0.309064	0.7585
TEA(-1)	-3.416625	0.760066	-4.495169	0.0000
MS(-1)	-1120561.	4713754.	-0.237722	0.8130
EXC(-1)	11767.40	67148.74	0.175244	0.8615
GEI(-1)	-12684929	8947776.	-1.417663	0.1620
STJ(-1)	1959364.	417654.8	4.691349	0.0000
RE(-1)	-578497.6	3030855.	-0.190869	0.8493
EP(-1)	-96709770	4.52E+08	-0.213744	0.8316
INTR(-1)	2091330.	6453860.	0.324043	0.7472
INFL(-1)	20994403	12052624	1.741895	0.0872
D(TEA(-1))	2.615335	0.674943	3.874898	0.0003
D(TEA(-2))	2.026374	0.741972	2.731064	0.0085
D(TEA(-3))	1.507382	0.518269	2.908491	0.0053
D(TEA(-4))	-0.985883	0.358464	-2.750300	0.0081
D(MS(-1))	-17109633	10457140	-1.636167	0.1076
D(MS(-2))	3435787.	9772081.	0.351592	0.7265
D(MS(-3))	4880682.	9687573.	0.503809	0.6164
D(MS(-4))	-23715157	8176896.	-2.900264	0.0054
D(EXC(-1))	-77386.83	174552.1	-0.443345	0.6593
D(EXC(-2))	-238049.5	184107.5	-1.292992	0.2015
D(EXC(-3))	-137795.8	183650.8	-0.750314	0.4563
D(EXC(-4))	-31380.43	102769.7	-0.305347	0.7613
D(GEI(-1))	6159651.	17021570	0.361873	0.7189
D(GEI(-2))	-19387091	16282599	-1.190663	0.2390
D(GEI(-3))	-4454875.	13123457	-0.339459	0.7356
D(GEI(-4))	5753699.	11715536	0.491117	0.6253
D(STJ(-1))	-2891435.	560182.0	-5.161599	0.0000
D(STJ(-2))	-5025794.	606570.5	-8.285589	0.0000
D(STJ(-3))	2054546.	1503936.	1.366113	0.1776
D(STJ(-4))	849655.5	1631138.	0.520897	0.6046
D(RE(-1))	18385028	5534913.	3.321647	0.0016
D(RE(-2))	-2380125.	6266484.	-0.379818	0.7056
D(RE(-3))	-1317460.	6432756.	-0.204805	0.8385
D(RE(-4))	9173609.	7598323.	1.207320	0.2326
D(EP(-1))	84716801	3.71E+08	0.228190	0.8204
D(EP(-2))	-1598751.	2.76E+08	-0.005782	0.9954
D(EP(-3))	-10863978	1.79E+08	-0.060820	0.9517
D(EP(-4))	5010516.	1.05E+08	0.047900	0.9620
D(INTR(-1))	-2824671.	10588097	-0.266778	0.7907
D(INTR(-2))	-3375904.	10130994	-0.333225	0.7403
D(INTR(-3))	-7289689.	8966947.	-0.812951	0.4198
D(INTR(-4))	14963687	12004650	1.246491	0.2180
D(INFL(-1))	-16302025	10720129	-1.520693	0.1342
D(INFL(-2))	-9760187.	11411150	-0.855320	0.3962
D(INFL(-3))	-598443.2	9915005.	-0.060357	0.9521
D(INFL(-4))	-2482999.	8259184.	-0.300635	0.7648
R-squared = 0.9672		F-statistic = 35.3795		Durbin-Watson
Adjusted R-squared = 0.9398		Prob (F-statistic) = 0.0000		stat = 2.46
Akaike info criterion = 41.86006		Schwarz criterion = 43.05844		

**\*\* denotes rejection of the null hypothesis at the 5% (1%) level**

**Source: Author's Computation (2016)**

The table above reveals the impact of monetary and fiscal policies and other control variables that determines or improves the TEA across the divides, that is, Anglophone and Franco phones. The result shows that among the long run variables of the model represented by the lagged variables, there are positive relationships between of exchange rate (EXC), science technical journal (STJ), INTR and INFL. On the other hand, a strong negative relationship exists between the lag variable of TEA, money supply (MS), GEI, RE and EP.

The lag value of TEA is statistically significant at at 5% level of significance shown by the t-value of 2.731699. Also, it exerts a negative relationship having a coefficient of -3.42. This means that the current level of TEA has an inverse but significant influence on the present level of DTEA in the selected regions. The negative value exhibited by the variable is in tandem with theoretical postulation. Also, other lag lengths of TEA from lag 1-3 exert a positive significant impact at 1% and coefficient of 2.615, 2.0263, and 1.5073 respectively. Hence, we say that a unit increase in the previous level of TEA will cause the current level of TEA to increase by 2.62, 2.02 and 1.51 units respectively. Thus implies that the immediate past outcome of TEA is a strong determinant of the present level of entrepreneurship development.

The second variable which is money supply (MS), at both level and lagged lengths revealed a negative relationship with the TEA, with the coefficient -11205 and -171096. It also shows that money supply is statistically insignificant to TEA at 1%, 5% and 10% level of significance respectively. This means that a unit increase in money supply will lead to about 171 units decrease in TEA respectively. Sadly, money supply failed to satisfy the a-priori expectation.

In the case of science technical journal, the current value of the variable have a negative relationship with TEA at present level and lag periods of 1 & 2, and positive at lag length 3 & 4. STJ has a coefficient of -195 which appears to be statistically significant at 1% level of significance. Thus, a unit increase in STJ will lead to a drastic fall of about 195 units in TEA. Though, current value of inflation (INF) exerts a positive significant relationship with TEA at 10 percent level supported by a coefficient of 2099, yet the result obtained for the lag periods revealed an insignificant negative relationship. This indicates that the variable doesn't enhance

TEA across the region. The result indicates that at level, a unit increase in inflation will lead to about 209 units increase in TEA; this result doesn't seems to be dependable because of the insignificance of the variable. The presences of a high rate of inflation as shown in the result reduces the real value of money (money illusion) may be reduce the savings of potential entrepreneurs.

Furthermore, the result revealed a coefficient of determination ( $R^2$ ) of 0.96719 which represents the fitness of the model, this means that the explanatory variables in the model well accounted for 97 percent of total variation in TEA while the remaining 3% were accounted for by variables (exogenous) whose value are determined outside the model. The F-statistics value of 35.3795 shows the overall significance of the entire model at 5% level of significance while a result of the Durbin Watson (DW) statistics (2.4597) shows that there is no serial correlation in the model, since it falls outside the region of acceptance. This therefore shows that the parameter estimates are reliable. The table below (table 5.7) presents the bound test as recommended by Im Pesaran and Shin (2003), the discussing of the bound test follows after the table.

**Table 5.7: Long-run Bound Test**

F- Statistic 35.3795		
1%	Lower Bound	Upper Bound
	2.41	3.61
5%	1.98	3.04
10%	1.76	2.77

**Source: Author's Computation (2016)**

Table 5.7 above showed that the F-statistic 35.379 falls outside the lower and upper bounds of 1.76 and 2.77 which implies that the null hypothesis should be rejected, hence there is long run co-integration among the variables used in the study at 1%, 5% and 10% level of significance.

**Table 5.8: Post Diagnostic Test**

Wald Test		
Test Statistic	Value	Probability
F-statistic	4.409051	0.0002
Chi-square	39.68146	0.0000

Source: Author's Computation, 2016 (E-view 8)

## 5.4 Data Enveloping Analysis (DEA)

### 5.4.1 The Efficiencies in Anglophone West African Countries

During the period under review, the following observations were made on the: Total Factor Productivity Change (TFPCH); Technical Efficiency Change (EFFCH); Technological Change (TECHCH); Pure Technical Efficiency Change (PECH) and Scale Efficiency Change (SECH) of monetary and fiscal policies in Anglophone West African countries using a Data enveloping analysis (DEA):

2000-2001: on the average, there was high productivity retrogression by 20.4% in the period while technical efficiency change was progressed by 1.5%. Given the value of technological change of 0.784, it could be deduced that productivity gains are more likely to be as a result of improvements inefficiency in the period. The source of inefficiency is PECH (+0.3%) which is success in adopting correct managerial decisions concerning input and output quantities but the value is less than SECH (+1.2%). It means that it is highly likely that an improvement in scale efficiency has generated the resulting efficiency change. The DMUs are the countries used in this instance. All the DMUs are operating at productivity regress but Sierra Leone needs to be emulated because she has high technical efficiency change of 7.9% in the period and as well efficient as a result of PECH and SECH values of 1.7% and 6.2% respectively.

2001 – 2002: Despite the fact that average productivity growth was higher than the previous period, productivity is still regressed by 19.7%. The technical efficiency change (EFFCH) is constant while technological change was decreased by 19.7%. The source of inefficiency which is pure technical efficiency change (PECH) was constant and SECH was as well constant in the period. Except Sierra Leone, all other DMUs are operating at a productivity regress. Technical change was increased by 15.3% in Sierra Leone likewise the productivity growth (15.3%). The source of inefficiency and scale efficiency change were constant in the period.

2002 – 2003: The productivity at this period was progressed by 1% on the average. The technical efficiency change with the source of inefficiency (PECH) and scale efficiency change were all constant in the period. The technological change (TCHCH) was 1% progressed. It was observed in the period that Ghana, Liberia and Nigeria experienced productivity growth of 3.7%, 14.7% and 50% respectively in the period. And the same results were observed under technological change for each country (DMUs). The technical efficiency change, PECH and SECH were constant in the period.

2003 – 2004: There was a relative regress in the productivity by 1.3% while the EFFCH, PECH and SECH were constant on the average in the period. Liberia and Sierra Leone experienced productivity regress by 23% and 24% respectively in the period while The Gambia, Ghana and Nigeria experienced productivity progress by 5.6%, 43.4% and 5.7% respectively in the period. The technological change (TECHCH) follows the same trend with the TFPCH in the period. Again, since the value of technical efficiency change (EFFCH) is greater than the value of TECHCH, the productivity gains are more likely to be as a result of improvements in efficiency but none of the DMUs could emulate one another in order to be efficient.

2004 – 2005: On the average, the productivity was total regressed and technological change was zero. Other indices were constant in the period. Despite the average results, The Gambia, Liberia and Sierra Leone were experiencing productivity progress at 62.1%, 10.7% and 5.3% respectively in the period.

**Table 5.4.1: Showing the statistics of entrepreneurship indicators from 2000 to 2014**

YEAR	STATISTICS	GDP	ROE	DPI	EPS
2000	Mean	323.7660	32.5000	9.5084	1.0000
	Minimum	156.59	18.10	4.18	1.00
	Maximum	637.10	51.70	24.00	1.00
	Std. Deviation	195.15001	16.53738	8.24278	.00000
2001	Mean	319.7480	25.6400	15.5890	1.0000
	Minimum	173.73	7.90	6.48	1.00
	Maximum	542.50	45.40	26.60	1.00
	Std. Deviation	139.62912	18.82294	9.97680	.00000
2002	Mean	333.9580	24.6000	13.4100	1.0000
	Minimum	176.83	8.60	6.85	1.00
	Maximum	457.39	42.60	26.10	1.00
	Std. Deviation	117.10961	15.59423	8.95511	.00000
2003	Mean	335.4320	28.1600	14.8311	1.0000
	Minimum	133.15	14.10	6.37	1.00
	Maximum	511.29	41.70	23.80	1.00
	Std. Deviation	137.64951	13.44277	7.99525	.00000
2004	Mean	385.9780	25.0400	18.4689	1.0000
	Minimum	149.15	16.70	5.82	1.00
	Maximum	645.76	39.30	29.46	1.00
	Std. Deviation	183.38257	9.92965	11.28544	.00000
2005	Mean	449.8400	25.0800	17.9792	150355040.0600
	Minimum	168.20	17.80	5.47	1.00
	Maximum	814.00	36.40	29.46	751775196.30
	Std. Deviation	241.03021	8.50570	11.65424	336204088.09780
2006	Mean	604.7480	23.3600	18.0389	353837093.6000
	Minimum	178.45	14.70	8.27	1.00
	Maximum	1114.73	43.10	31.70	1769185464.00
	Std. Deviation	398.20292	11.74215	9.69655	791203792.01449
2007	Mean	696.2200	20.8200	17.5220	289435831.6000
	Minimum	219.81	14.70	8.37	1.00
	Maximum	1199.12	33.70	29.42	1447179154.00
	Std. Deviation	441.96750	8.23693	8.80481	647198192.34571
2008	Mean	782.9660	21.6200	16.8178	190748705.7600
	Minimum	231.44	13.50	8.15	1.00
	Maximum	1376.85	39.90	26.71	953743524.80
	Std. Deviation	498.96482	11.25642	8.26968	426527070.46340
2009	Mean	736.7580	22.2000	17.7580	205490073.4536
	Minimum	312.27	13.50	8.72	1.00
	Maximum	1195.50	31.80	26.76	534537111.00
	Std. Deviation	425.51123	8.57963	7.27688	279315898.80172
2010	Mean	994.7220	23.7400	22.2149	434299479.1553
	Minimum	326.60	16.80	17.29	1.00
	Maximum	2314.96	31.80	29.96	2153292433.00
	Std. Deviation	834.39020	6.97266	5.49837	960978305.95014
2011	Mean	1097.7380	25.4280	17.6914	514389672.3151
	Minimum	378.81	16.32	1.00	1.00
	Maximum	2514.14	36.90	26.44	2571823185.00
	Std. Deviation	931.03905	9.12084	10.23704	1150140299.66452

2012	Mean	1185.9560	34.0280	18.1049	1991831029.6000
	Minimum	414.18	31.40	1.00	1.00
	Maximum	2739.85	41.40	31.78	9959155144.00
	Std. Deviation	998.71684	4.16479	11.39601	4453869579.64293
2013	Mean	1305.5080	34.1040	16.9988	1106435075.2000
	Minimum	453.33	18.00	1.00	1.00
	Maximum	2979.83	44.56	27.73	5532175372.00
	Std. Deviation	1089.64176	11.20327	10.07093	2474064038.60122
2014	Mean	1175.9440	846.6460	16.9122	227302303.8000
	Minimum	1.00	1.00	1.00	1.00
	Maximum	3213.29	4133.00	27.14	1136511515.00
	Std. Deviation	1253.55647	1837.20234	9.79314	508263400.50304
POOL	Mean	715.2855	80.8644	16.7897	364274953.9696
	Minimum	1.00	1.00	1.00	1.00
	Maximum	3213.29	4133.00	31.78	9959155144.00
	Std. Deviation	679.35250	474.36549	8.90239	1373507964.02522

**Table 5.4.2: Showing the statistics of entrepreneurship indicators in countries (2000 - 2014)**

COUNTRY	STATISTICS	GDP	ROE	DPI	EPS
THE GAMBIA	Mean	469.3627	21.9667	21.1907	1.0000
	Minimum	1.00	1.00	4.56	1.00
	Maximum	637.10	31.80	31.70	1.00
	Std. Deviation	149.93194	7.91262	8.77653	.00000
GHANA	Mean	969.6687	35.9667	25.0387	36845215.6667
	Minimum	264.70	24.50	19.70	1.00
	Maximum	1827.16	48.80	31.78	534537111.00
	Std. Deviation	558.12115	7.73699	3.53031	137761562.69379
LIBERIA	Mean	263.7827	19.6320	19.9520	1.0000
	Minimum	133.15	7.90	7.50	1.00
	Maximum	457.85	44.56	26.10	1.00
	Std. Deviation	115.74192	10.97717	4.22356	.00000
NIGERIA	Mean	1448.9300	34.3467	10.7967	1784141183.7333
	Minimum	351.26	18.00	5.47	1.00
	Maximum	3213.29	51.70	17.29	9959155144.00
	Std. Deviation	1019.63107	8.99610	3.99780	2692867779.72857
SIERRA LEONE	Mean	424.6833	292.4100	6.9704	388368.4480
	Minimum	156.59	7.90	1.00	1.00
	Maximum	783.11	4133.00	29.96	5636491.37
	Std. Deviation	180.91796	1062.50697	7.03097	1452272.34233
POOL	Mean	715.2855	80.8644	16.7897	364274953.9696
	Minimum	1.00	1.00	1.00	1.00
	Maximum	3213.29	4133.00	31.78	9959155144.00
	Std. Deviation	679.35250	474.36549	8.90239	1373507964.02522

2006 – 2007: About 4.7% progress in productivity was observed in this period on the average and productivity gains were also observed among the DMUs except The Gambia, where Ghana, Liberia, Nigeria and Sierra Leone experienced a productivity gain of 4.3%, 29.8%, 4% and 27.6% respectively. Since TECHCH is greater than EFFCH, productivity gains are more likely as a result of technological progress.

2007 – 2008: The average productivity was highly regressed by 25% in the period. Except The Gambia and Ghana that experienced productivity gains of 4.7% and 6.7% respectively, all other DMUs experienced productivity retrogression in the period. The technical efficiency change, source of inefficiency and scale efficiency change were all constant in the period. It means that PECH and SECH are operating at the same rate. But one can still deduce that the productivity gain in this period is attributable to improvements in efficiency.

2008 – 2009: This period was better than the previous period where the average productivity gains were 42.4% and technological change was improved by 42.4% in the period. The TECHCH was greater than EFFCH, and this implies that productivity gains are mostly attributed to technological progress. Except Nigeria, about 9.2%, 81.9%, 48.6% and 18.5% productivity gains were experienced in the period. The average value of TECHCH was greater than EFFCH, meaning that the productivity gains are more likely as a result on the improvements on technological advancement.

2009 – 2010: Average productivity lost of 13.4% was observed in this period while the value of EFFCH was greater than TECHCH value, meaning that productivity lost is due to failure in efficiency in the period. Only Nigeria and Sierra Leone experienced productivity gains of 128.1% and 3.7% respectively and their productivity gains are mostly likely attributed to technological progress in the period.

2010 – 2011: On the average, there was productivity progress of 10.4% with technological improvements of 10.4% in the period. Since the value of TECHCH was greater than EFFCH value, the productivity gains are as a result of technological change. Only The Gambia and Nigeria experienced productivity gains of 111.7% and 47.5% respectively while their source of inefficiency and scale efficiency are constant in the period.

2011 – 2012: A very high average productivity gain was experienced in this period with 103.1% and same was observed for technological change. The value of TECHCH was 10.4% higher than EFFCH value, which implies that most of the productivity gains were attributable to technological improvements in the period. PECH and SECH values are 1, meaning that the pure technical efficiency and scale efficiency changes are constant returns to scale in the production function. Across the DMUs, except The Gambia that experienced productivity lost, Ghana, Liberia, Nigeria and Sierra Leone experienced a high productivity growth of 9.2%, 68.7%, 51.4% and 47.4% respectively.

2012 – 2013: The average productivity loss was 4.1% in the period. The technological change failed by 4.1% in the period. Since EFFCH is greater than TECHCH, the productivity loss is most likely attributable to technological depression. All the DMUs experienced productivity loss except Nigeria that experienced a productivity progress of 9.9% in the period. The source of inefficiency and scale efficiency are constant in the period.

2013 – 2014: A very high average productivity gain (412.1%) was observed in this period and likewise the technological improvements. The technical efficiency was constant, and PECH and SECH were also constant. The productivity loss could be attributable to technical efficiency failure since TECHCH value is greater than EFFCH value while the productivity gain was as a result of technological progress. According to the DMUs behaviour, it was observed that all the countries experienced productivity gain in the period. The source of inefficiency (PECH) and scale efficiency change were constant in the period.

**Table 5.4.3: Showing the efficiency performances in countries (2000- 2014)**

YEAR	COUNTRY	EFFCH	TECHCH	PECH	SECH	TFPCH
2000 – 2001	THE GAMBIA	1	0.828	1	1	0.828
	GHANA	1	0.774	1	1	0.774
	LIBERIA	1	0.894	1	1	0.894
	NIGERIA	1	0.678	1	1	0.678
	SIERRA LEONE	1.079	0.763	1.017	1.062	0.823
	<b>Mean</b>		<b>1.015</b>	<b>0.784</b>	<b>1.003</b>	<b>1.012</b>
2001 – 2002	THE GAMBIA	1	0.797	1	1	0.797
	GHANA	1	1.019	1	1	1.019
	LIBERIA	1	0.378	1	1	0.378
	NIGERIA	1	0.943	1	1	0.943
	SIERRA LEONE	1	1.153	1	1	1.153
	<b>Mean</b>		<b>1</b>	<b>0.803</b>	<b>1</b>	<b>1</b>
2002 – 2003	THE GAMBIA	1	0.688	1	1	0.688
	GHANA	1	1.037	1	1	1.037
	LIBERIA	1	1.147	1	1	1.147
	NIGERIA	1	1.5	1	1	1.5
	SIERRA LEONE	1	0.857	1	1	0.857
	<b>Mean</b>		<b>1</b>	<b>1.01</b>	<b>1</b>	<b>1</b>
2003 – 2004	THE GAMBIA	1	1.056	1	1	1.056
	GHANA	1	1.434	1	1	1.434
	LIBERIA	1	0.77	1	1	0.77
	NIGERIA	1	1.057	1	1	1.057
	SIERRA LEONE	1	0.76	1	1	0.76
	<b>Mean</b>		<b>1</b>	<b>0.987</b>	<b>1</b>	<b>1</b>
2004 – 2005	THE GAMBIA	1	1.621	1	1	1.621
	GHANA	1	0.88	1	1	0.88
	LIBERIA	1	1.107	1	1	1.107
	NIGERIA	1	0	1	1	0
	SIERRA LEONE	1	1.053	1	1	1.053
	<b>Mean</b>		<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>
2005 – 2006	THE GAMBIA	1	1.311	1	1	1.311
	GHANA	1	0.931	1	1	0.931
	LIBERIA	1	0.846	1	1	0.846
	NIGERIA	1	2.356	1	1	2.356
	SIERRA LEONE	1	1.189	1	1	1.189
	<b>Mean</b>		<b>1</b>	<b>1.237</b>	<b>1</b>	<b>1</b>
2006 – 2007	THE GAMBIA	1	0.699	1	1	0.699
	GHANA	1	1.043	1	1	1.043
	LIBERIA	1	1.298	1	1	1.298
	NIGERIA	1	1.04	1	1	1.04
	SIERRA LEONE	1	1.276	1	1	1.276
	<b>Mean</b>		<b>1</b>	<b>1.047</b>	<b>1</b>	<b>1</b>

2007 – 2008	THE GAMBIA	1	1.096	1	1	1.096
	GHANA	1	1.067	1	1	1.067
	LIBERIA	1	0.78	1	1	0.78
	NIGERIA	1	0.603	1	1	0.603
	SIERRA LEONE	1	0.807	1	1	0.807
	<b>Mean</b>	<b>1</b>	<b>0.85</b>	<b>1</b>	<b>1</b>	<b>0.85</b>
2008 – 2009	THE GAMBIA	1	1.092	1	1	1.092
	GHANA	1	4.819	1	1	4.819
	LIBERIA	1	1.486	1	1	1.486
	NIGERIA	1	0.632	1	1	0.632
	SIERRA LEONE	1	1.185	1	1	1.185
	<b>Mean</b>	<b>1</b>	<b>1.424</b>	<b>1</b>	<b>1</b>	<b>1.424</b>
2009 – 2010	THE GAMBIA	1	0.825	1	1	0.825
	GHANA	1	0.287	1	1	0.287
	LIBERIA	1	0.866	1	1	0.866
	NIGERIA	1	2.281	1	1	2.281
	SIERRA LEONE	1	1.037	1	1	1.037
	<b>Mean</b>	<b>1</b>	<b>0.866</b>	<b>1</b>	<b>1</b>	<b>0.866</b>
2010 – 2011	THE GAMBIA	1	2.117	1	1	2.117
	GHANA	1	0.962	1	1	0.962
	LIBERIA	1	0.884	1	1	0.884
	NIGERIA	1	1.475	1	1	1.475
	SIERRA LEONE	1	0.618	1	1	0.618
	<b>Mean</b>	<b>1</b>	<b>1.104</b>	<b>1</b>	<b>1</b>	<b>1.104</b>
2011 – 2012	THE GAMBIA	1	0.813	1	1	0.813
	GHANA	1	7.092	1	1	7.092
	LIBERIA	1	2.687	1	1	2.687
	NIGERIA	1	1.514	1	1	1.514
	SIERRA LEONE	1	1.474	1	1	1.474
	<b>Mean</b>	<b>1</b>	<b>2.031</b>	<b>1</b>	<b>1</b>	<b>2.031</b>
2012 – 2013	THE GAMBIA	1	0.811	1	1	0.811
	GHANA	1	0.97	1	1	0.97
	LIBERIA	1	1.099	1	1	1.099
	NIGERIA	1	0.928	1	1	0.928
	SIERRA LEONE	1	1.01	1	1	1.01
	<b>Mean</b>	<b>1</b>	<b>0.959</b>	<b>1</b>	<b>1</b>	<b>0.959</b>
2013 -2014	THE GAMBIA	1	2.983	1	1	2.983
	GHANA	1	1.163	1	1	1.163
	LIBERIA	1	3.227	1	1	3.227
	NIGERIA	1	12.216	1	1	12.216
	SIERRA LEONE	1	25.753	1	1	25.753
	<b>Mean</b>	<b>1</b>	<b>5.121</b>	<b>1</b>	<b>1</b>	<b>5.121</b>



According to Table 5.4.4, the average TFPCH of 0.642 implies an average productivity regress of 35.8% annually with the study. The period of 2001 – 2002 experienced productivity increase of 0.7% and further increased in 2002 – 2003 by 20.7%. The period 2003 – 2004 experienced productivity regress of 2.3% and later reduced to 0% in 2004 – 2005. About 23.7% productivity progress was observed in 2005 – 2006 but later decreased by 19% and 19.7% in the subsequent periods of 2006 – 2007 and 2007 – 2008 respectively. A very high productivity gain of 57.4% was further observed in 2008 – 2009 but regressed in 2009 – 2010 by 55.8%. Period 2010 – 2011 experienced productivity progress of 23.8% and further progressed by 92.7% in 2011 – 2012. A productivity loss of 107.2% was experienced in 2002 – 2013 period but 2013 – 2014 experienced very high productivity progress of 416.2% in the period. The technical efficiency change (EFFCH) progress by 0.1% annually while the technological change (TECHCH) regressed by 35.9% annually. From the Table, it can be deduced that productivity gains are more likely to be as a result of improvements in efficiency in the years under the study. The source of inefficiency (PECH) was constant while the scale efficiency (+0.1%) as the DMUs are trying to get closer to the optimal size to realize the economies of scale although it is very weak and small. Therefore, since PECH is less than SECH value, it is highly likely that an improvement in scale efficiency has generated the resulting efficiency change. It was also observed that only period 2000 – 2001 slightly experienced to be efficient given the value of PECH (0.3%) and SECH (1.2%), and this implies that they are embracing technology and as well improving their managerial allocative efficiency, and therefore optimizing their DMUs economies of scale.

**Table 5.4.1.4: Showing average efficiencies from 2000 – 2014**

Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2000 – 2001	1.015	0.784	1.003	1.012	0.796
2001 – 2002	1	0.803	1	1	0.803
2002 – 2003	1	1.01	1	1	1.01
2003 – 2004	1	0.987	1	1	0.987
2004 – 2005	1	0	1	1	0
2005 – 2006	1	1.237	1	1	1.237
2006 – 2007	1	1.047	1	1	1.047
2007 – 2008	1	0.85	1	1	0.85
2008 – 2009	1	1.424	1	1	1.424
2009 – 2010	1	0.866	1	1	0.866
2010 – 2011	1	1.104	1	1	1.104
2011 – 2012	1	2.031	1	1	2.031
2012 – 2013	1	0.959	1	1	0.959
2013 – 2014	1	5.121	1	1	5.121
<b>Mean</b>	<b>1.001</b>	<b>0.641</b>	<b>1</b>	<b>1.001</b>	<b>0.642</b>

The productivity changes of individual DMUs were presented in Table 5.4.5 and this attempts to find out the best performers and what can be learnt from one another to improve efficiency over time. It was observed that The Gambia, Ghana, Liberia and Sierra Leone have productivity progress of 8%, 19%, 8.3% and 25.2% respectively annually. Only Nigeria has productivity regress of 93.8% annually in the study. The value of EFFCH suggests that technical efficiency change progress by 0.1% annually while TECHCH regress by 35.9% annually. Since the PECH value is less than SECH value, one can conclude that it is highly likely that an improvement in scale efficiency has generated the resulting efficiency changes.

All the DMUs are constant under PECH and SECH except in Sierra Leone where the source of inefficiency is PECH (0.1%) which implies a slight success in adopting correct managerial decisions concerning inputs and output quantities while the scale inefficiency (0.4%) indicated that Sierra Leone is getting closer to the optimal size to realize the economies of scale.

Therefore, the other DMUs can learn something from Sierra Leone being the best of the DMUs' class performer to enhance their productivity.

**Table 5.4.1.5: Showing productivity changes of individual DMUs**

COUNTRY	EFFCH	TECHCH	PECH	SECH	TFPCH
THE GAMBIA	1	1.08	1	1	1.08
GHANA	1	1.19	1	1	1.19
LIBERIA	1	1.083	1	1	1.083
NIGERIA	1	0.062	1	1	0.062
SIERRA LEONE	1.005	1.245	1.001	1.004	1.252
<b>Mean</b>	<b>1.001</b>	<b>0.641</b>	<b>1</b>	<b>1.001</b>	<b>0.642</b>

#### 5.4.2 The Efficiencies in Francophone West African Countries

In 2000 – 2001, there was high productivity decrease of 34.7%. All the DMUs experienced decrease in productivity growth. The EFFCH suggests a small regress of 0.5% while TECHCH experiences high technological change decrease of 34.3%. The source of inefficiency is PECH and it indicates stagnation in adopting correct managerial decisions concerning inputs and outputs quantities. The scale inefficiency (SECH) of -0.5% indicated that the countries failed to get closer to the optimal size to realize the economies of scale.

2001- 2002: The average TFPCH value of 0.013 implies an average productivity regress of 1.3% in the year. It was observed that Ivory Coast, Mali and Burkina Faso experienced productivity progress by 11.4%, 3.4% and 50.8% respectively in the year. The value of technical efficiency change (EFFCH) implies 0.5% improvement in the productivity. Mali was the only country that has improvement on technological efficiency change in the period given the value of 2.5% while

TECHCH of 1.7% indicated an improvement on the average. Ivory Coast, Mali and Burkina Faso experienced technical change improvement of 11.4%, 0.8% and 50.8% respectively. The average source of inefficiency (PECH) was stagnant and likewise among the countries. The scale inefficiency (0.5%) is progressing at a small rate to get closer to the optimal size realize the economies of scales. Other DMUs should emulate Mali in this period.

2002 – 2003: The mean TFPCH indicates a positive productivity growth by 33.7% in the period. Except Burkina Faso and Ivory Coast, all of them experience productivity progress. EFCH was stagnant in the period. The Technological Change (TECHCH) was progressed by 33.7% and it cut across the whole countries except Ivory Coast and Burkina Faso. The source of inefficiency is PTECH and SECH were stagnant in the period.

2003-2004: The average TFPCH (13.9%) implies a productivity regress while all the countries experienced productivity regress except Ivory Coast which experienced a productivity progress of 33.7%. EFFCH was stagnant while TECHCH showed a regress in technical efficiency change by 34.3%. The PECH was stagnant while SECH (-0.5%) indicated a failure to get closer to the optimal size to realize the economies of scale.

**Table 5.4.2.1: Showing the statistics of entrepreneurship indicators from 2000 to 2014**

Year	Statistic	GDP	ROE	DPI	EPS
2000	Mean	392.0480	24.4200	13.9659	-633729.0840
	Minimum	226.80	9.50	7.85	-2577333.00
	Maximum	648.80	40.80	20.46	1171387.00
	Std. Deviation	175.74415	11.36517	5.37813	1654508.72714
2001	Mean	403.9940	25.0200	12.9436	3528046.9200
	Minimum	235.50	9.20	7.08	-5175717.00
	Maximum	663.60	40.70	18.62	13539534.00
	Std. Deviation	174.68097	11.54716	5.30561	7178902.04643
2002	Mean	435.3140	27.0200	12.1318	1553254.2000
	Minimum	260.80	9.20	7.12	-2061728.00
	Maximum	718.40	47.50	17.18	3586861.00
	Std. Deviation	189.66828	14.07896	4.21453	2233527.75184
2003	Mean	541.7600	24.7000	12.8377	4402612.8200
	Minimum	332.42	8.70	5.62	-366482.90
	Maximum	875.10	41.90	22.28	15760487.00
	Std. Deviation	225.40751	12.19324	6.43836	6519509.04221
2004	Mean	600.7320	25.6000	12.2365	-6468859.1780
	Minimum	371.39	11.30	6.39	-27661216.00
	Maximum	929.90	46.40	21.63	3861553.40
	Std. Deviation	234.36502	13.10591	5.83570	12286947.26363
2005	Mean	626.9660	26.1000	12.5034	2932944.8484
	Minimum	406.99	9.70	6.56	-6066717.10
	Maximum	942.20	49.90	24.49	13876051.02
	Std. Deviation	229.67376	14.91023	7.05310	8506405.76181
2006	Mean	652.5320	32.0800	12.4399	1128820.5883
	Minimum	422.47	11.50	7.22	-363365.07
	Maximum	962.90	52.40	24.70	2773049.20
	Std. Deviation	230.47613	19.20773	7.01271	1214495.88524
2007	Mean	741.3140	30.5800	14.5352	1456742.5434
	Minimum	474.71	10.50	8.79	-6405618.15
	Maximum	1078.50	47.20	29.25	8033104.19
	Std. Deviation	264.61932	16.17226	8.56322	5541148.72072
2008	Mean	866.0860	30.6400	14.3460	-19551070.6752
	Minimum	569.01	10.00	7.36	-92607220.40
	Maximum	1257.67	47.10	31.27	1930837.09
	Std. Deviation	300.94019	16.18944	9.69208	40884097.24030
2009	Mean	836.3160	31.8400	12.7429	1325383.8508
	Minimum	551.84	12.70	7.44	-2964931.48
	Maximum	1233.30	50.90	22.04	8981624.59

	Std. Deviation	286.15215	17.89296	5.50682	4697884.33485
2010	Mean	830.4800	33.8200	13.8279	6845928.1360
	Minimum	574.45	19.20	8.91	1191252.52
	Maximum	1236.10	50.60	22.10	23348549.39
	Std. Deviation	281.04918	15.46648	5.09210	9323893.40077
2011	Mean	891.7360	30.0800	55.0013	2624049.6128
	Minimum	665.80	21.40	6.33	-3948153.82
	Maximum	1231.90	53.80	225.50	14213777.59
	Std. Deviation	252.83822	13.35485	95.38540	6843237.49604
2012	Mean	884.6320	29.9400	15.4322	-32087007.2248
	Minimum	641.79	24.30	6.67	-188272068.70
	Maximum	1281.40	48.50	29.52	30443161.41
	Std. Deviation	267.03264	10.41576	8.68725	88377811.24036
2013	Mean	18426.0860	30.5000	1423624731.2800	-37884475.9253
	Minimum	659.52	26.10	12.81	-193630055.80
	Maximum	88263.00	43.80	7118123578.00	3789591.65
	Std. Deviation	39041.30050	7.46157	3183321629.76504	87081420.25436
2014	Mean	18875.3180	32.3200	16.4488	13116108.9640
	Minimum	704.50	25.80	9.91	1.00
	Maximum	90346.00	43.40	26.05	65580540.82
	Std. Deviation	39954.80233	7.33941	6.12624	29328509.00773
Pool	Mean	3067.0209	28.9773	94908330.8449	-3847416.6402
	Minimum	226.80	8.70	5.62	-193630055.80
	Maximum	90346.00	53.80	7118123578.00	65580540.82
	Std. Deviation	14374.44539	12.79233	821930110.84899	34574555.06523

**Table 5.4.2.2: Showing the statistics of entrepreneurship indicators in countries (2000 - 2014)**

Country	Statistics	GDP	ROE	DPI	EPS
IVORY COAST	Mean	1070.2247	46.9933	474541578.7497	4872043.9503
	Minimum	648.80	40.70	5.62	-4906444.30
	Maximum	1545.90	53.80	7118123578.00	30443161.41
	Std. Deviation	277.89997	4.15958	1837891603.01854	8766261.21797
MALI	Mean	496.8827	33.9067	10.9996	627634.3186
	Minimum	240.37	22.80	8.53	-6405618.15
	Maximum	704.50	52.40	12.81	13539534.00
	Std. Deviation	163.04726	11.68653	1.32188	4990541.54216
SENEGAL	Mean	846.9560	26.4467	37.5153	-5548034.8418
	Minimum	474.57	24.30	17.18	-92607220.40
	Maximum	1094.57	28.70	225.50	23348549.39
	Std. Deviation	230.47306	1.45743	52.16706	26438604.73545
BENIN	Mean	12441.9013	22.4067	15.0814	1595574.1241
	Minimum	369.70	18.50	11.24	-2905629.60

	Maximum	90346.00	36.10	20.12	8981624.59
	Std. Deviation	31208.98406	4.53675	2.54616	3023600.54077
BURKINA	Mean	479.1400	15.1333	11.8783	-20784300.7525
FASO	Minimum	226.80	8.70	8.98	-193630055.80
	Maximum	713.06	28.90	17.61	65580540.82
	Std. Deviation	172.09628	7.49206	3.20574	71158571.14744
POOL	Mean	3067.0209	28.9773	94908330.8449	-3847416.6402
	Minimum	226.80	8.70	5.62	-193630055.80
	Maximum	90346.00	53.80	7118123578.00	65580540.82
	Std. Deviation	14374.44539	12.79233	821930110.84899	34574555.06523

2004-2005: On average, a productivity regress was experienced by 20.7%. The EFCH was stagnant while TECHCH showed a productivity decrease of 20.7%. The sources of inefficiencies by PECH and SECH were stagnant in the period.

2005-2006: The DMUs experienced very high productivity growth with an average of 108.7% progress. The EFFCH and their inefficiency sources (PECH and SECH) were stagnant. The technical change experienced 108.7% productivity increase.

2006-2007: The average TFPCH showed a productivity regress of 9.3% and the same was experienced by technical change (TECHCH). Across the DMUs, only Ivory Coast and Burkina Faso experienced productivity improvement by 6.4% and 33.2% respectively.

2007-2008: All the countries experienced a productivity regress of 46.0% on the average and the result was observed on the technical change. EFFCH, PECH, and SECH were stagnant in the period.

2009-2010: Despite an increase in productivity growth in Ivory Coast, Mali and Senegal by 6.4%, 42.5% and 1.8% respectively, the average TFPCH still indicated a productivity regress 28.1%. The average EFFCH indicated productivity retrogressive with a technological change of 27.9% regress.

2008-2009: Despite a great or high increase (167.6%) on productivity growth, EFFCH, SECH and PECH were stagnant in the period. All the DMUs had very high productivity growth.

2010-2011: There was great retrogression in the productivity in this period on the average but Benin experienced a productivity progress of 21.6%.

2011-2012: There was high productivity decrease in this period while the technological change increase by 2.5%. The PECH was 2.5% efficient on the average.

2012-2013: Despite a sharp decrease on average productivity, Mali, Benin and Burkina Faso experienced a high increase in productivity by 23%, 787.6% and 29.4% respectively. The EFFCH decreased in productivity by 0.2% while the scale inefficiency was -0.2%.

2013-2014: All the DMUs experienced productivity progress except Ivory Coast and technical efficiency change was regressed by 3.6% with inefficiency source of -3.6%.

**Table 5.4.2.3: Showing the efficiency performances in countries (2000- 2014)**

2000-2001	Country	EFFCH	TECHCH	PECH	SECH	TFPCH
	IVORY COAST	1	0.723	1	1	0.723
	MALI	0.975	0.696	1	0.975	0.679
	SENEGAL	1	0.741	1	1	0.741
	BENIN	1	0.598	1	1	0.598
	BURKINA FASO	1	0.548	1	1	0.548
	<b>Mean</b>	<b>0.995</b>	<b>0.657</b>	<b>1</b>	<b>0.995</b>	<b>0.653</b>
2001-2002	IVORY COAST	1	1.114	1	1	1.114
	MALI	1.025	1.008	1	1.025	1.034
	SENEGAL	1	0.886	1	1	0.886
	BENIN	1	0.61	1	1	0.61
	BURKINAFASO	1	1.508	1	1	1.508
	<b>Mean</b>	<b>1.005</b>	<b>0.983</b>	<b>1</b>	<b>1.005</b>	<b>0.987</b>
2002 – 2003	IVORY COAST	1	0.997	1	1	0.997
	MALI	1	1.382	1	1	1.382
	SENEGAL	1	1.495	1	1	1.495
	BENIN	1	2.208	1	1	2.208
	BURKINAFASO	1	0.94	1	1	0.94
	<b>Mean</b>	<b>1</b>	<b>1.337</b>	<b>1</b>	<b>1</b>	<b>1.337</b>
2003 – 2004	IVORY COAST	1	1.339	1	1	1.339
	MALI	1	0.744	1	1	0.744
	SENEGAL	1	0.929	1	1	0.929
	BENIN	1	0.548	1	1	0.548
	BURKINAFASO	1	0.933	1	1	0.933
	<b>Mean</b>	<b>1</b>	<b>0.861</b>	<b>1</b>	<b>1</b>	<b>0.861</b>
2004 – 2005	IVORY COAST	1	0.789	1	1	0.789
	MALI	1	0.617	1	1	0.617
	SENEGAL	1	0.869	1	1	0.869
	BENIN	1	0.797	1	1	0.797
	BURKINAFASO	1	0.927	1	1	0.927
	<b>Mean</b>	<b>1</b>	<b>0.793</b>	<b>1</b>	<b>1</b>	<b>0.793</b>
2005 – 2006	IVORY COAST	1	2.171	1	1	2.171
	MALI	1	1.917	1	1	1.917
	SENEGAL	1	2.697	1	1	2.697
	BENIN	1	2.685	1	1	2.685
	BURKINA FASO	1	1.313	1	1	1.313
	<b>Mean</b>	<b>1</b>	<b>2.087</b>	<b>1</b>	<b>1</b>	<b>2.087</b>
2006 – 2007	IVORY COAST	1	1.064	1	1	1.064
	MALI	1	0.921	1	1	0.921
	SENEGAL	1	0.685	1	1	0.685
	BENIN	1	0.687	1	1	0.687
	BURKINA FASO	1	1.332	1	1	1.332
	<b>Mean</b>	<b>1</b>	<b>0.907</b>	<b>1</b>	<b>1</b>	<b>0.907</b>
2007 – 2008	IVORY COAST	1	0.586	1	1	0.586

	MALI	1	0.482	1	1	0.482
	SENEGAL	1	0.813	1	1	0.813
	BENIN	1	0.44	1	1	0.44
	BURKINA FASO	1	0.455	1	1	0.455
	<b>Mean</b>	<b>1</b>	<b>0.54</b>	<b>1</b>	<b>1</b>	<b>0.54</b>
2008 – 2009	IVORY COAST	1	2.431	1	1	2.431
	MALI	1	1.776	1	1	1.776
	SENEGAL	1	1.778	1	1	1.778
	BENIN	1	1.817	1	1	1.817
	BURKINA FASO	1	9.832	1	1	9.832
	<b>Mean</b>	<b>1</b>	<b>2.676</b>	<b>1</b>	<b>1</b>	<b>2.676</b>
2009 – 2010	IVORY COAST	1	1.064	1	1	1.064
	MALI	1	1.425	1	1	1.425
	SENEGAL	1	1.018	1	1	1.018
	BENIN	0.988	0.992	1	0.988	0.979
	BURKINA FASO	1	0.127	1	1	0.127
	<b>Mean</b>	<b>0.997</b>	<b>0.721</b>	<b>1</b>	<b>0.997</b>	<b>0.719</b>
2010 – 2011	IVORY COAST	1	0	1	1	0
	MALI	0.885	0.515	1	0.885	0.456
	SENEGAL	1	0	1	1	0
	BENIN	1.013	1.201	1	1.013	1.216
	BURKINA FASO	1	0.823	1	1	0.823
	<b>Mean</b>	<b>0.978</b>	<b>0</b>	<b>1</b>	<b>0.978</b>	<b>0</b>
2011 -2012	IVORY COAST	1	0.971	1	1	0.971
	MALI	1.13	0.751	1	1.13	0.848
	SENEGAL	1.000	1	1.000		
	BENIN	1	0.884	1	1	0.884
	BURKINA FASO	1	0.751	1	1	0.751
	<b>Mean</b>	<b>1.025</b>	<b>1</b>	<b>1.025</b>		
2012 – 2013	IVORY COAST	1	0	1	1	0
	MALI	0.992	1.24	1	0.992	1.23
	SENEGAL	1	0.768	1	1	0.768
	BENIN	1	8.876	1	1	8.876
	BURKINA FASO	1	1.294	1	1	1.294
	<b>Mean</b>	<b>0.998</b>	<b>0</b>	<b>1</b>	<b>0.998</b>	<b>0</b>
2013 – 2014	IVORY COAST	1.000	1	1.000		
	MALI	0.834	1.248	1	0.834	1.041
	SENEGAL	1	1.174	1	1	1.174
	BENIN	1	9.628	1	1	9.628
	BURKINA FASO	1	1.083	1	1	1.083
	<b>Mean</b>	<b>0.964</b>	<b>1</b>	<b>0.964</b>		

From Table 4, the average TFPCH of 0.674 implies a productivity regress of 32.6% over the years. 2000-2001 experienced a high productivity decrease of 34.7%. 2001-2002 experienced productivity increase by 33.4%; 2002-2003 experienced productivity increase by 35.0%. It was decreased sharply by 47.6% in 2003-2004 periods. 2004-2005 experienced further productivity decrease 6.8%, but a significant increase in productivity was experienced in 2005-2006 by 129.4% while a sharp and significant productivity decrease was experienced in 2006-2007 by 118%.

2007-2008 experienced productivity decrease of 36.7% but 2008-2009 experienced super increase of 213.6% but decrease by 195.7% in 2009-2010. No productivity was experienced from 2010-2011 to 2013-2014 periods. There is technical efficiency change regress by 0.3% annually while technical change decreases by 32.4%.

The sources of inefficiency PECH was stagnancy over the years while scale efficiency was inefficient by - 0.3%.

**Table 5.4.2.4: Showing average efficiencies from 2000 – 2014**

Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2000- 2001	0.995	0.657	1	0.995	0.653
2001 - 2002	1.005	0.983	1	1.005	0.987
2002 - 2003	1	1.337	1	1	1.337
2003 - 2004	1	0.861	1	1	0.861
2004 - 2005	1	0.793	1	1	0.793
2005 - 2006	1	2.087	1	1	2.087
2006 - 2007	1	0.907	1	1	0.907
2007 - 2008	1	0.54	1	1	0.54
2008 - 2009	1	2.676	1	1	2.676
2009 - 2010	0.997	0.721	1	0.997	0.719
2010 - 2011	0.978	0	1	0.978	0
2011 - 2012	1.025	1	1.025	-	-
2012 - 2013	0.998	0	1	0.998	0
2013 - 2014	0.964	1	0.964	-	-
<b>Mean</b>	<b>0.997</b>	<b>0.676</b>	<b>1.000</b>	<b>0.997</b>	<b>0.674</b>



From Table 5, Ivory Coast experienced a high productivity decrease/regress of 92.8%; Mali experienced a small productivity regress of 5.2% and Burkina Faso experienced a small productivity regress of 3.8% annually. Senegal and Benin experienced productivity progress of 60.8% and 31.6% respectively annually. The average TFPCH of 0.674 implies an average productivity regress of 32.6% annually with the study period.

The technical efficiency change (EFFCH) was regressed by 0.3% annually while technological change (TECHCH) was also regressed by 32.4% annually. The value of PECH was equal to 1 in all the DMUs which indicate stagnation in the efficiency while SECH was equal to 1 in all the countries except Mali which experienced inefficiency of 1.3%.

This showed that the inefficiency/short-fall is coming from technical inefficiency in terms of managerial skills deficit required to optimally increase the return on outputs from the given set of inputs.

**Table 5.4.2.5: Showing productivity changes of individual DMUs**

Country	EFFCH	TECHCH	PECH	SECH	TFPCH
IVORY COAST	1	0.072	1	1	0.072
MALI	0.987	0.961	1	0.987	0.948
SENEGAL	1	1.608	1	1	1.608
BENIN	1	1.316	1	1	1.316
BURKINA FASO	1	0.962	1	1	0.962
<b>Mean</b>	<b>0.997</b>	<b>0.676</b>	<b>1</b>	<b>0.997</b>	<b>0.674</b>

## 6.0 SUMMARY, RECOMMENDATIONS AND CONCLUSION

In this paper, we have examined the effects of monetary and fiscal policies on entrepreneurship in both Anglophone and Francophone West African countries using an institutional approach. After classifying countries into two divides to determine which one is more entrepreneurial, we found that cumulatively, the Anglo West African countries were entrepreneurship enhancing while the francophone countries are entrepreneurship inhibiting. Of interest to us, was the question of whether the dependence of central bank and the emerging stock exchange market has either made or mar entrepreneurship in the region. However, despite the fact that the emerging capital market operating in the francophone divide remains relatively small and illiquid, the performance of the stock market variable was slight higher than in the first divide i.e. Anglophone countries. Secondly, using the GEM measures of entrepreneurship on OECD indicators, we examine the effect and the efficiency of the macroeconomics policy instruments on institutional entrepreneurship across the selected countries in West Africa.

From the ARDL result, exchange rate has a high mean value which signaled huge entrepreneurial activities that necessitated cross border transaction amongst the countries under study. This supports Bollerslev, Chou and Kronner's (1992) findings that exchange rate movements have implications for trade. Specifically, the acquisition of domestic assets and international portfolio management. Therefore monetary policies should be designed to be favourable for the countries especially in the Anglophone divide that have independent monetary policies been managed by unfixed foreign exchange rates as in francophone countries. The Return on export variable also shows significant relationship indicating high inter-country trade activities and export dependence across the countries and regions under review. This corroborates the result from exchange rate that the both divides engage in cross border transactions. There is also an indication that the two divides have constantly invested in sciences and technology

researches which drives innovation for entrepreneurship. However, the efforts have been rather minimal when compared with developed countries. This supports the submission of Lo (2006) that scholarly journals are the valuable sources among various communication channels for research output for technology development in more developed economies. Hence fiscal policies should be advanced to expend more financial resources into science and technology researches and entrepreneurship education in order to awaken higher level of innovation and creativity through research. As well as enhance linkages between tertiary institutions and the private sector

From the efficiency analysis on the Anglophone divide, the Pure Technical Efficiency Change (PECH) is less than the Scale Efficiency Change (SECH) value, it is highly likely that an improvement in scale efficiency has generated the resulting efficiency change. It was also observed that only period 2000 – 2001 slightly experienced to be efficient given the value of PECH (0.3%) and SECH (1.2%), and this implies that the countries in the divide are embracing technology and as well improving their managerial allocative efficiency, and therefore optimizing their DMUs (countries) economies of scale. It is highly likely that an improvement in scale efficiency has generated the resulting efficiency changes. All the DMUs (countries) are constant under PECH and SECH except in Sierra Leone where the source of inefficiency is PECH (0.1%) which implies a slight success in adopting correct managerial decisions concerning inputs and output quantities while the scale inefficiency (0.4%) indicated that Sierra Leone is getting closer to the optimal size to realize the economies of scale. Therefore, the other

DMUs can learn something from Sierra Leone being the best of the DMUs' class performer to enhance their productivity. While the efficiency analysis on the Francophone divide revealed that there was a sharp decrease on average productivity, but Mali, Benin and Burkina Faso experienced a high increase in productivity. All the DMUs (countries) experienced productivity progress except Ivory Coast and technical efficiency change was also regressed. This could be as a result of scoring low in the constant election variable during the period under review. However, the general inefficiency/short-fall is coming from technical inefficiency in terms of managerial skills deficit required to optimally increase the return on outputs from the given set of inputs.

Despite the fact that theoretical expositions demonstrate the linkages between infrastructure and economic growth -entrepreneurship growth inclusive i.e. the endogenous growth theories (Canning and Petroni, 2004). Infrastructure development have also been found by Udjo et al. (2000) to be responsible for both direct and indirect impact on the growth of an economy because it raises efficiency and provides facilities useful for the entrepreneur to be productive. Government expenditure on infrastructure in the entire West African countries shows that the proportion of government spending on infrastructural development has not been encouraging. A high interest rate has also shown that investment within the region has not been quite impressive especially in the Anglophone countries. The performance of the money supply variable reveals a performance that indicates that the average money in circulation during the periods under review in the two regions was extremely inadequate. Horwitz, (2000), recognizes that any analysis of excesses or deficiencies in the money supply must involve the institutions that are responsible for supplying money. To this end the central banks have not been efficient in the supply of money for certain reasons such as inflation targeting Also, interest rate shows that investment within the region has not been quite impressive (especially in the Anglophone countries) which is to the detriment of entrepreneurship because the cost of getting money will definitely be high when interest rate increases –this is one advantage the Francophone divide has over the Anglophone divide because the former operates a steady/fixed interest rate across member countries. However, the general minimal effect interest rate has on entrepreneurship in West Africa could be because of the resultant effect of the global financial crises and lack of adequate coordination between monetary and fiscal policy makers in the region. This aligns with Dixit and Lambertini (1999) finding that suggests that fiscal and monetary policy makers should agree on the levels of output and inflation in order to achieve positive effects of the policies despite their differences in objectives. However, Favero (2004) reiterates that the complementarity or substitutability of both policies depends crucially on the specific types of shocks hitting the economy. In addition, Adegboye (2015) found that the stabilization of policy of both policies are required to achieve highest level of economic outcomes This calls for an ideal fiscal-monetary policy mix and management in West Africa.

To our knowledge this is the first study to investigate the effects and efficiency of macroeconomic policies on institutional entrepreneurship across country-specific framework in West Africa. Where sufficient data permitted, the econometric analyses were carried out, using the Auto Regressive Lag. Our findings can be summarized as follows: Firstly, the effects of monetary and fiscal policies on entrepreneurship were mixed, hence a nexus of effects, but what is apparent is that countries in the Anglophone divide are more entrepreneurship enhancing and produce more discernible evidence of the positive effects of the policies on entrepreneurship. In the Francophone divide we found the emerging stock exchange market is encouraging for entrepreneurship. We therefore recommend entrepreneurship policy that will harness and synergize the best of monetary- fiscal policy mix and a regional cooperation approach that encompasses the broad differences such as: a common currency for the purpose of trade openness; a unified official language for the purpose of better communication; a unified regional stock exchange for an effective capital market growth; and a wider international affiliation of countries for global market advantage, and efforts to control for the effect of institutions which in this case are macroeconomic policies on entrepreneurship in order to realize that West African countries do not have low income potentials as the case may seem (Acemoglu, Johnson & Robinson, 2000). These recommendations will enhance entrepreneurship growth in West Africa.

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## The interplay of Local and Regional Context in Entrepreneurial Activity

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### Abstract:

This empirical study is capturing the entrepreneurs' understanding of the role of spatial context and its impact on their activity. This research setting is Jordan, a country characterized by increasing instability in the region. The objects of our study are entrepreneurs engaged in early stages of their firms' life. Using Phenomenography as a qualitative methodology has enabled capturing the variation in understanding that other qualitative methodologies do not allow. The study focused on the entrepreneurs' understanding of their spatial context at the local and regional level. The findings show how entrepreneurs relate to their context in an interchangeable way between local and regional and how the region impacts the entrepreneurial activity in terms of product design and market planning. Meanwhile, local issues are more related to acceptance and the entrepreneurial support at the policy level. These findings present a new field of research that require further investigation. My aim was a context-rich understanding of entrepreneurial understanding of the entrepreneurs' local context; more specifically its impact on their activity.

Using Phenomenography in the entrepreneurship field has a potential to further reveal the entrepreneurs' relations with their local context. Focusing on various dimensions of context and how they interrelate and influence the entrepreneurial opportunities (Welter 2010) and decision making. This study will focus on the complex multiplicity of the role of local context in product design and market targeting. Entrepreneurship research has recently moved from previous debates about "who" and "what" an entrepreneur is (Shane and Venkataraman 2003), away from a person centric approach to understanding factors that impact entrepreneurship activity (Bettignies and Brander 2007; Gentry and Hubbard 2000; Harper 1998; McMillan and Woodruff 2002; Shane 1996).

### Introduction

Contextualization of entrepreneurship has captured the interest of many researchers, introducing a new body of literature (for example Zahra et al. 2014; Venkataraman 1997; Eckhards and Shane 2003; Welter 2011; Garud et al. 2014). This stream highlights the important role of context in relation to entrepreneurial activities and outcomes (Foss et al. 2013; Sarasvathy and Venkataraman 2011; Ucbasaran et al. 2001). Moreover, the topic has recently gained momentum as researchers are trying to understand the relation between multi-contexts and entrepreneurial activity (Clarysse et al. 2014; Bruyat 2000; Walsh and Huang 2014; Acs et al. 2014; Hoang et al. 2003; OECD 1997; GEM 2004). These actions are multi-level and shaped by different sets of contextual variables which led scholars to call for further research to understand these contextual variables (Welter 2011; Zahra and Wright 2011).

Research in the importance of context, in which entrepreneurship takes place "has a tendency to underestimate the influence of external factors and overestimate the influence of internal or personal factors"; according to Gartner (1995, p. 70). Although these variables are not set to be the same for each case, but taking them in context of each case can provide evidence of what can influence the entrepreneurial activity (Zahra et al. 2014). The impact of context differs in each case and can't be generalized. "An acknowledged gap in the entrepreneurship literature is ... not paying much attention to how context regulates the behaviour, choices and performance." of entrepreneurial activity according to Autio et al. (2014, p. 1099). In addition, the diversity in approaches has presented inadequacies of research in understanding the role and impact of context (Cabral et al. 2013; Bjørnskov and Foss 2013; Foss et al. 2013; Sarasvathy and Venkataraman 2011; Ucbasaran et al. 2001). This led to include a more

contextualized approach in designing the theory for this field of research (Welter 2011; Zahra and Wright 2011; Zahra 2007). Entrepreneurship research has recently moved from previous debates about "who" and "what" an entrepreneur is (Shane and Venkataraman 2003); away from a person centric approach to understanding factors that impact entrepreneurship activity, such as culture, economy, institutions, and education (Bettignies and Brander 2007; Gentry and Hubbard 2000; Harper 1998; McMillan and Woodruff 2002; Shane 1996), towards a contextualized approach, in which entrepreneurs articulate different narratives for their activity (Zahra et al. 2014; Guard et al. 2014).

This study addresses the entrepreneurs' understanding of their local context and how it relates to their activity. I ask the question "What does local context mean to you and how do you define it?" Focusing on the role of context and how it is understood and defined by the entrepreneurs presented new insights into their world. The entrepreneurship research field witnessed dominance of rationalistic and objectivistic approaches (Sullivan 1998). This has presented a limitation in the field of research (Coviello and Jones 2004; Zahra 2007; Venkataraman and Sarasvathy 2008; Audretsch, Grimm and Schuetze 2009; Drakopoulou Dodd & Hynes 2012) and the understanding local context in entrepreneurship. As Morgan and Smircich (1980, p.491) mention "... the choice and adequacy of a method embodies a variety of assumptions regarding the nature of knowledge and the methods through which knowledge can be obtained, as well as a set of root assumptions about the nature of the phenomena being investigated". To address this limitation, I use phenomenography as an interpretive qualitative methodology in this study. This research approach will be focusing on contextualization of entrepreneurs understanding of their local context framing the understanding between the local and regional context. Based on the variation of understanding I propose a hierarchy of local context and its relation to the entrepreneurial activity. The findings present a new field of research in how entrepreneurs contextualize their local context in relation to their activity.

## Literature review

The shift in entrepreneurship research away from "who the entrepreneur is?" was marked by Gartner (1989). This was followed by other researchers taking a new approach away from personality traits and factors (Gartner 1989; Chell et al, 1991; Gibb 1993). This has introduced entrepreneurship as a dynamic social and economic construct to which people respond to. This focused on the availability of opportunity and the environmental signals sent out to exploit those opportunities (Shane and Venkataraman 2000). From this follows the conceptualization of local context as a set of relationships between a few variables which are stripped of confounding noise variations in an attempt to fit preconceived hypothetical understandings to the data (Punnett & Shenkar, 1996). In doing so, local context becomes de-contextualized and reduced to ever smaller, partial elements and dimensions (Westwood 2004).

Entrepreneurship has been identified through economic theories, innovation-related frameworks and systems, and personality traits and characteristics. It is seen as an overarching construct that has various dimensions; each one is elaborated by a number of attributes, relationships and intertwined episodes which have been partially exposed through investigatory processes. In other words, as long as entrepreneurship research is framed by the assumptions underlying rationalistic approaches and economic relations, it is unlikely that we will be able to adequately identify and describe how entrepreneurs understand their local context.

Given the limitations inherent in the assumptions underlying rationalistic approaches and the "...dissatisfaction with the chronic failure of the positivistic agenda to deliver science it promised" (Chapman, Gajewska-De Mattos, & Antoniou 2004: 289), perhaps we cannot continue to rely solely on this research tradition for advancing our understanding of local context in entrepreneurship (Grant & Perren 2002; Cope 2005; Zahra 2007).

Recently, a growing number of scholars are calling for a shift in approach to explain context. These calls include engaging in interdisciplinary research using different theoretical frameworks (Anderson, Drakopoulou Dodd and Jack 2009; Gordon, Hamilton and Jack 2012; Leitch et al. 2012), re-considering the unit of analysis, and adopting different methodologies and methods (Gartner 1988; Shane and Venkataraman 2000; Schatzki 2001; Baron 2002; Gherardi 2006; Kuratko 2007). Using a meta-theoretical perspective, it becomes apparent that most researchers operate within the rationalistic research tradition (Jack, Calás, Nkomo & Peltonen, 2008), which is underpinned by a dualist ontology and an objectivist

epistemology (Rorty 1979; Bernstein 1983; Sandberg 2005). A dualistic ontology stipulates that the person and the world are seen as externally related to each other, (i.e. separate entities), while, an objectivistic epistemology assumes there to be an objective and knowable reality 'out there' beyond the human mind (Sandberg 1994). When attempting to explain local context, the assumption of a dualistic ontology separates the local context into two independent entities – meaning and the use of it, on the one hand, and the individuals involved, on the other. The objectivistic epistemology leads researchers to describe the activities associated with entrepreneurs to be independent of the individuals who carry out the actual activities. Therefore, an interpretive methodology is required as it will account for the complexity, dynamism and contextual nature of the entrepreneurs' understanding, hence the use of phenomenography in this study. As Moran (2000: p.15) explains "the whole point of phenomenography is that we cannot split off the subjective domain from the natural world ... Subjectivity must be understood as inextricably involved in the process of constituting objectivity". Phenomenography rejects the dividing up of reality as a key concept behind phenomenological thinking is the intentionality of consciousness. As explained by Sokolowski 2000; it refers to the description of experience as an experience of something or "aboutness" (Moran 2000). Therefore, this research will try to capture the entrepreneurs' understanding of their local context in relation to their activity.

## **Research Approach and Philosophy**

The roots of interpretive research are many and the approaches within that tradition are varied but the most influential approaches are the social constructionism approach according to Berger & Luckman 1966; Bourdieu 1990. In this sense, people not only interact with their environment, they also seek to make sense of it through their interpretation of events and the meanings that they draw from it (Saunders et al. 2003). Interpretive research provides an alternative way to understand human and organizational phenomena through ontological and epistemological assumptions that are different from the positivistic/rationalistic approach (Crotty 1998; Sandberg 2005). The purpose of interpretive research is not to confirm or deny previous theories "but to develop bottom-up interpretive theories that are inextricably grounded in the lived-world" (Cope 2005; p. 167). A shift in scientific approach that does not underline a dualistic ontology and an objectivistic epistemology, separating entrepreneurship context into two discrete entities - the activities of entrepreneurs and their local context is required. In particular, a new approach is needed to investigate how entrepreneurs define their local context. The interpretive research tradition offers an alternative lens to understand that entrepreneurs are not separate from their local context, as they operate within that context through their understanding and the way they define it. More specifically, when looking through an interpretive lens, entrepreneurs are trying to make sense of their "local context" (Zahra 2007; 2011). The relation between the subject and reality are interrelated which means you cannot describe one apart from the other; they are constructed and re-constructed through on-going social exchange and interaction. It is futile to attempt to describe an external objective reality without the inner subjective world or private experience. As explained by Burrell and Morgan (1979; p233) "ontologically, the world constitutes a stream of consciousness; it is experiential; the subjective is the source of all objectivities". This stipulates that there is no independent objective reality to be discovered through rational, empirical, or scientific method (Cope 2003; Hammond et al. 1991).

What we do and how we act is based on our understanding of our particular situation and what it means to us. In other words, we cannot identify and describe how a person is and how they see the world separately (Sandberg & Targama 2007). Therefore, using phenomenography as methodology is the best tool for this study to help us understand how entrepreneurs understand and define their local context. Interpretive methodologies have distinct procedures for data collection, interpretation and theoretical development. Ethnography, is concerned with cultures, reaching a conclusion that members of similar cultural groups act similarly based on their common understanding of their reality (Pittigrew 2000; Boyle 1994; Arnould 1998). Grounded Theory presents theoretical sampling and saturation of data and theory before theory development can be reached; data comprise of life histories and introspection which are constructed to form a generalized theory (Glaser & Strauss 1967; Mckinley-Wright 1995; Corbin 1998). As for Case Study, the focus on the complexities that connect practices in the natural setting of events and organizations, the data is interpreted through critical event or thematic analysis (Eisenhardt 1989; Stake

1994). Case study and Grounded Theory seek to find generalized theories through finding common themes or events in data interpretation. These interpretive approaches can help identify and describe the local context in entrepreneurship, but they are unable to capture the variation in the entrepreneurs' understanding and experiences. Meanwhile, phenomenography captures the variation which is the aim of this study. Phenomenologists build theory based around lived experiences. The lived world is defined as the world in which people experience culture and society, are influenced by their objects and act on them focusing on the variation of individual experiences (Schutz 1966; Goulding 2004).

Context is not viewed unanimously among entrepreneurs. It is seen as a continuing reflective set of factors that have a direct impact on their activities (Autio et al. 2014; Zahra and Wright 2011; Zahra 2007; Cope 2003). More precisely, from an interpretive perspective, it is the entrepreneurs understanding of their local context that forms the basis of how they carry out their activity. In other words, how do entrepreneurs define their local context and how does local context relate to their activity in accordance with their understanding? This approach may provide a lens to further enhance our understanding of the entrepreneurial activity.

### Empirical context and participants

This study will examine the understanding of local context from the entrepreneurs' perspective. Oasis500 is a leading start up incubator in Jordan with a comprehensive approach to entrepreneurship (i.e. training, investment and incubation). Oasis500 invests in start-ups that show a viable and profitable business model. The sample was from those who received seed funding. The sample was purposively selected based on the list of names provided by Oasis 500. The sample captured the experiences of the entrepreneurs at different stages (i.e. recent start up to several years' growth phase). The number was decided by theoretical saturation (Glaser & Strauss 1967), where no new information was emerging out of the questions. I have reached the saturation phase after the 14<sup>th</sup> interview, which is consistent with previous phenomenographic interviews.

### Data collection

In-depth interviews were used as primary data collection supplemented by GEM reports on the region. The interview protocol was not designed to be structured. It was fluid and in the form of dialogue. This enabled the participants to share as much information about their perspective of how the regional instability has impacted their enterprises. The main question asked for this research was "What does local context mean to you and how do you define it?" The focus of the question was to capture their understanding of their local context as entrepreneurs. Interviews were transcribed, copies of transcription were sent to verify that the understanding of the participants was captured. The interviews were conducted in Arabic, although the majority of the participants spoke both Arabic and English during the interview. Translation was done where necessary to produce a final transcript in English which was sent to the participants and verified. The following table explains the sample selected for this study:

Number of Entrepreneurs		14
Gender	Male	10
	Female	4
Age	Range of years	28-49 years
Enterprise phase	Start-up	3
	Growth	11

**Table 1: Sample Characteristics**

This process required an intensive focus on constructing the understanding of the entrepreneurs' rather than focusing on the frequency of occurrences. To be able to study social construction, processes require more focus on the means by which participants achieve and understand their experiences rather than the

number of frequency of measurable occurrences (Gioia et al. 2013). The analysis followed the double hermeneutic process, through which, I, the researcher tried to make sense of the entrepreneurs' understanding of their Local context as second order perspective. This was achieved through a two stage interpretation process, first a descriptive level of the participants' understanding of their local context, and second, my role as a researcher in making sense of the participants' understanding by following a rigours process of interpretive activity. The double hermeneutic process allows the researcher to communicate as closely as possible the participants' understanding and experiences of their lived world (Smith and Osborn 2003). The methodology does not test hypotheses; its objective is to understand the participants' lived experiences without imposing the constraints of prior theory as explained by Storey (2007).

Phenomenography allows the description of the full experience in all its richness and complexity (Smith 2004). Systematic analysis of the data can provide novel insights in addition to a broader and more comprehensive perspective. It capitalizes on the participants' sense making of their understanding, providing a subjective view in contrast to the more objective standpoint of quantitative research. An explanation and description of the process of analysis used in this study is further explained.

### **Process of analysis**

Phenomenography is used in this study for the depth of analysis it provides. It is designed to capture the variation of individuals' understanding and experiences as part of their reality and what it means to them, and how they act based on their understanding. What Phenomenography offers that other interpretive methodologies don't is the variation in the different ways people understand the same reality and how their understanding forms the basis for their action (Marton 1986, Marton and Booth 1997).

Qualitative interviews are tools used to find out what people feel and think about their world, and how researchers can understand experiences and reconstruct events (Rubin & Rubin 1995). Language becomes the central medium for transmitting meaning, the meaning which becomes the reference in the real word (Goulding 2005). It is where views are conversationally exchanged between people about a phenomenon.

Therefore, interviews are a means by which the interviewer and interviewee reflect and learn about the phenomenon under discussion (Kvale 1996). Semi-structured questions were used in order to give the appropriate amount of variations, openness and flexibility (Glaser and Strauss 1967). These exchanges are socially and linguistically complex. Producing various scripts can introduce potential to bias or obscure to what is being exchanged and the nature of the knowledge produced (Holstein & Gubrium 1997; Silverman 2006). Interviews are considered the best tool to represent or account for individual's views or opinions (Silverman 2006). As a result, data collected cannot be considered to be a true reflection of reality, "the gap between the empirical material (interview talk) and what it is supposed to refer to ... is not that large" as observed by Boje (1991). Therefore, adopting a reflexivity qualitative approach to both qualitative interviewing and interpretation was used. The assumptions underpinning interpretive research and phenomenography as a methodology demands and encourages the reflexivity approach according to Alvesson (2011; 2003) Alvesson and Sköldbberg (1999) and Sandberg (2005).

The analytic practice for these interviews were an ongoing interpretive and iterative process. Shifting between what is local context (focusing on understanding) and how it is related to the activity (capturing the relation). Although the two aspects were analysed separately (as What and How), in reality they present one relational whole. The analysis was conducted in phases: during the first phase of familiarisation with the transcripts, all the interviews were gathered into one document. The software Nivo 10 was used for the first phase of processing and analysing "what" and "how". To be able to separate the two, transcripts were read several times and notes were documented each time. In the second phase a table was created to analyse the two aspects and group them based on differences and similarities of understanding. Then the statements were categorized producing a set of constructs that emerged from the transcripts. These constructs represented the local context. The final stage was to consider both what is local context and how it is related to the activity and introducing overall categories that relate to both as

one construct. This led to producing the final categories of descriptions that represented the understanding of the entrepreneurs.

### **Validity and Reliability in Phenomenography Research**

The validity of phenomenographic studies relates to the researcher's justification for presenting the outcome and claims based on method and results, as credible and trustworthy (Booth 1992; Burns 1994).

Several steps were taken to ensure validity of the method. Characteristics of participants were stated and background is provided. The interview question was designed to provide data that will establish critical variation explaining how participants understand their local context and how they define it. Collection of unbiased data and attempts to approach data analysis with an open mind were implemented and acknowledged by the interviewees. Data analysis method is described through implementing the structure of awareness and using quotes from the interviewees. Researchers should account for the process used to control and check interpretations made throughout the analysis process (Sandberg 1997). Categories of description are fully described and adequately illustrated with quotes (Booth 1992).

Reliability in phenomenographic studies is not considered to have the same sense as in qualitative research. The reliability of qualitative research refers to the replicability of results, "... if another researcher repeated the research project ... what is the probability that he or she would arrive at the same results" (Booth 1992, p. 64).

In phenomenographic studies, this would refer to replicability of the outcome space(s). Given a particular set of data, would different researchers report the same outcome space? In phenomenographic literature this is not a reasonable question to ask of phenomenographic studies. Although broad methodological principles are adhered to, the open, explorative nature of data collection and the interpretative nature of data analysis mean that the particulars of the method applied by different researchers will not be the same (Booth and Johansson, Marton and Svensson 1985). As Johansson, Marton and Svensson (1985, p.251) outlined "... once the discovery has been made we should be able to communicate it". The established variation was then described as an outcome space of categories of description, each one of the categories was described in terms of a structure of awareness (Cope 2004).

Based on the utterances of participants of their experiences, dimensions of variation, and values in dimensions of variations were established. Then the relationship between these dimensions were set, followed by the boundary between internal and external horizons leading to the meaning of the phenomenon inherent in the structure.

What does local context mean to you and how do you define it?

Follow up questions were used such as "How do you define it in relation to your activity?", "Can you elaborate more?" Interpretive awareness means that the researcher interpretations during the process of data analysis have been controlled and checked through the use of an analytical framework of "structure of awareness" (Cope 2004).

### **Understanding Local Context**

This research setting is Jordan, a developing country situated in midst of a politically turbulent region. In the context of the Middle East borders matter as they impact the economic terms. The region is being categorized as fragmented in terms of production, trade and economic linkages although the region is positioned to be a global trade hub. This is all, however, impacted by the current Arab spring (Malik & Awadallah, 2013). The level and nature of entrepreneurial activity differs from one country to another (Lakovleva, Kolvereid Stephan 2011; Valliere & Peterson, 2009). The economic level of the country also



impacts the potential contribution of entrepreneurs within that country (Wennekers, Van Stel, Thurik & Reynolds 2005). This paper will examine the entrepreneurial activity in the context of regional political instability.

Jordan has embarked on developing entrepreneurial activity in the country. The most recent study on entrepreneurial activity in Jordan was conducted by Global Entrepreneurship Monitor (GEM) in 2009. The Global Entrepreneurship Monitor (GEM) began in 1997 to study differences in entrepreneurial activities among countries. Their report confirms that there are significant differences and variability between countries in terms of entrepreneurship and entrepreneurial activities.

The report focused on a local micro approach to entrepreneurship in Jordan and identified positive indicators relating to institutional, cultural and opportunity recognition aspects. Despite these positive indicators Jordan scored the lowest in entrepreneurial activity in comparison to other countries in the region. From a context perspective the opportunity recognition is considered high, yet activity is low. It is important to understand the context from the entrepreneurs' perspective in Jordan to be able to understand what impacts their activity. It is also important to understand the setting and previous insights into the entrepreneurial activity in Jordan and how entrepreneurs understand their local context.

The answer to this question has produced five variations in understanding. These five understandings explain how entrepreneurs define their local context.

**1. Being an Entrepreneur:** local context is understood and defined as a personal experience. Employment is valued higher than entrepreneurship. Local context from a perspective of being an entrepreneur and in relation to family has been identified as a negative experience. Here are some statements that represent this experience in this category. AAM explains:

*“Lack of respect by others, which is one of the most negative things that hinder the entrepreneur ... For them this company that I have established doesn't have a future.”*

As for SO he identified local context as following:

*“Local context, is probably feeling comfortable doing my own business ... As an entrepreneur it's the people that I interact with on a daily basis, personal and professional.”*

The aspects of this understanding is how entrepreneurs are perceived, addresses the entrepreneurial identity.

This has an impact on the entrepreneurial activity as explained by AAM:

*“This is an example of the societal values and culture that can either motivate or hinder the person.”*

**2. Physical space:** Local context is experienced in relation to physical space or place. It refers to the country or place where the entrepreneurial activity is happening. Although with the internet the physical place is becoming irrelevant to the activity. MI identified local context as following:

*“So it is whatever you consider your personal locals, it is where you have your house and what you consider home, but with the internet the local context is blurry”*

The internal horizon of this category consists of the role of the internet in relation to local context. The internet impacts the definition of local context so that it becomes blurry, i.e. detached from the physical space. MI further identifies his local context:

*“So your context is really about recalibrating to your reality ... I had to recalibrate the local context to here and my idea”*

The relationships within and between the various aspects of the category are differentiated. For example, local context was identified as the local space, meanwhile with the internet the local context is blurry and can't be identified. Being in one place doesn't mean that the activity is being conducted in that place because of the role of the internet.

*“So my local context is international for me, I am located in Amman but most of my business revenue comes from outside Amman and Jordan. So I don't have a local context or one context for me ... because, as I said somebody in Ramallah can create something and it goes globally around the world.”*

Physical place is of minimal impact on the activity as explained by MI. Entrepreneurs with on-line activity can be anywhere from their clients and still be in contact and conducting their activities. Therefore, local context can be anywhere and is defined through the technology in relation to the activity.

**3. Product content and culture:** Local context is understood in relation to the product design in relation to regional needs and demands. Different quotes from the entrepreneurs focused on different aspects of how the product is impacted by the culture both at the regional level and at the client's. The quotes below explain the various aspects of the category of description. JSH identified local context as following:

*“Local context is everything starting from the fact that the region is unique and the region wants to consume local content. So anything that is not local unless necessary will not be consumed. For me context means the content that we provide, the team that we work with and the mentality that we deal with and so on. All of these things come together, when I say that they (customers) don't prefer to consume content that is not regional. It falls into the point of context.”*

The aspects of local context making up this category are local content, the team, the mentality, customers' need, the image and brand, and the region's values. Local context is discerned in relation to the region and the needs of the customers in the region. Local context is therefore regional and reflects on the company, the team and the product content. The following quote illustrates these relationships thereby, identifying local context from a regional perspective.

*“We understand many of these things and we work with them. That's one part. The things that are liked by the region and what is not liked by the region, the things that we say, the brand that we represent and the image that we emit has to be in line with what's happening in the region because the clients are from the region and the market is in the region. At the same time, we thrive on it. Why do we thrive on it? Because one of our major competencies is that we know what people like and people don't like. We don't build all these hypotheses if it they don't work. We just know because we are there (in the region).”*

Going deeper in the explanation of local context, JSH also describe the different aspects and the different relationships between them. Building on the culture and the content that they present affects the image of the company. Understanding local culture is their competitive edge. To provide content that is relevant to the market and that is the local context that he operates within because he is from the region. Local context is limited to regional needs of local content and understanding of clients' culture and needs.

Further AAM identified local context as following:

*“The content we produce sometimes is religious in content. We notice that there is a big difference when we want to produce something for the Saudi market. For example, a 3D animation for Saudi or other Gulf countries forbids a certain characters (even a female character) or disallows even adding music to the content. We believe that these values that are in today's market hold creative people back.”*

This category contains additional aspects of how entrepreneurs understand their local context in comparison to the previous categories. This implies a more complex way of their understanding of their local context in relation to their product content and clients' culture. The relation between the local context and product design depends on understanding the region's need and are clear example of the interplay between local and regional context.

**4. Market:** in this category of description local context is understood in relation to the market, to market strategies and to lost markets as part of the entrepreneurial activity. The local context is in terms of access to market and strategies used by entrepreneurs. There is a clear understanding of market challenges and dealing with clients in terms of addressing their needs and creating trust. Different quotes addressed different aspects of this category of description.

Understanding of the relationships between the different aspects of the market as a local context from the perspective of the entrepreneur is discussed. SQ has identified the local context as follows:

*“Local context means to me the market that I want to deal with. I am dealing with the banking sector. At present I am dealing with the local banks. Maybe later I will expand the scope of our market, which now has shrunk to be only Jordan.”*

The local context in this statement was identified as the market and the sector within that market.

*“The local market is currently the banks and it is not easy to deal with the local market because they look at you as a local company ... which affects our pricing.”*

The local context in this statement was identified as the market, market positioning and strategies. SM refers to:

*“I am unable to find a break in the market in a strong way ... this is how I understand the local context.”*

The aspects of local context implied by SM have presented challenges in addressing the targeted market and to think of strategies to overcome these challenges. IO has identified local context as following:

*“Context in terms of my business is how to position myself within a specific entry point within the region or the market.”*

The local context in this statement has been defined as the positioning of the entity within the market. In this statement also, we can see the marketing strategies used as finding an entry point within the region.

Local context in this category is limited to the market and the strategies to target this market as part of the entrepreneurial activity. The way of understanding local context in category four introduces another side of the entrepreneurial activity which builds on the previous categories in terms of identifying local context in relation to entrepreneurial activity. This category of description is more complex than previous categories on the basis that it relates to market strategies and understanding of their local context in terms of how to access the market and the challenges they experience. The relation between local context and activity is clearly defined by being local in the market, identifying market sector and strategies to address the market. Again the role of local-regional context is clearly exhibited in this category.

**5. Entrepreneurial Environment:** This category identified local context in relation to the local environment in Jordan. This includes rules and regulations, laws, policies, investment, market readiness for entrepreneurial activity. This category explains all aspects of the local context in relation to the entrepreneurial activity in Jordan.

In this statement, AS introduces all these aspects as following:

*“Entrepreneurship is one of the top topics on the table at the official side and at the private sector side because of many reasons, the unemployment, the economic growth and the reaction of the Arab spring to give some freedom and some space for young people to innovate and to implement and realise dreams of their future. So my understanding of the context in Jordan is that, it was overrated at the beginning and it was tackled without a proper plan that is normalised across all stakeholder parties. They didn't take into consideration the reality of our local context here, in terms of market size, appetite for investment, or how ready our country is to deal with such transactions ... These concepts in our regulations in our country is*

*not there. So we were oversold the idea of entrepreneurship. It wasn't really relevant to our context at that time. "*

In this category AS identified local context as a policy strategy used to reduce the impact of the Arab spring locally. The aspects of local context implied have addressed the relationships between the entrepreneurial activity and institutional ability. Policy level decisions were presented without proper understanding of the entrepreneurial needs, such as local market, laws and regulations in addition to investment in start-ups. Despite all these disconnect between policy and ecosystem, the awareness and knowledge about entrepreneurship has created changes in thinking and established a community of entrepreneurs. The following quote explains this further.

In the next statement WAD presented the different aspects related to the phenomenon:

*"The government regulations are a whole story by itself which has a great impact on new businesses. When I consider the policies and regulations and the cost of the start-up and how they are not supportive to my enterprise. The funding opportunities and venture capital is part of the local context. How we find investors to be partners and to convince them to invest. In Jordan the government is not that supportive ... The government is not supporting any more, 3-4 years ago there was a great hype around entrepreneurs and support from different entities. Now everything is frozen and not moving ... I can't see that I have a place to go to if I am short in funding."*

He elaborates on the government regulations, lack of funding opportunities and links it to the lack of support from the government. The aspects of local context implied by WAD have presented challenges to the environment. The relation between local context and the activity is clearly linked through the challenges in the entrepreneurial environment. In this category the local context is being addressed in relation to the local environment in Jordan. Even though and as result of the regional instability in the Middle East entrepreneurship was encouraged by Government. The interplay of local-regional context is evident in this category as well.

### **Hierarchy of understanding local context:**

The findings illustrated do not only present variation in understanding. The five categories are hierarchically related to each other in terms of their relation and impact on the entrepreneurial activity. Category 1 is the least comprehensive. Meanwhile, category 5 is the most comprehensive introducing several aspects that are related to the entrepreneurial activity. Category 1 identified the stakeholder engagement to the family and immediate interaction, category 2 expanded into the physical space and the interaction taking place in relation to their activity.

This category presents a different aspect of the personal perspective of local context in relation to physical space and how to adapt to each one. The aspects of stakeholders are different than the ones introduced in the first category. But the idea of stakeholders that the entrepreneur deals with in the local context is recognized. Therefore, the empirical support for the logical inclusiveness of the first two categories is presented in terms of identifying different stakeholders that the entrepreneurs interact with. Each presents a different side of the relationship and personal perspective of local context and how it relates to their activity.

These categories are logically inclusive of each other in describing the understanding of local context in relation to the entrepreneurial activity. The understanding local context has more aspects which presents more awareness. The additional aspects include policies, regulations, laws, processes related to entrepreneurial activity. Local context is delimited in to the entrepreneurial environment in general. The aspects of local context discerned in this third category of description in addition to the previous two categories are:

1. Local context in perspective to family, professional and other entrepreneurs' and their role in the entrepreneurial activity
2. Local context in perspective to physical space and the role of the internet in defining it.
3. In relation to product and markets local context becomes of regional context. Focusing on the region as the client base and market. This have an impact on product content and design by being sensitive to the culture
4. Local context in relation to market, market strategies and market challenges to be able to find break for the new start-ups. To be able to compete on regional level.
5. Local context in relation to the entrepreneurial environment in Jordan in terms of policies, laws and regulations.

These categories logically build on each other in terms of its relation to the entrepreneurial activity.

### Variation in understanding

In the section above, the way the phenomenon was explained was illustrated as dimensions of variation. The critical differences between less and more complex ways of understanding the phenomenon were determined from the perspective of complexity. This means the value of a dimension of variation changes in relation to the value associated to that category indicating complexity of experience. The aspects of the category are not discerned in less complex ways of understanding the phenomenon and finally the relationships between the dimensions of variation. In other words, the way of understanding local context and its relation to the entrepreneurial activity in this empirical study differ from each other reflecting the richness and strength of relationships between the categories. These variations can be related to the characteristics of the sample, such as gender, years of experience, stage of the start-up.

These variable are presented in association with the entrepreneur in the following table:

		Being an entrepreneur	Physical space	Product and Culture	Market Strategies	Entrepreneurial environment
Number of entrepreneurs		2	1	4	3	4
Gender	Male Female	2	1	4 1	4 2	4 1
Start-up phase	Start-up Growth	2	1	4	2 4	1 6

**Table 2: Understanding local context in relation to sample characteristics**

The sample characteristics are male dominated however the gender difference didn't account for any significance in understanding and defining local context. The category that showed more significance was the entrepreneurs in the growth phase. They exhibited more variety in understanding and that can be due to a variety of experiences as their business grows. They have identified more complex aspects for each category hence they have been spread over the categories. The two start-ups (one male and one female) are the two who reported the same challenges in lost opportunities and shrinking market shares. This can be related to the starting time of their activity. These two have started at time of regional political instability and had to shift their activity to local market until the region is stable. In addition, they contributed to the entrepreneurial environment challenges and were accounted there too. Other entrepreneurs have changed their market target to other countries as a result of the instability simply because their products/services are in the growth stage and already established locally. Majority of entrepreneurs have agreed that the entrepreneurial environment in Jordan needs to change and become supportive of the entrepreneurial activity in terms of laws and regulations in addition to investment in start-ups. Recognizing the entrepreneurial activity and the role of entrepreneurs at policy level is key in policy level changes. The variation in understanding can be attributed to the entrepreneurs' experience and understanding and there is little evidence that it might be influenced by other sources.

## Summary and significance

The entrepreneurs defined their understanding of Local Context in five qualitatively different categories of description representing the variation of their understanding of local context in relation to their activity. These categories of description represent a hierarchy of increasing complexity in understanding and based on logical progression of factors that influence their activity. The more complex category introduced more aspects that discerned local context which has a broader impact on the activity. The less complex ways of understanding local context was presented through various aspects that were more of personal nature in relation to the activity. The more complex ways of understanding related to the overall entrepreneurial environment in the country and how ready it is in supporting the entrepreneurial activity. Understanding the role of local context in relation to the entrepreneurial activity at all levels was strongly discerned by the entrepreneurs in all categories of description. The findings have demonstrated the partiality of findings in existing explanations of context in the field of entrepreneurship.

The following table demonstrates the findings in relation to prior theoretical findings:

Local context	Economic	Who and What is an entrepreneur	National Innovation Systems	Spatial, temporal and relational
Being an entrepreneur		X		
Physical space				X
Product content and culture	X			
Market strategies	X			
Entrepreneurial environment			X	

**Table 3: comparing local context variation with previous research in the field**

Each of these theoretical research fields have addressed the entrepreneurial activity independently of the other. The findings of this research has identified a link between these aspects in relation to the entrepreneurial activity and local context. Through the understanding of local context links between culture, entrepreneurial identity and physical space were strongly discerned in relation to the entrepreneurial activity. Local context was identified as the culture of the region, this exhibited the interchangeable role of local and regional from a cultural perspective. The culture of the region has overtaken the local context and was strongly identified in relation to product content and customers' demand, and strongly influenced the product design. Furthermore, market strategies were also identified beyond local market, emphasizing the interplay between local and regional context. Meanwhile, the entrepreneurial environment was recognised as the key factor impacting the entrepreneurial activity at the country level. These findings account for the understanding of the complexity and multiplicity of local context and its relation to the entrepreneurial activity. The interplay between local and regional context influence the product design and market strategy making the definition of local context regional.

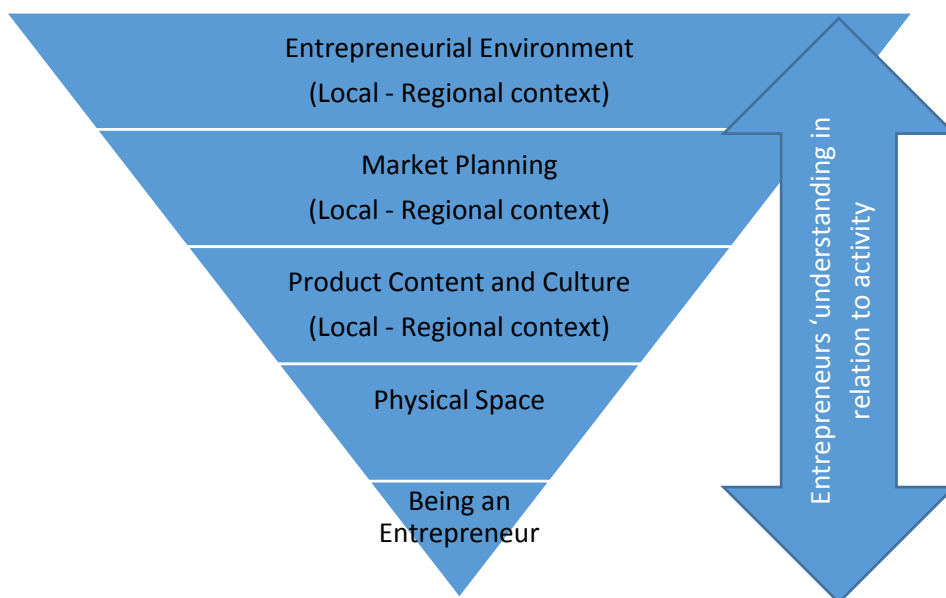
This study has introduced the variation in understanding local context in relation to the entrepreneurial activity. It is of significance to understand how entrepreneurs see their local context and how they operate within that context. The more significant findings in understanding local context include:

1. The personal relation between the entrepreneur and the physical space. The role of internet in blurring up the physical aspect which provided more flexibility of working in one place and reaching customers in other places.
2. Seeking acceptance and recognition as an entrepreneur. The symbiosis between "identity" and "activity" is evident in this category.

3. The interplay between local and regional context has a major impact regarding product design and market planning. Identifying the activity and products toward the regional market and client base is beyond local. Presenting the definition of local as regional in this category.

4. The overall entrepreneurial environment in Jordan in terms of policies, rules and regulations and access to funding and investment has been recognized by the majority of entrepreneurs in relation to their activity locally. Although entrepreneurship was a policy decision influenced by regional circumstances. Entrepreneurship needs further development to meet the needs of the entrepreneurs locally.

The variation in understanding is significant in this study in addressing previously identified research gaps in understanding context and how it impacts the entrepreneurial activity. The relationship between the understanding and the activity has introduced the Hierarchy of Entrepreneurs' Local Context which introduced a theoretical contribution to the field:



**Figure 1: Hierarchy of entrepreneurs' local context**

The practical contribution of this study introduced policy level recommendations to increase awareness of the important role of entrepreneurs (Being an Entrepreneur). In addition to the engaging with the entrepreneurs to shape policies (Entrepreneurial Environment). Entrepreneurs are aware of the market needs and addressing these needs through the design of products that are relevant to the regional and local culture. The role of the entrepreneur at the need to be recognised by policy makers to change perceptions and to improve the entrepreneurial environment.

### **Conclusion:**

Of further significance in this study, contrary to a context-free view of entrepreneurship, which is widely present in literature, it addressed how entrepreneurial experience varies from country to country and how context affects it (Anderson, Drakopoulou Dodd, and Jack 2009). Further, the way entrepreneurs see the region as their local context in terms of designing their product and market strategies. From a phenomenographic perspective the variation in understanding of "what" is local context and "how" it impacts the entrepreneurial activity were evident. The relationship between the two aspects are combined to present a model of variation in understanding that can be used as a theory and at policy level.

### **Implications and further research:**

The findings from this study introduced theoretical and practical findings. These findings challenge existing understanding of local context, not only how it is understood and defined but how the different aspects of defined local context relate to each other and impact the entrepreneurial activity. Researchers have criticized the approach taken in entrepreneurship and described it as an "individualistic" approach that doesn't take into consideration the broader social context among which entrepreneur function (Gross, 2005). Previous research has addressed each of these categories independently of the other, focusing on the activity of entrepreneurship, the identity away from the activity, also regional entrepreneurship independent from local entrepreneurship (see Autio and Acs 2010; Levie and Autio 2011; Clark et al. 2006; Zahra et al. 2004; Feldman 1999; Saxenian 1994). The field of entrepreneurship has provided a broad diversity and links to understand entrepreneurship (Gartner 1988); which led to realisation that we cannot take entrepreneurs in isolation of their environment (See Hytti 2003; Pittaway & Thrope, 2012; Sveningsson and Alvensson 2003; Venkataraman and Sarasvathy 2008; Audretsch, Grimm and Schuetze, 2009; Drakopoulou Dodd & Hynes 2012).

The findings of this study introduced a hierarchy of categories representing the interplay between local and regional context. These categories build on each other and affect the entrepreneurial activity. The findings challenge previous research of context in entrepreneurship that was addressed separately. In addition, the findings have introduced policy level recommendations to engage with entrepreneurs in policy design. The importance of these findings exhibits the different aspects of "local context" by introducing a comprehensive hierarchy. These findings emerged by using phenomenography as a methodology which other methodologies wouldn't have allowed.



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**Sub-theme 6:**  
**SMEs and Technology, Digitisation**  
**and Innovation**

## **Role models boost entrepreneurial intentions**

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**Keywords:** *Entrepreneurship Education, Entrepreneurship, Education, Entrepreneurial Attitudes, Entrepreneurial Intentions, Desirability, Feasibility, Role Model.*

### **Abstract**

The purpose of this contribution is to analyze the impact of entrepreneurial role models on entrepreneurial attitudes and intentions. To this end, a quasi-experiment was conducted to evaluate web-based entrepreneurial narratives. The paired-sample tests and general linear modelling of results comprising 466 individuals from Austria, Finland and Greece indicate that desirability and intention are significantly different between pre and post observing entrepreneurial role models. Furthermore, the findings indicate that entrepreneurial feasibility is stronger effected by videos than cases. From a policy perspective, this is an essential contribution for raising awareness that being entrepreneur as an attractive career path.

## Reference 10 (Presentation)



### **Role models boost entrepreneurial intentions**

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## Project Homepage

[www.e-ship-stories.com](http://www.e-ship-stories.com)



### a) the main theoretical issues



#### Research question & focus

*Can role models boost entrepreneurial intentions?*

#### Hypotheses

- H1: *Observing entrepreneurial role models via multimedia has a positive effect on the overall perception of entrepreneurial role models.*
- H2: *Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial desirability.*
- H3: *Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial feasibility.*
- H4: *Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial intention.*

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## b) the methods



- 1 Web-based and paper-based pre- and post questionnaires
- 2 At least 466 individuals
- 3 Entrepreneurship online and offline courses
- 4 At least three universities in Finland, Austria, and Greece
- 5 Experiments with control groups
- 6 Investigation period from February 2016 to July 2016

## c) the key findings



### **Enough support for...**

- H1 Observing entrepreneurial role models via multimedia has a positive effect on the overall perception of entrepreneurial role models.*
- H3: Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial feasibility.*
- H4: Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial intention.*

### **Not enough support for...**

- H2: Observing entrepreneurial role models via multimedia has a positive impact on perceived entrepreneurial desirability.*

## First results

Table 2. Differences in means between the treatment and control group.]

<i>Pre sample (t = 0)</i>	<i>Treatment and control group</i>	<i>Control group (C)</i>	<i>Treatment group (T)</i>	<i>Difference (T-C)</i>
Inspiration/Modeling Entrepreneurial	4.01	3.98	4.02	0.04
Desirability	4.43	4.01	4.47	0.47
Entrepreneurial Feasibility	3.64	3.42	3.66	0.25
Entrepreneurial Intention	3.74	3.54	3.76	0.22
<i>Post sample (t = 1)</i>				
Inspiration/Modeling Entrepreneurial	4.04	3.98	4.04	0.07
Desirability	4.19	3.87	4.22	0.35
Entrepreneurial Feasibility	3.70	3.29	3.73	0.44
Entrepreneurial Intention	3.85	3.73	3.86	0.14

## First results

$\Delta\mu = \mu_1 - \mu_0$	<i>Treatment and control group</i>		<i>Control group (C)</i>		<i>Treatment group (T)</i>	
	Mean	SD	Mean	SD	Mean	SD
Number of observations	466		40		426	
Inspiration/Modeling	0.02	1.10	0.00	0.89	0.03	1.12
Entrepreneurial Desirability	-0.25	1.07	-0.14	0.60	-0.26	1.11
Entrepreneurial Feasibility	0.05	0.86	-0.13	0.68	0.07	0.87
Entrepreneurial Intention	0.11	0.81	0.19	0.72	0.10	0.81
<i>Control variables</i>						
Experience	0.45	0.25	0.40	0.23	0.45	0.25
Gender	1.61	0.49	1.48	0.51	1.63	0.48
Age	2.22	0.76	2.15	0.43	2.23	0.79
Nationality	3.49	2.90	2.40	0.93	3.60	3.00
Field of Study	3.67	2.65	3.15	3.33	3.72	2.58

## First results

Table 4 Paired samples test

	Mean	SD	SE	t	p-value
<i>Treatment and control group</i>					
Inspiration/Modeling	0.02	1.10	0.05	0.45	0.65
Entrepreneurial Desirability	-0.25	1.07	0.05	-4.96	0.00
Entrepreneurial Feasibility	0.05	0.86	0.04	1.37	0.17
Entrepreneurial Intention	0.11	0.81	0.04	2.90	0.00
<i>Control group</i>					
Inspiration/Modeling	0.00	0.89	0.14	0.00	1.00
Entrepreneurial Desirability	-0.14	0.60	0.09	-1.50	0.14
Entrepreneurial Feasibility	-0.13	0.68	0.11	-1.16	0.25
Entrepreneurial Intention	0.19	0.72	0.11	1.64	0.11
<i>Treatment group</i>					
Inspiration/Modeling	0.03	1.12	0.05	0.47	0.64
Entrepreneurial Desirability	-0.26	1.11	0.05	-4.78	0.00
Entrepreneurial Feasibility	0.07	0.87	0.04	1.69	0.09
Entrepreneurial Intention	0.10	0.81	0.04	2.56	0.01

Remarks. \* indicates significance at the 10 % -level.

\*\* indicates significance at the 5 % -level. \*\*\* indicates significance at the 1 % -level.

## First results

Table 4 Paired samples test

	Mean	SD	SE	t	p-value
<i>Treatment and control group</i>					
Inspiration/Modeling	0.02	1.10	0.05	0.45	0.65
Entrepreneurial Desirability	-0.25	1.07	0.05	-4.96	0.00
Entrepreneurial Feasibility	0.05	0.86	0.04	1.37	0.17
Entrepreneurial Intention	0.11	0.81	0.04	2.90	0.00
<i>Control group</i>					
Inspiration/Modeling	0.00	0.89	0.14	0.00	1.00
Entrepreneurial Desirability	-0.14	0.60	0.09	-1.50	0.14
Entrepreneurial Feasibility	-0.13	0.68	0.11	-1.16	0.25
Entrepreneurial Intention	0.19	0.72	0.11	1.64	0.11
<i>Treatment group</i>					
Inspiration/Modeling	0.03	1.12	0.05	0.47	0.64
Entrepreneurial Desirability	-0.26	1.11	0.05	-4.78	0.00
Entrepreneurial Feasibility	0.07	0.87	0.04	1.69	0.09
Entrepreneurial Intention	0.10	0.81	0.04	2.56	0.01

Remarks. \* indicates significance at the 10 % -level.

\*\* indicates significance at the 5 % -level. \*\*\* indicates significance at the 1 % -level.

Table 6 Results of general linear modeling (GLM) repeated-measures analyses.

<i>Variable</i>	Type III sum of squares	df	Mean square	F	Significance (p)	Partial eta squared ( $\eta_p^2$ )
Inspiration/Modeling	.222	1	.222	.077	.782	.000
Entrepreneurial Desirability	12.172	1	12.172	2.822	.094	.006
Entrepreneurial Feasibility	8.796	1	8.796	3.393	.066	.007
Entrepreneurial Intention	2.333	1	2.333	.541	.462	.001
<i>Error</i>						
Inspiration/Modeling	1336.101	464	2.880			
Entrepreneurial Desirability	2001.340	464	4.313			
Entrepreneurial Feasibility	1202.979	464	2.593			
Entrepreneurial Intention	1999.944	464	4.310			

Remarks: N = 466. Video or case specified as within-subject independent variable.

**d) the implications of the findings for policy and practice**

- Entrepreneurial role models affect an individual's entrepreneurial feasibility and intention positively
- Web-based multimedia videos of entrepreneurial role models could enrich the curriculum in an effective manner to boost entrepreneurial inspiration, feasibility and intention



e) how or what future research on the topics could cover.



- Why do entrepreneurial role models show a higher impact on entrepreneurial feasibility than desirability?
- Are the findings equal across Europe?
- A bigger control group sample would underpin the effects.
- A long term investigation for more than five years would support the findings.

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**Thank you very much for your attention!**

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## **Entrepreneurship, knowledge spillovers and technology convergence: An empirical analysis**

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*Keywords: Network, Investment, Knowledge, Convergence, Internet of Things*

### **Abstract**

As the innovation-based economy has now occurred, the creation and diffusion of technological knowledge is acknowledged to contribute in inter- and intra-industrial innovation and also provide new sources of growth. Recently, venture firms have solely focused on such diffusion as a key factor of growth rather than the size or capital differing from the traditional growth factors. Based on this background, this paper aims to analyze the flow of knowledge among venture companies and the effect of such diffusion through the investment network. As investments take place when high growth potential and core competitiveness of a firm is confirmed, investment connections as a proxy for technological diffusion is adequate in the venture society. This paper tends to focus on the macro and micro effect of such connections.

The present study starts from collecting data on US based IoT ventures and the investments that were made between the investors and ventures. This study focuses on the IoT industry, due to its converging characteristics among diverse technologies. With such data, a two-mode network is created with intension to initially analyze the investment network. Through this stage, it is able to identify the topology of the network and also recognize information such as the relationship among ventures and also clusters and major nodes caused by such relationships. This initial analysis provides profound information about the network. In the following stage, we use keywords explaining the technology that startups possess and serially see if the technologies converge or combine together as time flows. With the knowledge flowing from a startup to another startup with investors as channels of such flow, we assume that later invested startups will have more knowledge stock and lead to more diverse convergence. After words, by using the O-I (Out-In) index, we are able to divide the nodes into groups that are mainly absorbing knowledge or sharing knowledge causing knowledge spillovers within the network.

Findings mainly show the following; with the investors as the intermediate node, the startup network shows a structure to be feasible for technology to flow. With few isolated nodes, startups are all connected among each other in a large component. Secondly, In the one-mode knowledge transfer network, the absorbing and spillover groups are accurately divided showing different characteristics. Two groups are differed by investment timing and the stage of technology. Finally, later invested startups show a more diverse combination of technology, showing that knowledge flows can lead to technology convergence.

This study suggests investment links as proxy measures for technological diffusion which is more accurate for future studies in the venture industry. Also this paper provides an advanced analysis model to find the implication of technological knowledge through networks, which can be used not only for IoT but various venture industries and also extended to a globalized and internationalized venture analysis.

## **1. Introduction**

With venture startups taking part as one of the most important factors of the modern economy, there no longer are argues on the influence of venture startups. Due to such values, the entrepreneurship environment is studied and examined as an effort to enhance entrepreneurship. Studies in search for key factors of the entrepreneurship environment have widely agreed upon knowledge to be a key feature out of the many components of entrepreneurship. Startups are often found to benefit from opportunities disposed by the creation of new knowledge (Shane, 2001) and also take advantage of the new opportunities and markets created by the merging of existing knowledge (Hacklin et al., 2004). In this perspective, perhaps the real challenge for startups could be knowing how to create new knowledge rather than becoming the first to produce something new by efficiently recognizing and combining relevant information together (DeBondt, 1997). Audretsch (1995) also emphasizes that with higher knowledge context, more entrepreneurial opportunities are created where entrepreneurs serve as a conduit for knowledge spillovers.

If knowledge and the transmission of knowledge is critical, how can knowledge be transmitted among startups? The importance of knowledge and knowledge transfer has been focused from the past defining knowledge as a factor to generate endogenous (Romer, 1990, Segerstrom et al., 1990) Studies on knowledge in the entrepreneur environment has also been conducted to extend the effect of knowledge flow. Acs et al. (2009) and Audretsch (1995), finding that knowledge produced by incumbent firms or research institutes that are not commercialized is an source for entrepreneurs, identify new knowledge as entrepreneurial opportunities. Also the studies define researchers in such incumbent fields and inventors as potential entrepreneurs and entrepreneurship by the usage of such knowledge as a conduit of knowledge spillovers (Acs et al., 2009, Audretsch and Lehmann, 2005). The knowledge spillover theory of entrepreneurship contributes greatly by finding the connection between the R&D investment and economic growth by knowledge spillovers via entrepreneurship and the practical role of startups. However, for a better examination within the entrepreneur environment, rather than focusing on the macro role of startups as knowledge spillovers, there is a need to reveal the inner channels of knowledge spillovers among the startups. As former studies have emphasized on the importance of knowledge for startups, no studies show an inner channel for startups to share knowledge and transfer technology.

In this paper we argue that the knowledge spillover within the startup network, will occur due to the role of investors in the entrepreneurship environment. Studies prove that investment through investors create a network between the investors and firms, and this network not only passes on financial support but also technology, information and social capital (Brown and Butler, 1995). We believe investments is the channel of knowledge diffusion and eventually can be utilized for technological convergence. In this context, new technology is formed as a result of knowledge spillovers via investment links in the startup ecosystem. As investors play a role as a mediator between several venture startups, knowledge and technology are passed on through the investors from one firm to another. This action could result from motivations to accelerate a firm with previously obtained technology or to maximize the profits using obtained technology due to new technological trends. Due to such phenomena, in this paper, we consider investment links as channels for technological knowledge to flow between venture startups. Based on such background, this paper includes (1) analyzing the investment network between the investors and startups, (2) transforming the two-mode (investor – startup) network in to a one-mode (startup – startup) network to analyze the flow of knowledge, (3) analyzing the structural topologies of the network and roles of major startups, (4) revealing the convergence of technology through investment links, and (5) providing strategic implications regarding the future direction of technology development. This paper targets the IoT venture industry as the IoT industry is literally a collaboration of the internet technology and another field creating new products and services in various fields. The adoption and diffusion of IoT technologies are taking place and is now applied not only in the organization level, but in various fields especially led by venture startups actively providing products and services. We assume that IoT is a sufficient field to see the convergence among technologies by investment links.

## **2. Literature review**

### **2.1 Venture capital financing and efficiency**

Studies have found the relationship between the venture startups and venture capitals to be tight, where the support of venture capitals effects venture startups in mostly positive ways. The endorsement of a venture capital is found to help venture startups to attract human capital (Hellmann and Puri, 2002), raise

better financial funding (Gompers and Lerner, 2004), foster innovation (Kortum and Lerner, 2000) and extends to strategic consulting (Hellmann and Puri, 2000).

Such supports from venture capitals are not framed only to a certain stage for venture startups but continue to further stages as entrepreneurs rely for information, advice and contacts (Johannisson et al., 1994). However, studies have found that the effect of such support is maximized and critical for venture startups and especially in the initial stages of the firm (Stuart et al., 1999). Early stage venture startups meet with various obstacles such as lack of financial support, technology absence and poor man human capital interfering innovation. Therefore, the investment through venture capital is found to be essential to the growth and success of entrepreneurial ventures.

Alike with the role that venture capitals perform in accelerating a venture startup, angel investors also play a significant role in incubating and accelerating venture startups. As their network is in diverse industries, they are able to play a role as a mediator to meet the needs of each venture startup (Ehrlich et al., 1994). Evidence is shown that angel group members work as mentors in their specific fields serving in financial performance, accounting, market positioning and R&D knowledge (Dutta and Folta, 2016). As there may be difference due to such characteristic of each investment type, the main purpose of both investments do not differ much to support and accelerate venture startups for the profit of both parties.

## **2.2 Venture capitals as intermediary of knowledge spillovers**

As investors and firms are connected through various relationships, the actors and relationships can easily be formed in to network of nodes and links. The key benefit of networks for entrepreneurship is the information and knowledge obtained within the network. Networks accompany advice and emotional support and relationships (Deeds et al., 1997, Shane and Cable, 2002) but mostly play part in the exchange of information and knowledge which is the most practical source of support for venture startups to fulfill business tasks. Other studies from the past show that entrepreneurial networks are used as a society to share ideas and knowledge for entrepreneurs for the growth of potential abilities (Birley, 1985, Smeltzer et al., 1991).

Within such network, venture capitals are structured as intermediaries as they play the role of connecting venture startups to different sources of need. Venture capital investors play a role of linking social capital and knowledge provided within such connections (Hoang and Antoncic, 2003). In the firm's perspective, ties to venture capitalists which can be extended to another connection such as experts can be a mean to accurate information (Freeman, 1999). Also, venture capitals act as information intermediaries, offering the appropriate resources and access to information to venture startups (Gans et al., 2002). Finally, with venture capitals offering know-how and information among venture startups leading to better alliance and innovation output (Brown and Butler, 1995), such roles work as conduits of knowledge also among industries as well. In this context, as information and technology are passed through investment links within the venture network through venture capitals and investors, investment links can operate as channels for knowledge spillover, eventually leading to the convergence of technology and knowledge.

## **2.3 Effect of knowledge spillover and technology convergence**

Knowledge spillover is the transfer of knowledge created within a firm to another firm. This in a broader case could be defined as knowledge transfer between industries (Gilbert et al., 2008). Knowledge spillover mostly occurs due to the need and as a byproduct of the knowledge generated by other firms within the same industry or also outside the industries (Feser, 2002, Audretsch, 1998). Through such knowledge spillovers, knowledge and technology are shared among firms as an exchange for more innovative activities, and also absorbed by particular firms as a strategic choice. With technological knowledge spillovers, presenting a new type of knowledge, firms are able to adapt new knowledge to their strategy or products with technological advancement (Audretsch and Keilbach, 2004) and find insights on services and features that will be noticed in the markets (Cohen and Levinthal, 1994). Due to such insights, entrepreneurs whom gain most from the opportunities created by new markets are necessarily found to be the prime beneficiary of knowledge spillovers (Audretsch and Keilbach, 2004). Entrepreneurs knowing how technology is flowing are able to adapt and emerge the technologies and continually improve innovative activities (Gilbert et al., 2008). With such knowledge spillover effect, technologies combined with the emerging trends are found to create greater success than others (Tegarden et al., 1999). Taking advantage of such spillover effects, entrepreneurs actively utilize knowledge spillovers and even act as conduits of knowledge flow among different firms and industries. Due to such, we suggest that investment

links will play a role for technological diffusion and lead to technology convergence for the benefit and advantages of new markets and opportunities for venture startups.

### **3. Data and methodology**

We use CrunchBase data, which is investment data accumulated from CrunchBase, an investment platform between venture startups and venture capitals along with individual angel investors. Among the whole data, we select the IoT ventures that was funded more than once by an investor. All firms are located based in the United States. IoT firms were defined if the venture firm held a keyword of “Internet of Things” or “IoT” in the firm categorization criteria. Consequently, our dataset consists of the 843 firms that were invested in 1998-2016 by 1,068 investors.

#### **3.1 Keyword analysis**

Since startups share or succeed knowledge and technological know-how through venture capitals, we assume the keywords are shared among the startups with the same venture capital. For the keyword analysis, we adopt co-occurrence-based analysis, which is used in text-mining analysis widely (Kim et al., 2015, Netzer et al., 2012, Pang and Lee, 2008). In terms of a text perspective, it is likely that there are some overlapped words between the texts if the subjects have some relationship each other. In the similar logic, most of the startups in the dataset choose the category keywords themselves. Thus there can be same category keywords if the firms have similar characteristics or are in the similar market. Then, it can be confirmed that new emergent keywords of the later startups are generated in comparison with the keywords of the former startups with the same venture capital. Moreover, purpose of our study is to demonstrate technological convergence, not just emergence of the keywords. Thus, we compare combinations of two keywords between the former and the later startups, that is, a pairwise analysis based on co-occurrence analysis. If a combination of two keywords exists in the later startups, but not in the former startups, then the combination states new “emergent.” For instance, two former startups have keywords as (A, B, C) and (C, D, E), respectively. Then their possible combinations are A-B, A-C and B-C in the first startup and C-D, C-E and D-E in the second startup. There are two later startups, which have (A, D, F), and (B, D, E). Thus there exist A-D, A-F and D-F, and B-D, B-E and D-E combinations, respectively. The keyword “F” is new emergent, thus A-F and D-F are new emergent combinations. A-D combination, even if both “A” and “D” are existed in the former startups, is new emergent since the combination does not exist in the former startups. B-D and B-E are same as the A-D case, and D-E is only existed keywords combination. Finally, we want to calculate the proportion of the new combinations, that is,  $5/6$  (83.3%) in this case. For ensuring the sufficient sample size, we choose the period from the first half of 2012 to the first half of 2016 and rolling approach. We set the rolling window size as one year and the interval as a half year. Venture capitals which have many links with the startups are chosen as the sample, and the results of top 2, top 5, top 11 and top 28 venture capitals are presented.

#### **3.2 Network analysis**

First, in order to find the patterns and the clusters of the IoT venture ecosystem, we construct the networks of the IoT ventures and the venture capitals graphically. The networks are formed in two different views; one is a two-mode network analysis among the startups and the venture capitals and the other is one-mode network analysis among the startup firms only. Fundamentally, the investment of venture capitals is indicated by the linkage in a network. First, in the two-mode network, the links are generated between a venture capital and a startup which is invested by the venture capital, but not homogeneously. In turn, the one-mode network of the startups is made by the one-mode projection of the two-mode network. The links of the networks have direction between two ventures, from the venture invested earlier to the venture invested later. For example, if a venture capital has invested ventures A, B, C, and D sequentially, then venture capital to A, venture capital to B, venture capital to C, and venture capital to D links are generated for the two-mode network and A to B, B to C, and C to D links are made for the one-mode network. For the robustness, we make the networks through two other ways. One network is that the startups are in on a line serially as introduced in advance. The other network is in the shape of a kind of a “clique,” which means that all nodes are connected to each other. Actually, the startup A is a precedent firm of the startup C and D as well as the startup B. Thus in the second network, the links are A to B, A to C, A to D, B to C, B to D, and C to D among the startups. We analyze the characteristics and the properties of these networks.

Next, we determine the important firms in the one-mode networks as the connectivity and the role of the effective knowledge flow. As following the criteria of the generated links, venture startups invested earlier usually have more indegree centrality and venture startups invested later have more outdegree centrality. In order to normalize the value of the degree centrality, we select the Outflow-Inflow (O-I) index for categorizing the firms in the sample (Choe et al., 2016). The O-I index facilitates to categorize firms which are classified by early and late invested group by using the difference between the outdegree and the indegree centrality. The precise formula is as follows:

$$O - I \text{ index} = \frac{\text{Outdegree centrality} - \text{Indegree centrality}}{\text{Outdegree centrality} + \text{Indegree centrality}}$$

The range of the O-I index is from -1 to 1. A startup plays a “spillover” role if the value is close to 1, on the opposite, it performs an “absorbing” role if the value is close to -1. However, as Choe et al. (2016) mentioned, the O-I index is not sufficient for the embodying representative startups in the whole network since the degree centrality considers only the neighborhoods of the individual startups. The other network property should reflect the characteristics of the whole network, thus, we use the betweenness centrality, which is a measure as the degree which is to play a role like a bridge or broker in a network. That is, a startup which has high betweenness centrality can transmit or absorb its technological knowledge flow through their homogenous investment. The formula is as follows:

$$\text{Betweenness centrality} = \frac{\sum_{j \neq k} g_{jk}(i) / g_{jk}}{(n-2)(n-1)/2}$$

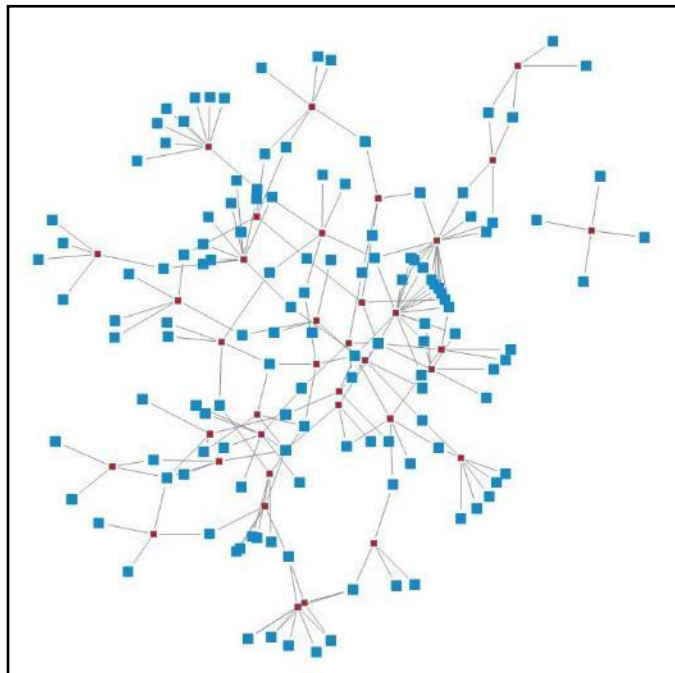
where  $n$  is the number of the startups in the network and  $g_{jk}(i)$  is the number of geodesics via startup  $i$  between among other startups  $j$  and  $k$ . We categorize in terms of (1) the startups with high O-I index and high betweenness centrality, (2) with low O-I index and high betweenness centrality, (3) with high O-I index and low betweenness centrality, and (4) with low O-I index and low betweenness centrality. Specifically, we are interest in the group (1) and (2) which can do the important roles in the network.

## 4. Results

### 4.1 Network analysis on the startup-investor network

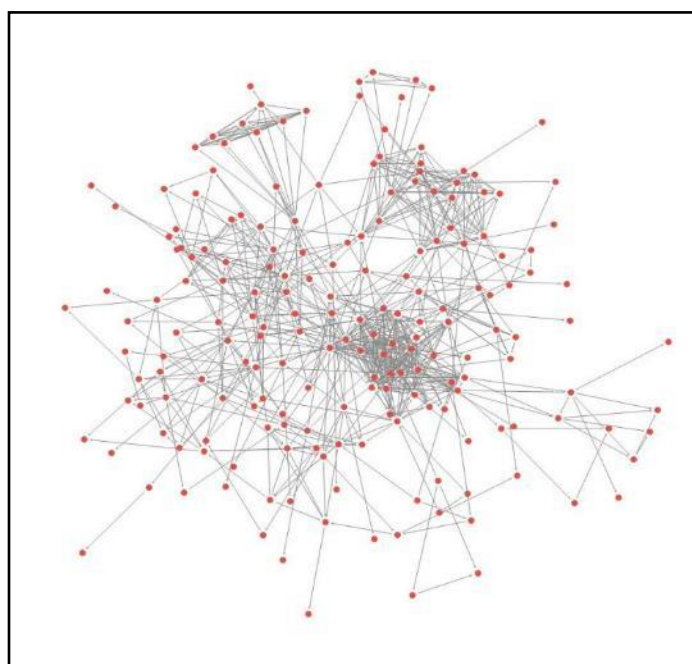
The whole network containing all startups and investors is consisted of one main component and several satellite networks. The main component contains over 90% all of the nodes and links and is connected mostly by major venture capitals. As venture capitals show more connections than individual investors, and also show that they share their information forming a syndicate for joint investment and also better valuation (Brander et al., 2002). The isolated nodes are mostly formed by individual angel investors, as they show a different characteristic in investing. Angel investors are mostly individuals investing in the initial stage of startups. As most angels have prior experience as a member of startups, they tend to be more understanding and sharing in a more informal hand approach (Van Osnabrugge, 2000). As for such reasons, the topology is formed in a structure where an angel investor invests in few startups showing limited links due to the initial stage or personal relationships. Fig. 1 shows the center of the two-mode network among the venture capitals and the Investor-backed startups with a cutoff. The red and circle nodes are the venture capitals and the blue and square nodes represent the startups.<sup>27</sup> For the sake of avoiding complications, we set the cutoff value as four links of the venture capitals. According to Fig. 1, major investors and startups are connected among each other through the investors even if a part of the network is selected. Even after the single or low value links are deleted, the component still remains as a whole network with only one isolated network. If we reflect this network to the real world, as startup companies are in a way competitors, a source of connection is not feasible to apply. However, with the investors playing a role as an intermediate node, via such investors, the startup network now shows an attractive topology to share or perhaps transmit social capital or information. There have been many cases where startups have collaborated with each other integrating their technologies together when the companies have the same goals or target market. As most markets are now a saturated market, collaboration via such investors could be a better source of success. That is, with the investors as a connecting bridge, a feasible structure in sharing knowledge and information among the seemingly unrelated firms is found.

<sup>27</sup> It is the subnetwork of the sample, but not the whole network.



<Fig. 1> The two-mode network of the venture capitals and the startups

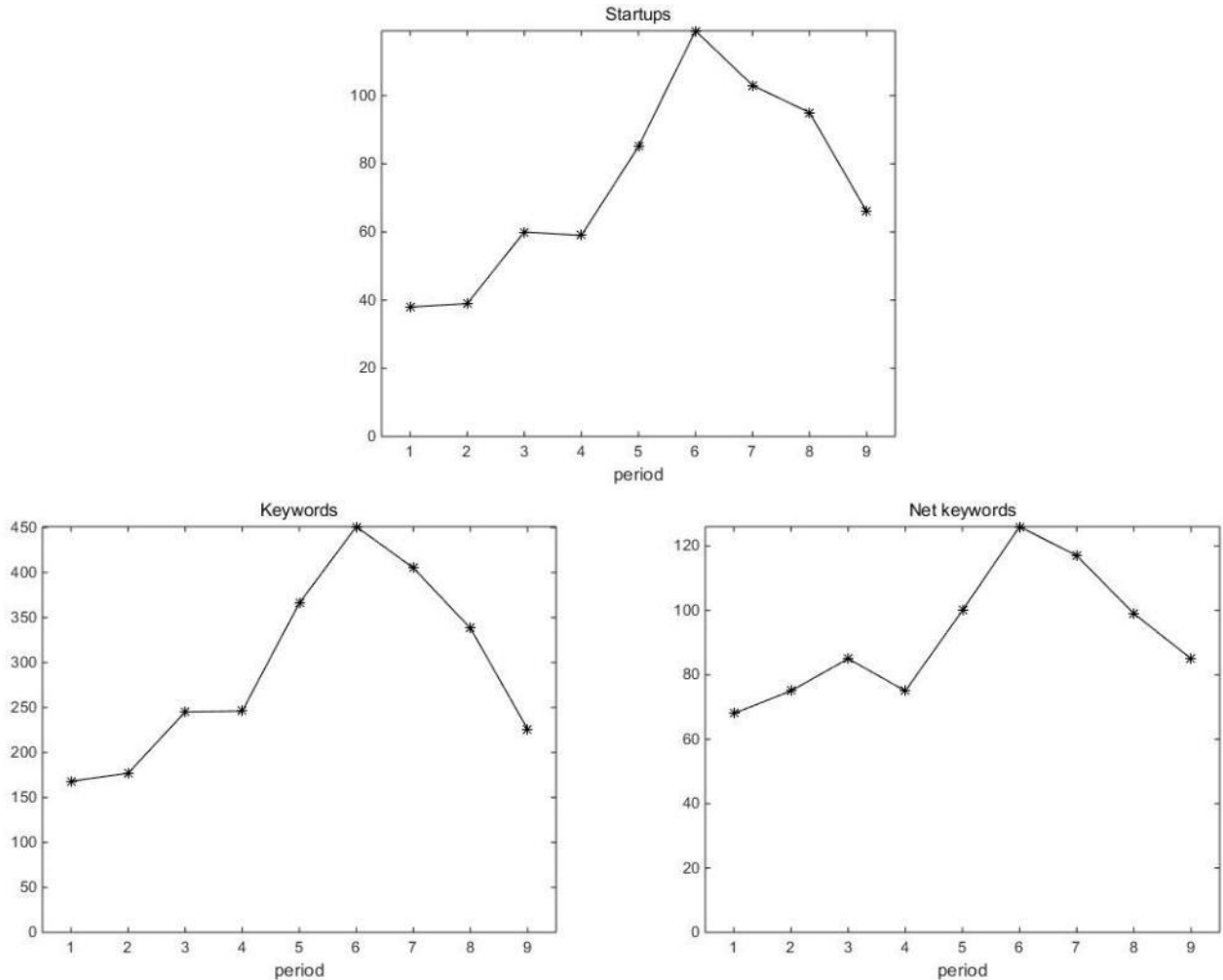
Fig. 2 displays the one-mode network among the startups serially. The radius of the nodes is proportional to the degree centrality of them. The one-mode network is a directed network showing where knowledge has started and where knowledge has flowed. As due to the serial circumstances, it is able to assume that startups that were invested in an earlier period will be transferring knowledge to the later invested nodes. Similar to the structure of Fig. 1, many startups are connected to each other, thus providing an adequate structure for knowledge to start and flow from one node to another. Most of the startups are a spillover or absorbing startup of the entrepreneurial knowledge. In addition, they generate their own clusters homogeneously and share allied knowledge. Startups invested by the same investors and the investors also investing in the same startups due for a reason seem to neighbor each other more closely than compared to other startups that have been invested by other investors. As some particular venture capitals play a role as a bridge, startups related to the same venture capital seem to however form a cluster among the startups. This could further on be enhanced and interpreted as the syndication among startups due to the same investment source.



<Fig. 2> The one-mode projected network of the startups (cutoff value 4 of the venture capitals)

#### 4.2 Keyword analysis

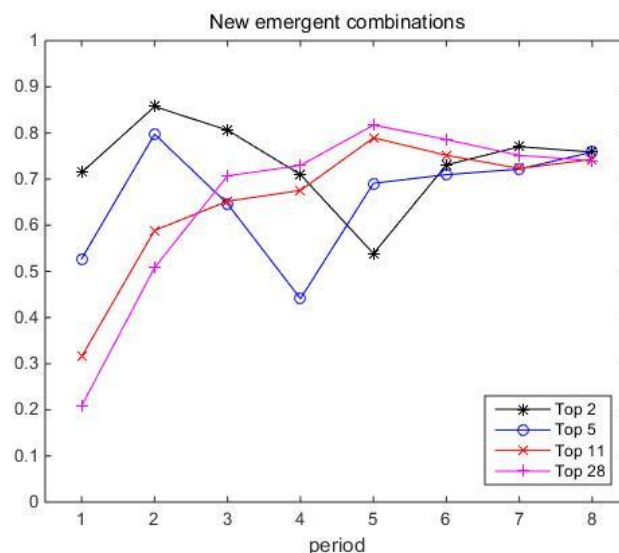
Fig. 3 shows the number of startups, their keywords, and net keywords which mean exclusion of duplicated keywords. The entrepreneurial market in IoT has been emerging in periods 1-6, that is, from the first half of 2012 to the second half of 2014. Startups, keywords, and net keywords increase explosively in this period. After the period, entrepreneurial environment of IoT seems to mature, thus, the results concentrate on the comparison between two periods.



<Fig. 3> (a) The number of firms, (b) keywords, and (c) net keywords

Fig. 4 displays the proportion of new emergent combinations of keywords of the later startups. In the emerging period, top 2 and top 5 venture capitals (the sum of top 2 venture capitals and the next three venture capitals) make more new keyword combinations than the venture capitals of extended range, top 11 and top 28. However, the ratios converge to the similar point for the all samples. It is plausible that the first-tier venture capitals, which play a leading role in startup investment, make more technological convergence specifically in emerging period. Then importance of the secondary venture capitals also increases over time. Finally, all of the venture capitals can make somewhat technological convergence of startups and their industry through the investment in mature period.



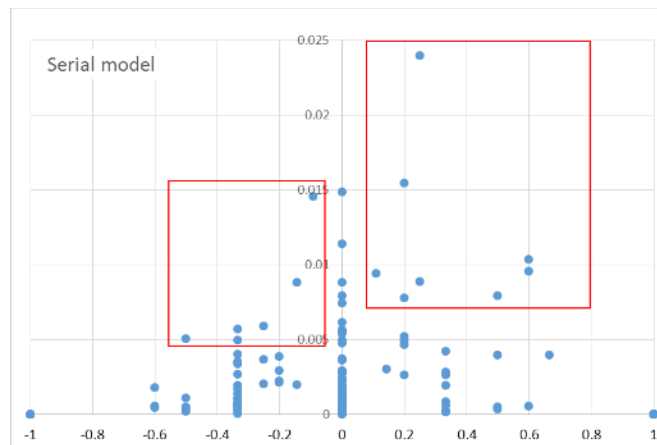


<Fig. 4> The proportions of new emergent combinations

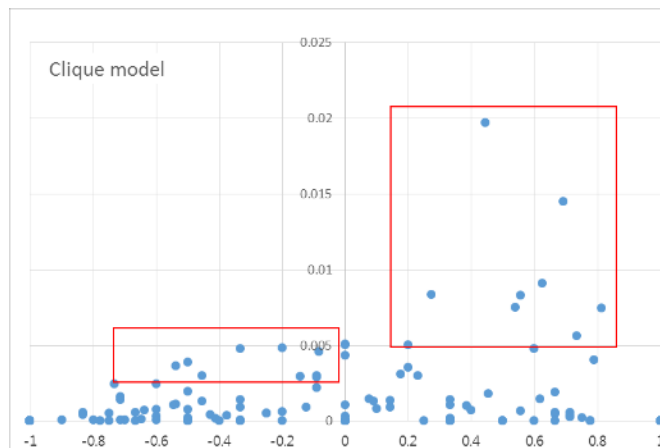
### 4.3 O-I index analysis

Fig. 5 and 6 each show the O-I index and betweenness centrality graph of the serial and the clique network model. We define the “spillover group” as startups which have a positive O-I index (more outdegree) with high betweenness centrality, and the “absorbing group” which has a negative O-I index (more indegree) with high betweenness centrality, respectively. Through the O-I index, it becomes more clear that the knowledge flow has a direction. Nodes with a higher outdegree means that they are passing on their knowledge, therefore, defined as a spillover group and vice versa, nodes with a higher indegree means they are receiving more links from other compared to other nodes which can be interpreted as absorbing knowledge. Betweenness centrality is a parameter to measure the activeness of the nodes. Even if a node holds a high in or out degree, if the node is not active within the network, the meaning for such analysis could fade away. Nodes with a low or none Betweenness centrality were not included in a group. We analyze the worthwhile startups which belong to both groups at least once in Table 1 and 2. In general, according to Table 1 and 2, it is likely that the spillover firms usually have the source of the technological knowledge and are the pioneers of their parts. Oppositely, most of the absorbing firms are consumer-friendly business and try to employ the applied IoT technologies. There are dissimilar category keywords between the two groups. The main keywords of the spillover startups are appeared as Wireless, Home Automation, Internet, Finance, and Big Data, which have a wide coverage and is generally defined as a fundamental technology. The absorbing startups hold key words such as Consumer Electronics, Health Care, and Home Automation, which are familiar in the daily life of the consumers and is a result of converge with various technologies.<sup>28</sup> Moreover, the keywords of the absorbing firms in particular are Art, Android, iOS, Parenting, Apps, and Developer Tools, while the spillover firms have Manufacturing, Semiconductor, Telecommunications, and Industrial. Those trends can be interpreted as that the knowledge is started with the sourced technology and the large field, specifically in IoT, in turn, flows to the sub-discipline and the converged technologies to combine with other knowledge through the connected network flows. By contrast, the entrepreneurs of the spillover startups found their own startups regardless of the regions or the states, whereas the absorbing startups are concentrated in California, especially the bay area. Spillover startups develop their idiosyncratic ideas, however, the absorbing startups share their technological ideas and knowledge with each other to exploit the resources of the venture capitals, specifically in the same region.

<sup>28</sup> The general words are eliminated, such as Internet of Things, Hardware, Software, and Mobile.



<Fig. 5> O-I index and betweenness centrality of the serial network model



<Fig. 6> O-I index and betweenness centrality of the clique network model

Spillover	Region	Size	Serial	Clique	Categories
Filament	Reno, NV	11-50	O	O	Bitcoin, Hardware, Software, Internet of Things, Industrial
Keen Home	New York, NY	11-50	O	O	Home Automation, Wireless, Hardware, Software, Internet of Things
uBeam	Santa Monica, CA	11-50	O	O	Consumer Electronics, Wireless, Hardware, Internet of Things
Placemeter	New City, NY	11-50	O	O	Local, Analytics, Finance, Big Data, Mobile, Internet of Things
Helium	San Francisco, CA	11-50	O		Internet, Wireless, Telecommunications
Ayla Networks	Sunnyvale, CA	51-100	O	O	Software, Manufacturing, Internet of Things
Ambiq Micro	Austin, TX	11-50	O	O	Wearables, Semiconductor, Internet of Things
Dash	New York, NY	1-10	O	O	Finance, Hardware, Software, Big Data, FinTech, Mobile, Internet of Things
Revolv	Boulder, CO	11-50		O	Home Automation, Software, Internet of Things
Buddy	Seattle, WA	1-10		O	Internet, Cloud Data Services, Enterprise Software, Mobile, Internet of Things

<Table 1> Description of the “spillover” group

Absorbing	Region	Size	Serial	Clique	Categories
-----------	--------	------	--------	--------	------------

Notion	Denver, CO	11-50	O	O	Home Automation, Wireless, Internet of Things
LaunchKey	Las Vegas, NV	11-50	O		Identity Management, Cyber Security, Security, Mobile, Internet of Things
Eight	New York, NY	1-10	O	O	Health Care, Consumer Electronics, Innovation Management
Cuseum	Boston, MA	1-10	O		Social Media, Art, Mobile, Internet of Things
21 Inc	San Francisco, CA	1-10	O		Bitcoin, Hardware, Big Data, Internet of Things
Butterfleye Inc	San Francisco, CA	1-10	O		Home Automation, Consumer Electronics, Video Streaming, Hardware, Software, Internet of Things
Next Thing Co	Oakland, CA	11-50		O	Consumer Electronics, Internet of Things
TrackR	Santa Barbara, CA	11-50		O	Android, Developer Tools, iOS, Insurance, Mobile, Internet of Things
Moxxly	San Francisco, CA	1-10		O	Health Care, Product Design, Hardware, Software, Internet of Things
Sproutling	San Francisco, CA	11-50		O	Wearables, Parenting, Hardware, Software, Internet of Things
Whistle	San Francisco, CA	51-100		O	Apps, Software, Electronics, Mobile, Internet of Things
Petcube	San Francisco, CA	11-50		O	Robotics, Consumer Electronics, Hardware, Software, Mobile, Internet of Things
Breathometer	Burlingame, CA	11-50		O	Health Care, Quantified Self, Consumer Electronics, Hardware, Software, Mobile, Internet of Things

<Table 2> Description of the “absorbing” group

## 5. Discussion

Our study provides valid confirmation that investors are the key source of knowledge spillover within the startup eco system. As the results mentioned above, it reveals that investors work as intervening nodes for startups to be connected among each other within the network. With the following results of such connections, it regards the importance of the role of investors for knowledge flows. However, our results to challenge the studies defining the traditional role of venture capitals such as the selector, monitoring role and the money provider (Dutta and Folta, 2016). While we did explain the effect of the network topology with the investors included was an adequate topology for knowledge to spread, and also the knowledge transmitted through a co-occurrence analysis, technological convergence through keywords may not be entirely accurate to explain the flow of knowledge from one startup to another. More qualitative evidence or perhaps measures such as the usage of patents or copyrights could be a more accurate measure for such research. However, due to the early limitations and characteristics of startups, assets as such could not be a possession of startups. Despite such limitations, our research argues that the technology convergence within the startup society is highly influenced by the role of the investors adding a new key feature and role for investors. Hence, the role of investors could exceed the traditional findings and enlarges to a different role of transmitting knowledge or other sources to different firms.

One suggestion we provided to explain why investors tend to pass on such knowledge was that the returns of the investors due to the collaboration of such startups. Eventually, by supporting the success of startups, investors are able to gain a great portion of financial success, participate as a member of the board and other enlarge their position within the startup society. Investors under such compensation are required to support the success not only as a money supplier but also in all perspectives for the success of the firm. As investors have multiple investing links, the stock of knowledge will increase due to experience from prior investments and thus may be used to accelerate technology development through passing on such knowledge. Startups may benefit greatly from knowledge created by other startups and

perhaps other research institutes or incumbent firms, connected by the social capital of investors. Interestingly, our analysis confirms that the investors possess an important position within the network as bridge nodes or in words connecting nodes. Technological knowledge spillovers through such investors, therefore, may be the key channel due to the compensation of both parties and also the unique topology that investors hold in the network. It may be that firms are able to innovate more because they have internal and external technology advice and support. Clearly, there are other concerns to be discussed in this study. The measure of technology convergence in which was represented by the alignment of keywords has its pros and cons. As the startup company classifies the technology set that they are using, the keywords could be the most practical explanation of the startup. Also as knowledge itself is a vague concept of measurement, especially when firms such as startups lack intelligence properties as patents and copyrights, keywords used to classify technology could be an adjustable measure. However, as the keywords are arbitrary, there are concerns on the accuracy of such measures. To follow, although our results confirm that technology is converging in a serial time order, it would be remiss to not acknowledge the results are limited to the IoT industry. The reason for selection of such industry is mentioned above, but however the characteristics of startups and investors could differ by each industry so an enlargement of samples can be needed. Supplemented information on such links such as the investment amount or rounds of investments might also be able to reveal different attributes of the network. With further effort, this research can be extended to different industries and perhaps offer more accurate measures.

## 6. Conclusion

This research shows the flow of knowledge through venture capital investment within the IoT venture industry. Through this study we are able to obtain an overview of the related networks and the flow of knowledge resulting to technological convergence. The main findings show that (1) the venture industry is intensively connected among the network through venture capitals, (2) the network is constructed with a major component, due to the relationship of the same investing venture capitals, (3) knowledge spillovers lead to technological convergence as new technologies are created due to the spillover effects among firms, and (4) startups with high betweenness centrality are located in the center of the network, which can be characterized as technology spillover firms. Our results add up to several studies defining the role of investors in the entrepreneurial environment: investors play a great role of transmitting knowledge which leads to the convergence of technology and perhaps a new alignment of technologies. Differing from the previous studies, by suggesting a new channel for knowledge connections among the network will be able to provide a better understanding on how knowledge and information is passed on and why it is passed on among the network. We hope this research inspires other researchers to join us in further studies to reveal the motivations and actual knowledge spillovers with more accurate methods.

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## Entrepreneurship, knowledge spillovers and technology convergence:

An empirical analysis

A study on Venture Networks

Research Motivation

Research Outline

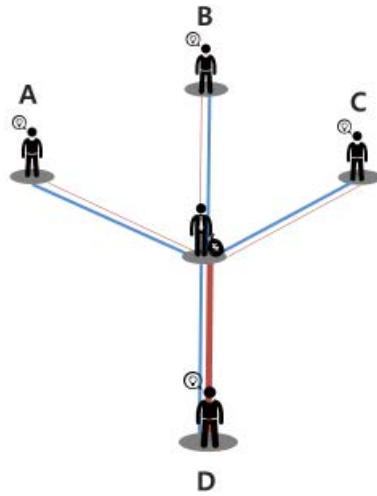
Research Method

Expected Outcomes



✓ Does **Investment** bring

**Technology Convergence** in the **Startup** industry ?



**WHO ?**

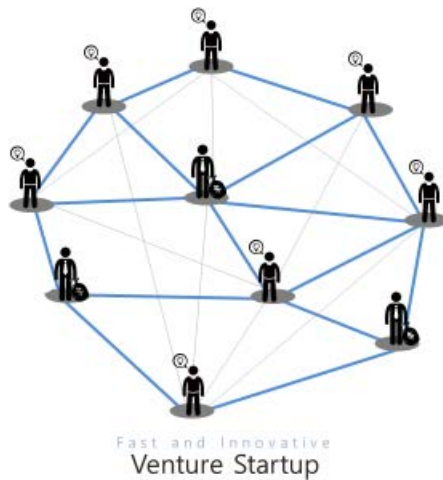
- Venture Startups
- Venture Capitals & Angel Investors

**HOW ?**

- Through investment among startups know-how and technology will be transferred

**WHY ?**

- Startups need to converge knowledge
- Investment aims for profit maximization



**WHO ?**

- Venture Startups
- Venture Capitals & Angel Investors

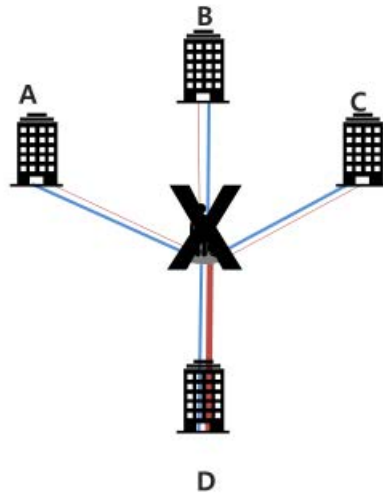
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**WHO ?**

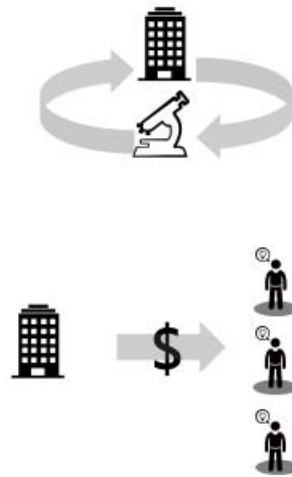
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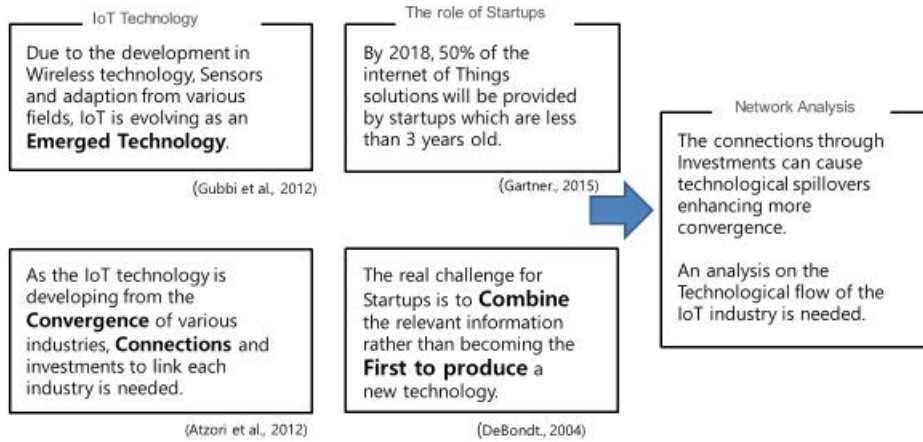
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**HOW ?**

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#1. IoT Network Analysis

**Revealing the structure of the IoT Startup network**

- Analysis of the the topology of the Investor-Startup network in the IoT industry
- Analysis of major nodes (Key investors and Major investees) and clusters



#2. IoT Technology Flow Analysis

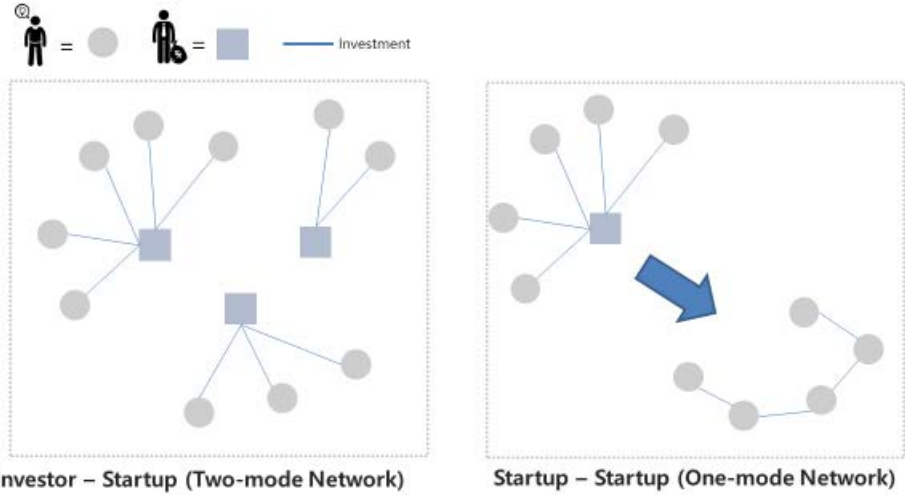
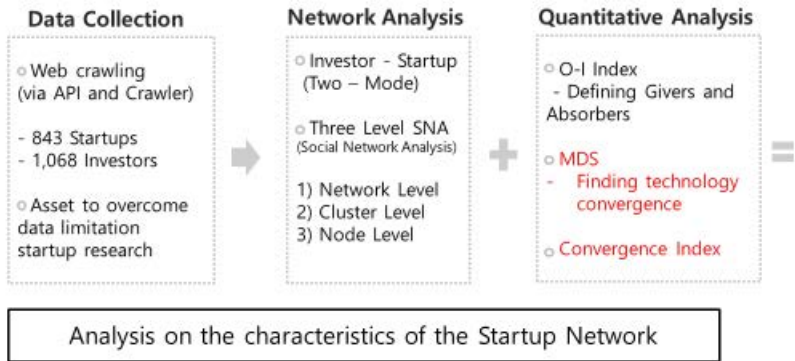
**Revealing the knowledge flow in the IoT industry**

- Analysis via OI index: Startups divided to 'Giving' or 'Absorbing' category (Technology diffusion structure within the IoT industry.)

**Revealing the types and effect of technological flow in the IoT industry**

- Analysis on former investments of investors: Investments as links of technology diffusion from various fields (Reveal technology inflowed in the IoT industry / The role of investments as links for knowledge diffusion and convergence)





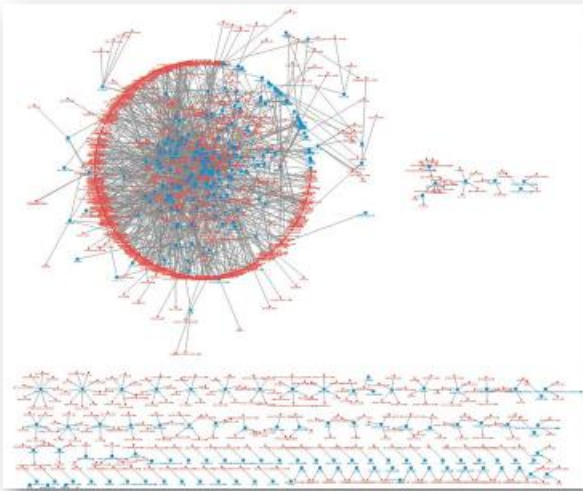


Fig. 1 The two-mode network of the VCs and the startups

**Investor – Startup  
(Two Mode Network)**

- One major network and several satellite networks
- The main component is widely connects all startups and investors
- Major investor nodes are large companies and VCs (Samsung, Qualcomm, MS, GE, Cisco, Y, 500 etc.)
- Major startup nodes (Filament, U Beam, August, Notion, Etc.)

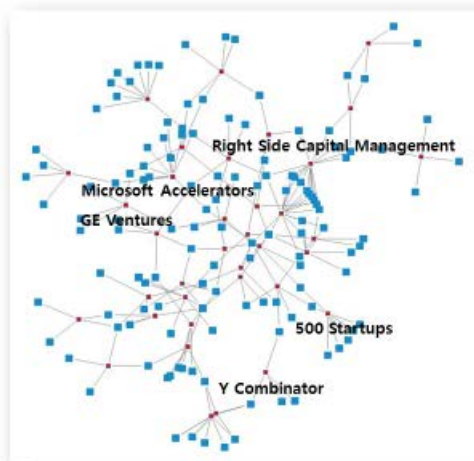


Fig. 2 The two-mode network of the VCs and the startups  
(Cutoff value 4 of the VCs)

**Investor – Startup  
(Two Mode Network)**

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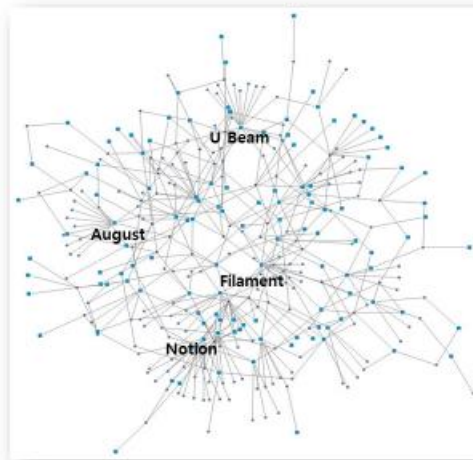


Fig. 3 The two-mode network of the VCs and the startups  
(Middle Main Component)

### Investor – Startup (Two Mode Network)

- One major network and several satellite networks
- The main component is widely connects all startups and investors
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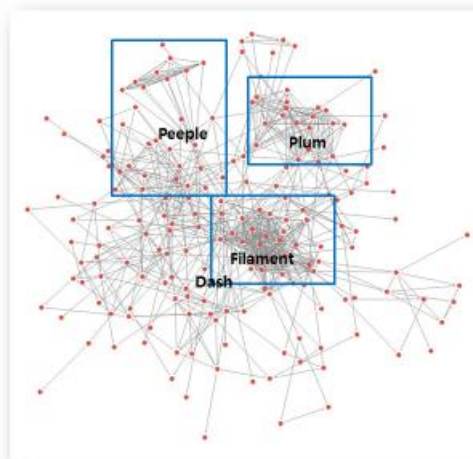


Fig. 4 The one-mode projected network of the startups  
(Directed Network)

### Startup – Startup (One Mode Network)

- One large component is formed connecting all startups
- Nodes are clustered due to there characteristic of investment (Blue Box)
- Major centrality nodes (Filament, Revolv, Buddy, Ayla Networks, Dash)
- Major betweenness nodes (Whistle, Petcube, Breathometer)

#1. Outflow-Inflow (O-I) index and betweenness centrality

- The O-I index facilitates to categorize firms which are classified by early and late invested group

$$O - I \text{ index} = \frac{\text{Outdegree centrality} - \text{Indegree centrality}}{\text{Outdegree centrality} + \text{Indegree centrality}}$$

- The betweenness centrality is a measure as the degree which is to play a role like a bridge or broker in a network

$$\text{Betweenness centrality} = \frac{\sum_{j \neq k} g_{jk}(i) / g_{jk}}{(n-2)(n-1)/2} \text{ where } g_{jk} \text{ is the number of geodesics}$$

(Choe et al 2016)

#2. Construction of the network

The network is constructed as two criteria; clique and serial  
e.g. A venture capital has invested firm A, B, C, D, and E sequentially

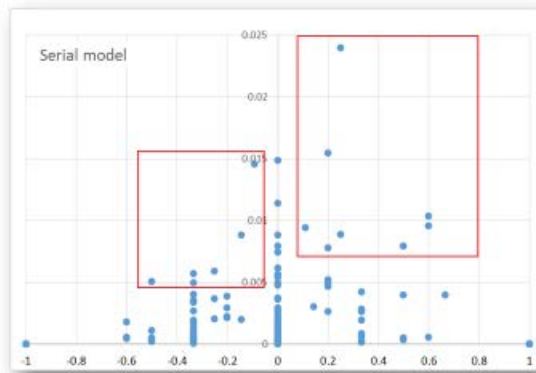
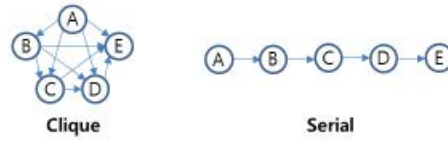


Fig. 5 O-I index and betweenness centrality of the serial network model

Out – In Index Analysis (Technology Out – In)

- Nodes are discretely divided in to the Technology 'Giver Group' and 'Absorbing Group'.
- Major startups act as Givers are mostly fundamental technology. (Filament, Keen Home, uBeam, Placemeter, Helium)
- Major Startups act as Absorbers are mostly New technology. (Notion, LaunchKey, Eight, Cuseum, 21 Inc, TrackR)

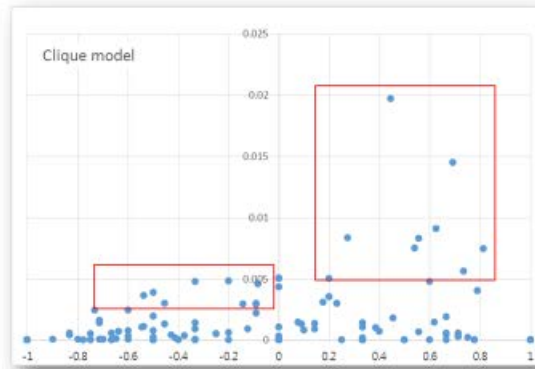


Fig. 6 O-I index and betweenness centrality of the clique network model

**Out – In Index Analysis (Technology Out – In)**

- Nodes are discretely divided in to the Technology 'Giver Group' and 'Absorbing Group'.
- Major startups act as Givers are mostly fundamental technology. (Filament, Keen Home, uBeam, Placemeter, Helium)
- Major Startups act as Absorbers are mostly New technology. (Notion, LaunchKey, Eight, Cuseum, 21 Inc, TrackR)

Spillover	Region	Size	Serial	Clique	Categories
Filament	Reno, NV	11-50	○	○	Bitcoin, Hardware, Software, Internet of Things, Industrial
Keen Home	New York, NY	11-50	○	○	Home Automation, Wireless, Hardware, Software, Internet of Things
uBeam	Santa Monica, CA	11-50	○	○	Consumer Electronics, Wireless, Hardware, Internet of Things
Placemeter	New City, NY	11-50	○	○	Local, Analytics, Finance, Big Data, Mobile, Internet of Things
Helium	San Francisco, CA	11-50	○		Internet, Wireless, Telecommunications
Ayla Networks	Sunnyvale, CA	51-100	○	○	Software, Manufacturing, Internet of Things
Ambiq Micro	Austin, TX	11-50	○	○	Wearables, Semiconductor, Internet of Things
Dash	New York, NY	1-10	○	○	Finance, Hardware, Software, Big Data, FinTech, Mobile, Internet of Things
Revolv	Boulder, CO	11-50		○	Home Automation, Software, Internet of Things
Buddy	Seattle, WA	1-10		○	Internet, Cloud Data Services, Enterprise Software, Mobile, Internet of Things

Table 1. Description of the "spillover" group



Absorbing	Region	Size	Serial	Clique	Categories
Notion	Denver, CO	11-50	○	○	Home Automation, Wireless, Internet of Things
LaunchKey	Las Vegas, NV	11-50	○		Identity Management, Cyber Security, Security, Mobile, Internet of Things
Eight	New York, NY	1-10	○	○	Health Care, Consumer Electronics, Innovation Management
Cuseum	Boston, MA	1-10	○		Social Media, Art, Mobile, Internet of Things
21 Inc	San Francisco, CA	1-10	○		Bitcoin, Hardware, Big Data, Internet of Things
Butterfleye Inc	San Francisco, CA	1-10	○		Home Automation, Consumer Electronics, Video Streaming, Hardware, Software, Internet of Things
Next Thing Co	Oakland, CA	11-50		○	Consumer Electronics, Internet of Things
TrackR	Santa Barbara, CA	11-50		○	Android, Developer Tools, IOS, Insurance, Mobile, Internet of Things
Moxody	San Francisco, CA	1-10		○	Health Care, Product Design, Hardware, Software, Internet of Things
Sproutling	San Francisco, CA	11-50		○	Wearables, Parenting, Hardware, Software, Internet of Things
Whistle	San Francisco, CA	51-100		○	Apps, Software, Electronics, Mobile, Internet of Things
Petcube	San Francisco, CA	11-50		○	Robotics, Consumer Electronics, Hardware, Software, Mobile, Internet of Things
Breathometer	Burlingame, CA	11-50		○	Health Care, Quantified Self, Consumer Electronics, Hardware, Software, Mobile, Internet of Things

Table 2. Description of the "Absorbing" group

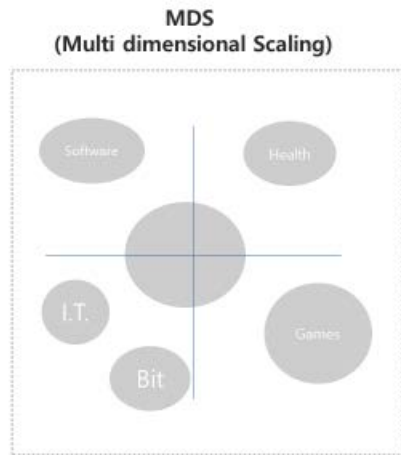


Fig. 5 MDS (Whole)

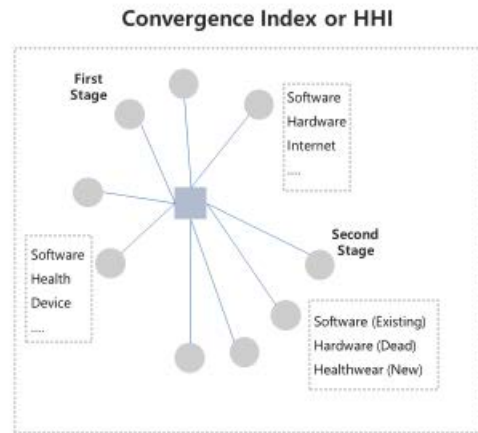
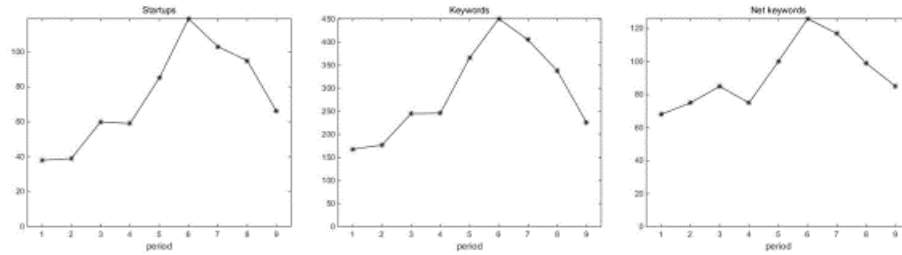
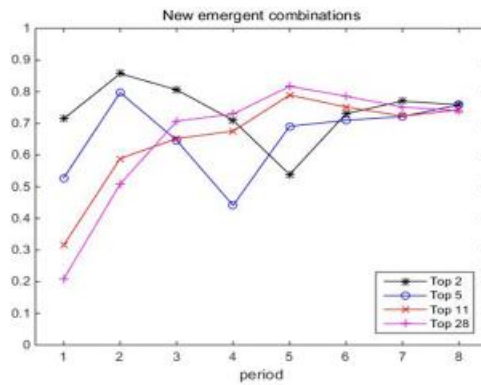


Fig. 6 Convergence Index Model





(a) The number of firms, (b) keywords, and (c) net keywords



The proportions of new emergent combinations

## #1. More Theory !!

**Basic studies on basic theories**

- Theories on knowledge spillover and technology diffusion is needed
- Studies on the effects of investment is also needed



## #2. Extension to different Industries

**Increasing nodes and industries**

- Extending research with more nodes and links, especially more industries such as biotech, green innovation and convergence based industries

## #3. Different Attributes

**Labeling nodes with different attributes**

- Nodes clustered by social effects or geographical effects (Same School, Social capital, Silicon Valley... etc.)

**Thank you very much for your undivided attention !**

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## **Use of IT by local SME-s for the creation of regional networks**

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**Keywords:** *Entrepreneurial Orientation, Use Of IT, Rural Economies, Supply Networks, Marketing Networks*

### **Abstract**

The entrepreneurial environment can be characterised by constant change of economic conditions and operation methods. Technological changes have strong impact not only at the high technology sector but also at the traditional industries like the agriculture and the fishing.

Small and medium size countryside firms have several deficiencies but at the same time several advantages too. Disadvantages are in general less educated workforce, long distance to cities and lack of consumer information.

Mainly, those firms located in rural and peripheral agricultural zone face substantial difficulties for getting market access. There is a geographic distance between farms and end consumers located in urban areas and therefore high transport cost. Another substantial difficulty is high cost of the middlemen, because substantial part of profit is left for intermediaries reducing available resources for investments.

At the same time the rural environments tends to be calmer, the land rent is low and certain production factors like water and space are easily available.

Previously (before internet age) intermediaries controlled substantial part of supply chain, profits and products range. The new era for several rural farmers arrived with wider adaptation of internet technologies. Internet help farmers to advertise their products, contact the potential customers and to organise supply roots. In simple terms, several intermediaries are cut off from the business. Several consumer markets are also getting more fragmented with myriad of niches. People searching bio-, vegan-, gluten-free-, un-allergic and other types of food are just small examples of such market fragmenting. Often there is combined internet and mouth-to-mouth communication between consumers themselves.

Current research paper will study the creation of links and networks by small and medium sized rural firms in Estonia. Researcher is based on 3 case studies made in SME-s of Estonia.

Especially attention will be given to the networks between producers and end consumer and networks that supply the farms with new product information. In paper we investigate use of information technology by farmers and their marketing methods.

Main theoretical part of article will try to combine traditional entrepreneurial network creation methods and theories related to the internet marketing and communication.

### **Introduction**

Entrepreneurial environment is constantly changing. There are demographic, economic, technological, political and other type of changes. To survive and to grow entrepreneurs have to identify and to react those changes. Constantly changing environment can be harming or benefiting SME-s.

Substantial group of entrepreneurs in every EU country are rural entrepreneurs. In general they tend to be in agro-food sector and other sectors related to nature and natural resources like tourism and fishing. Often they have combined economic activities and sometime family members have salaried jobs.

Most of the technological innovations start in urban areas (Rogers 1995). Later they disseminate to rural areas and other countries. The same could be said about technological innovations like broadband internet, e-commerce and social media. Rural SME-s need often to buy more expensive IT services and there could be infrastructure problems.

At the same time when deficiencies for doing business in countryside are visible there are some opposite trends. People in urban areas want recreational services, biologically clean products and other services related to environment.

Demand for ecologically cleaner products opens opportunities for rural SME-s and small farmers. Those opportunities could be further supported by IT technologies like social media for advertising and e-commerce (Broadbent, Papadopoulos(2013)).

## **Objectives**

In Soviet period predominant organizations in agriculture and rural locations were big processing plants in rural centers and number of big dairy farms supplying for those processing plants. Restitution and splitting of big collective farms in the beginning of 1990-s created big number of small farms. Often those small farms were quite uncompetitive and lacking both resources and know-how. However some collective farms were not split but reorganized.

New smaller farms faced quite a many challenges. Their problem was not only lack of resources but at the same period retail sector started to concentrate and food selling supermarkets got big negotiating power. Purchasing departments of supermarket chains have strong influence to the processing plants and thereafter raw material producers.

Bad trade and political relations between Russia and European Union in 2015 further exacerbated the situation of agricultural producers and processing enterprises. Several enterprises started to look for additional customers and to diversify their product portfolio.

Network creation is essential characteristic of starting SME-s (Johannisson 1988). By resource nature and functionality networks could be split into three categories: supplier networks, customer networks and community networks. Supply networks assure obtaining of raw materials and other product inputs. Those inputs are not always physical but can be for example production know-how. Customer networks are with end-consumers and different intermediaries between enterprise and end-consumers. Community networks are relations and actors who help to be a good citizen and member of local community. Sometimes there is overlap between those networks. .

Based on these points we have formulated next research questions:

- 1) How rural SME-s create their networks
- 2) How information and communication technologies help to create and maintain various networks

Constant discussion between raw material producers, processors and retail enterprises is sharing of profits. Raw material producers feel that they give too much value away to big supermarkets and to middlemen. Another deficiency for small rural producers is lack of consumer feedback. Goals for rural SME-s in building their networks are the creation of own brand and establishing own controlled supply networks. It is a step closer to the idealistic world when every producer speaks directly to every consumer (vision presented by Itella in seminar 2014 in Tallinn).

## **Theoretical background and literature review**

Entrepreneurial network formation has been subject of interest for researchers since 1980 and even earlier (Johannisson 1996). To establish their venture entrepreneurs need different resources and in many cases optimal way to get them is through personal networks (Vesper, 1990). Johannisson (1988) argues that the key to entrepreneurial success is the ability to develop, grow and maintain a personal network (s).

Social networks can give privileged access to resources to network members. Organizations as market economy actors are depending both on suppliers and customers (Jenssen 2001). This idea links entrepreneurial networks with resource dependency theory. To reduce uncertainty enterprises need to have control over important resources (Greve, Salaff 2003). Jenssen (2001) argues that social network has both a positive direct and indirect effect through resources on the success of organization start-ups.

Social networks have different parameters. We want to mention here social networks created before the enterprise creation and social ties created after. Another parameter characterizing the social networks is nature and quantity of social ties. Briefly saying there can be weak ties (Granovetter 1983) and strong ties (Krackhardt 1992). Both ties can impact start-up nature of start-up process (Jenssen 2001).

Branding decisions and strategies can be complicated for SME-s. Own brand allows to earn higher margins but at the same time branding itself requires considerable resources. Branding in SME-s is relatively new field of research (Inskip 2004). Often small and starting enterprises don't use conscious branding in traditional way like advertising and trademark registering. Rather they try to build-up their imago among local customers. Mouth to mouth communication and product trials play big role in this period. First loyal customers help to earn finances and raise reputation and serve as bridgehead for future expansion. Starting entrepreneurs seldom have big product portfolio and own family name and company address serve as brand names. Sometimes there is mentioning of village and county.

Collective quality labels (Bakkour, Fort, Mione 2015) could serve as brand names as well. Especially for agricultural products geographically protected names (*IGP* in french), geographically protected origin names (*AOC* in french) could serve as trademarks.

Building of marketing and supply channels is long term task for every enterprise. Communication with key customers is important management function but small enterprise who depend from smaller number of key customers it is crucial.

Local trade fairs could serve as a tool for successful branding (Kirchgeorg, Springer, Kästner 2009). Trade fairs require substantial time to prepare but when well managed is possible to make your product familiar to big number of customers.

Use and development of ICT skills and tools has been mentioned as an strategic factor for growth and development of rural firms (Deakins D., Mochrie R., Galloway L. 2004). Rural enterprises in general are lacking qualified personnel and capabilities to use ICT in the same way as urban firms. Digital divide is may-be too harsh term to use, but "lesser availability" and "smaller sophistication of services" could be used as a terms characterizing social phenomena.

Qualitative research shows that different methods of use of ICT tools by rural firms are more related to human factors than market driven factors (Deakins D., Mochrie R., Galloway L. 2004). To some extent new e-commerce and social media tools equalize the competition between bigger and smaller enterprises (European Commission 2016).

## **Methodology and findings**

In-depth interviews with SME-s in survey were made in summer and autumn in 2016. Author conducted in-depth surveys with 3 enterprises.

Enterprise A is family owned farm producing goat and cow cheese. Enterprise is located in South-East of Estonia quite far from bigger cities and main customers. Enterprise produces 7 different types of cheeses. Farm has around 25 milking goats. Cow milk is bought from nearby eco-farmer.

Owner of enterprise A was educated as medical doctor and previously worked 15 years as surgeon. After the working as a surgeon he worked several years internationally for pharmaceutical companies as sales representative. In his late 40-s he decided to become a goat farmer and bought farm in South-Estonia.

Main clients are local people and up-market restaurants in Tallinn (capital) and Tartu (second biggest city). From the location of producer to Tallinn is approximately 270 kilometres and to Tartu 90 kilometres.

Enterprise also has number of internet based customers mainly in Tallinn area and nearby. Enterprise has not advertised about itself but several journalists have visited it and made interviews with owners in national media.

Enterprise B is medium-sized agricultural producer with 17 years of experience and 180 cows and 180 additional cattle. One third of milk is processed into cheese and two thirds are sold to processing plants. Enterprise is approximately 30 kilometers from Tartu and 210 kilometers from Tallinn. Unprocessed milk is sold to big processing plant. Cheese is sold to various customers like: commercial centers, restaurants and internet clients.

Enterprise B actively promotes its brand traditional media (radio), trade fairs and internet media. Social media and internet plays substantial role in the promotion enterprise production. There is also small but growing share of internet customers. Enterprise has constantly increased the share of direct customers who buy without intermediaries. Enterprises marketing mix works in combination of different tools. Social media allows to invite people to trade fairs and people tasting the cheese in trade fairs can find additional information in enterprises website.

Family who established enterprise B was previously living in city but wish to establish own enterprise pulled them to countryside. Family members themselves didn't have initial agricultural education but have educated themselves much in different courses. Since 2015 they have professional cheese technologist with Dutch experience.

Enterprise C is small size firm producing soap and natural cosmetics. Enterprise was established 2010 by enthusiastic and young lady and her relatives. Enterprise is located 60 kilometres from Tallinn. Company owns it's own internet shop, selling outlet and uses services of several re-sellers. Enterprise has wholesale export agent in Finland who has organized contacts with several retailers. Company actively participates in local and international trade fairs and events. Enterprise uses the owners first name as a brand and it is recognized by thousands of customers.

Traditional marketing channels like trade fairs and novel channels like internet shop work in combination. People who see the products in internet site or invitations to the events could visit fair or the shop. On the vice versa people who see the trade fair booth of the company in trade fairs become often users of internet shop.

## **Conclusions and discussions**

The study contributes to the field of entrepreneurial network creation and global digital landscape.

We observed three enterprises who have production in rural location and major customers in cities. All enterprises produced consumer goods and had in general up-market products. Network creation by all enterprises was done in the process of everyday activities.

When general demographic trends is towards urbanization and migration from inner cities to metropolitan areas, entrepreneurs in our cases where urban professionals who took opposite direction. They moved from city to countryside. In two cases they not only changed the living place but did choose completely different profession. In general entrepreneurs and their family members were well educated, but not on the field of their enterprise main activity. Whatever is legal form of enterprise in all three cases there was very active family involvement. Like in pre-industrial farms everyone had its task. In some cases children did social media tasks like posting new product photos and sending invitations to visit enterprise stands in trade fair.

Use of information technology and different communication tools were important for all the enterprises. Share of internet customers was for all enterprises between 5-10% but it had growing trend. Quite often there was mixed behaviour from customers who sometimes visited enterprises physical location and sometimes bought the items via electronic channel. In some cases there were customers from neighbouring countries who ordered the products through mail services. Some clients just appeared by internet search and some tourists found the producers via Google maps related tourism websites.

From the theoretical point of view, it could be worthwhile to integrate entrepreneurial network research with the digital behaviour of different customer groups.



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## Reference 16 (Presentation)

**Rünno Lumiste**

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a) the main theoretical issues covered by each author and the conceptual framework for each paper;

The main theoretical issues

A1 How the rural enterprises create networks

A2 How rural enterprises market their products so that they can sell to final customers

A3 How IT helps the rural entrepreneurs to create networks and to sell their products?

b) the methods for their research/or concepts referred to for theoretical papers;

We made 3 interviews with relatively successful rural entrepreneurs. We studied literature about above mentioned topics.

c) the key findings;

Last years the supermarkets and big retailers have increased their influence to supply chain.

Small rural entrepreneurs don't want to give their profit for processors and retailers.

E-commerce offers opportunities to sell direct customers (without middleman).

Social media and direct contact with customers becomes more and more important for small rural firms.

d) the implications of the findings for policy and practice; and

Even small rural firms to expand geographically and to sell distant customers.

Educating and advisory services (about e-commerce) supported by public sector can help rural SME-s

Support for locality branding can help rural entrepreneurs

e) how or what future research on the topics could cover.

Rural networks, efficiency of e-commerce channels, local brands

## **The New Trend of Chinese Venture: A Case Study of DJI the Top Maker of Drone in the World**

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Keywords: *DJI, Student Venture, Chinese Enterprise, Drone, Innovation*

### **Abstract**

In recent years, the number of news articles on drones (a small unmanned aircraft) in newspapers has been increasing quickly. We might not have a positive image of the flying machine, however, because its bad news was sometimes reported on TV, such as an incident where a drone crashed on the White House grounds in the U.S., or a drone fell on the roof of the Prime Minister's Office in Japan. Yet, the world market of drones is expanding by \$4 billion every year. A driving force for the expansion is not Japanese companies; it is Chinese companies. Of them, the leading company is DJI (Da-Jiang Innovations Science and Technology Co., Ltd.)

DJI is located in Shenzhen, which is one of the emerging cities and is called the Silicon Valley of China. DJI was established by Frank Wang, whose Chinese name is Tao Wang, and his two colleagues when they were graduate students at the Hong Kong University of Science and Technology in 2006. At first it was manufacturing a control system for drones, but later it began to manufacture a drone that had a control system on itself. The company's history is just short and it has not carried out IPO, yet. Today, however, it enjoys about 70 percent of the market share in the world.

So far, so-called global Chinese enterprises such as Haier, Lenovo, and Huawei, all started their business in traditional industries. They followed the same pattern: first catch up with rivals, and then take them over. On the other hand, DJI was a pioneer in the drone industry and has been always the leading company.

As there is little information about DJI, this paper is a case study to examine its business model and success factors.

### **1. Introduction**

#### **1.1 What is the drone?**

According to *Random House English-Japanese Dictionary*, the drone is "remote control machine (such as radio-controlled airplanes and ships) and unmanned flying object (such as a target for missiles and shooting training)" <sup>(1)</sup>. This definition tells us the role of the drone. That is, the drone has been used mainly for military-purposes. It is said that its history dates back to the 1930s. In addition, recreational radio-controlled machines can be considered the drone in a broad sense.

However, the drone discussed in this paper is used neither in the military nor for a hobby. It is a small unmanned aircraft (multirotor) for the consumer industry that has emerged in the 21<sup>st</sup> century. Why do the authors mention that it was born in the 21<sup>st</sup>? It is because the top three companies in this industry were established after 2005. For example, DJI, the leading company in this field, was established in 2006. Both Parrot and 3D Robotics, the second and the third respectively, were born in 2009.

## 1.2 The drone in Japan

For a long time, the development and use of the drone in Japan has occurred only in the field where radio control has been used for recreational purposes. With technological advances, radio control has become closely associated with the robot. In 1988, the First Robot Contest of College Students was launched by the call of Masahiro Mori, who was then a professor at Tokyo Institute of Technology (now, he is an emeritus professor at the university.) The contest was born in Japan, later developing into the Robot Contest of Universities and ABU Robot Contest. In spite of these international contests, the drone in Japan has not become a bigger industry, yet. It is worth mentioning, however, that a certain graduate student of the Hong Kong University of Science and Technology was awarded the third place at an ABU Robot Contest. Later, this achievement led him to play a major role in the formation of a drone industry. Although the drone is used in agriculture, to spray pesticides, in Japan, technically it is no different than a conventional radio-controlled machine. The drone used for the purpose has no functions such as a video camera and image transmission.

## 2. A graduate student's venture

### 2.1 The founder

Frank Wang (his Chinese name is Tao Wang) was born in Hangzhou City, Zhejiang Province, in 1980. He is 36 years old as of 2016. His father was an engineer and his mother was a teacher of an elementary school, but both left their jobs and started their business after the reform and opening-up in China. Therefore, they were too busy to take care of their son's education. Wang's academic performances at school were not good, because he devoted himself to a hobby of radio control. So, his parents promised to get him a radio-controlled helicopter as an incentive for him to study. In order to get a machine that he had never seen, Wang studied hard. As a result, he made his wish come true. The expensive helicopter, however, crashed just after it flew several times. The reason is that its control was difficult. Making a radio-controlled helicopter that can be controlled easily, therefore, became Wang's dream.

Wang spent his high school days at the Hangzhou Foreign Language School. Since he learned to speak English there, this education would pave the way for him to do business overseas from the beginning.

Wang was accepted by the East China Normal University in Shanghai in 1999. Although the university is a famous national university, its educational goal is basically to prepare its students to be future teachers. It was not consistent with what he wanted to do. Therefore, he applied to some famous universities overseas (for example, MIT, Stanford, etc.) but was rejected by all. Fortunately, Hong Kong University of Science and Technology (HKUST) accepted him. Eventually, he dropped out of the East China Normal University and enrolled in HKUST, starting to learn as a freshman at the Department of Electronic and Computer Engineering in 2001. Four years later, he conducted a senior-year research on radio-controlled helicopter's hovering in the air. Graduating from the department, he went on to the graduate school of HKUST.

In January 2006, He created a prototype with it based on his senior-year research at the department. Once he provided the information on the prototype on a website called RC forum, he received an order from the United States and sold it at 50,000 RMB (\$7,575), although the cost was 15,000 RMB (\$2,272). Wang saw a business opportunity in this transaction and immediately took an action. He established a company with his two classmates in Hong Kong, renting a studio in Shenzhen and starting their business of selling the flight control system of a radio-controlled helicopter. This was a common practice among college student entrepreneurs in Hong Kong.

### 2.2 Da Jiang Innovation (DJI)

Now, the formal name of DJI is Da Jiang Innovation Science and Technology Co., Ltd. Da Jiang in Chinese was from Wang’s belief (Da Jiang Wuxian). They mean that one’s ambition is so vast as to have no boundaries. In China, the company is called Da Jiang Innovation.

Today DJI is an 11-year-old company which has not been taken public yet. Although we were unable to get the detailed financial data, we have learned from media reports that its business performances have been developing steadily. Now, the following three lists can be presented as facts here with certainty.

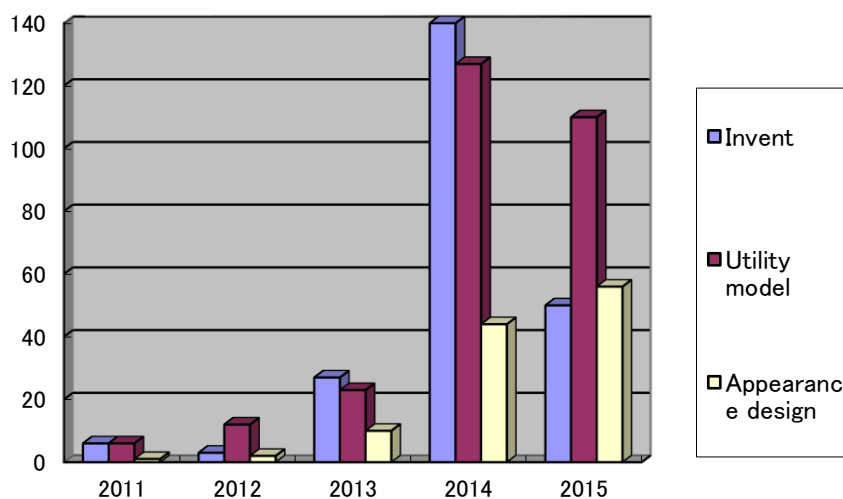
- 1) DJI has 70 percent market share on the global market of the drone in 2015 (2).
- 2) By the end of 2015, the number of DJI's employees had exceeded 4,000 (3).
- 3) According to American business magazine “Forbes,” Wang ranked 31st among Chinese mainland billionaires with personal assets of \$3.6 billion.

### 3. The competitive strategies of DJI

#### 3.1 Establishment of competitive advantages in the technology

DJI has the word “science” in its name while Huawei (Huawei Technologies), which is located in Shenzhen as well, doesn’t. The authors think that DJI carrying “science” in its name stems from the education that Wang had received until graduating from HKUST. He succeeded in the development of a new drone because he was able to make an important discovery by conducting theoretical research at HKUST. Therefore, DJI has been doing theoretical research and making a technological development simultaneously from the beginning. The results can be seen in the number of its patent applications. According to SIPO (State Intellectual Property Office of the P.R.C), DJI submitted 679 applications by December 2015, including Wang’s own 31 applications and 58 applications with him as the first inventor. Figure 1 shows DJI’s change in the number of national patent applications.

Figure 1. The change in the number of national patent applications by DJI



Source: created by the senior author based on the data from SIPO.

Under the policy, DJI’s drone technologies have enabled the drone maker to be the leading company in the industry on the technical aspect. For example, problems, such as hovering and turning in the air,

avoidance of obstacles, prevention of image blurs while flying and taking a picture, immediate transfer of photos and videos, automatic return before the battery runs out, are all regarded as worldwide problems. However DJI had quickly resolved them, and has maintained the competitive advantages in the technical aspects.

In May 2013, when DJI released “Phantom” (the Chinese name is Jingling) which was developed under the concept of "a flying camera," the company has drawn the attention of the world as a leader role of the drone industry. People such as film directors of Hollywood, professional photographers, and aerial lovers knocked the door of DJI one after another. Through three model changes, “Phantom4,” launched in March 2016, reached the highest level of quality ever. Its main features are as follows:

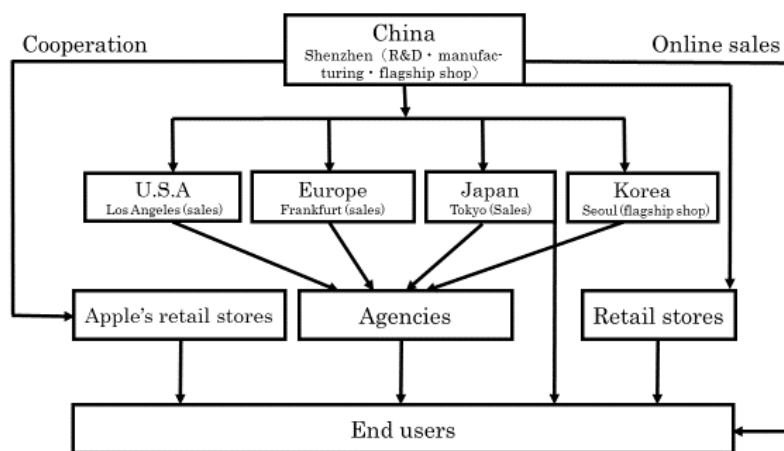
- a. Weight that it can carry: 1,380
- b. Flying height: 6,000m
- c. Flying time: 28 minutes
- d. Temperature condition: 0°C~40°C
- e. Usage of satellites: (GPS/GLONASS)
- f. Obstacle sensing range: 0.7~15m
- g. Image transmission distance: 5km

In addition, the machine also features functions such as easy operation, vertical rise, 360-degree turn, return to the location where it started. The machine’s price is 8,999 RMB (about ¥144,000 when converted at 1 RMB to \16).

### 3.2 The business model centered on the overseas market

Most of the Chinese companies expand their business to overseas after their success on the domestic market. But DJI was different. In 2008, the company just started to sell their drone control system on the Chinese market. Unlike other Chinese companies, however, it did not wait to succeed on the domestic market; it quickly expanded the business to overseas, especially to the markets of Western developed countries in the next year. Currently, DJI’s sales of the confi-

Figure 2. The Business Model of DJI



Source: Drawn by the author

guration are North America, Europe, Asia including China, each of which accounts for 30% of DJI's global share respectively. The remaining 10% comes from South America and Africa. In fact, the sales on the Chinese market only account for 20 percent of the total.

The business model of the DJI is shown in Figure 2. DJI does R&D and manufacturing in Shenzhen headquarters. The products are sold in its own retail stores in China and sold by sales companies or at flagship shops in United States, Europe, Japan and Korea. Also, DJI's drones are sold at Apple's retail stores in the world. Why was DJI able to establish a relationship of cooperation with Apple? It is because if DJI's users utilize Apple's smartphone, it is easier for them to control DJI's drone, which, in turn, will contribute to sales of Apple's smartphones. DJI has also launched online sales on the world market.

### 3.3 Funding and configuration of the shareholders of DJI

When DJI was established in November 2006, so-called an initial fund came from Wang's self-funding including his scholarship that he had received from the university. One month later, Wang accepted an investment of \$90,000 from Di Lu, who is one of Wang's relatives. Now, Lu is vice-chairman and vice-president of DJI and owns 16% of the company's stocks. He is a major shareholder after Wang, who holds 45% of the shares.

Jia Xie, who is Wang's close friend from his junior high school days, joined in DJI as CMO in 2010. In order to support Wang, he sold his house and invested in DJI. Now, he holds 14% of the shares.

The fourth shareholder of DJI is Professor Zexiang Li, who was a mentor of Wang at HKUST. He has invested 2 million RMB into DJI in 2010. Now, he is one of the board members of DJI and holds 10% of its shares.

In around 2014, Sequoia Capital, the world's largest venture capital, invested \$30 million into DJI. Its corporate value at that time was estimated to be \$1.6 billion.

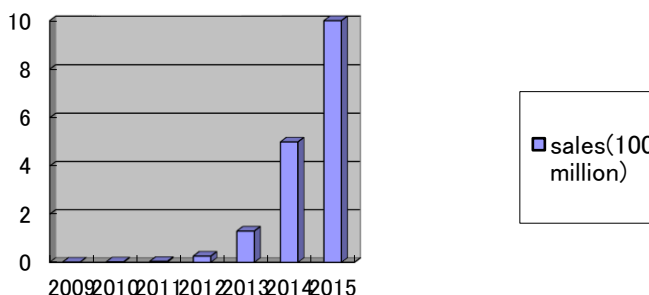
In May 2015, Accel Partners, another venture capital in the United States, invested \$75 million into DJI. The enterprise value of the drone company was highly estimated as \$8 billion.

However, Unlike Xiaomi, a smartphone maker, DJI does not accept the external funds actively, and takes a cautious stance to IPO. Media has reported that DJI will not carry out IPO in the future, at least not during the next five years.

### 3.4 The amount of sales

Until 2008, DJI had posted a deficit of one or two million RMB every year. In 2009, DJI got \$1 million in sales, and achieved a turnaround. The great sales of "Phantom" reached \$130 million in 2013. In the following year, the sales soared to \$500 million with an increase of 385%. Media predicted that the sales amount will be \$1 billion in 2015.

Figure 3 Changes in sales



Source: created by the authors from the data of WSJ. The data of each year excluding those of 2011 and 2013 are estimated.

## 4. Analysis of success factors

### 4.1 The founder with visions

Wang has been interested in radio-controlled machines since his childhood and had a dream of making a radio-controlled helicopter that can be freely controlled. After he entered East China Normal University, he kept determined to realize his dream. When his determination got strong enough, Wang took an action and dropped out of the university, starting all over again at HKUST. His strong will to make the dream happen was manifested in his actions to choose a drone-related study as the topic for his senior-year research and to set up a student venture company later. In particular, when the other two of the founding members left the company after the second consecutive year of deficit, Wang continued researching with the vision of creating the new drone which people had never seen. Such a vision, in other words, the intrinsic motivation is the necessary condition for success in venture business.

### 4.2 Mettle to compete on technology

So far, no Chinese companies except DJI compete with their technical capabilities. Almost all of the Chinese companies started their business by imitation. But unlike them, DJI tried to compete on its own technology from the beginning. As mentioned above, by March 2016, DJI had applied 686 national patent applications. Also, the number of its patent applications in the United States is about 80. These patents not only show the technical strength of DJI, but also make it possible for the company to prevent the entry of new rivals. For example, when Yuneec International (aka, Yuneec USA) sold their drone in the United States, DJI sued it to the United States Court for the Central District of California on the U.S. patent infringement in April 2016.

### 4.3 Management philosophy to value engineers

Since DJI is a technology-driven venture, the engineers play an important role for the company. Currently, DJI has about 4,000 employees including 1,500 engineers <sup>(5)</sup>. Because Wang himself is CEO and CTO (Chief Technology Officer), he knows well what his engineers want (he sometimes works on a technological problem long enough to end up sleeping in the bed in his office.) He values his engineers so much that he himself makes decisions from employment to appointment and promotion of engineers.

For example, DJI has given its excellent employees rewards (cars) as the year-end bonus since 2012. The first time, 10 units of "Golf," which cost 100,000 RMB per unit, were awarded. In 2013, 10 excellent employees received a "Mercedes-Benz," which cost more than 200,000 RMB per unit. 30 units of expensive "Tesla" were awarded in 2015. DJI has the ownership of the cars for five years, after which the ownership will be transferred to the winners. Needless to say there have been many engineers among the winners.

Not only does Wang provide material rewards for engineers, but also he often mentions in public that he considers engineers important. For example, in his speech at the RoboMasters, which is National University Student Robot Contest held by DJI in July 2015, Wang said, "There are many movie stars and sport stars in our society. But there is no case which a person became a star because he/she works firmly. Even watching TV, no program about an engineer or inventor became star" <sup>(6)</sup>. His aim is to make engineers and innovators become a star.

## 5. Conclusion

The drone is becoming a new industry. Teal Group, an American market research firm, predicted that the market scale of the drone in the world will increase from the current size of \$4 billion a year to \$14 billion a year in the future, skyrocketing to \$93 billion (including military market of \$30 billion) in 2025 <sup>(7)</sup>. Chinese companies have been fighting a good fight in this industry. DJI is a representative of those Chinese companies. In the beginning of 2015, "Time" magazine chose the "Phantom 2" of DJI for the "2014 Top



10 Products," and the "New York Times" also selected "DJI Inspire 1" as the "2014 excellent high-technology products." These recognitions play a part as just a tailwind for the global expansion of DJI. Unfortunately, Japan is lagging in the development of a drone industry. It is said that the slow development of a Japanese drone industry is caused by Japan's regulations such as the aviation law. Is it true? There are various regulations in China too, but they have been loosened gradually through the efforts of Chinese companies. So, the authors think that the issue is related to entrepreneurship among Japanese people.

So far, so-called Chinese global enterprises, such as Haier, Lenovo, and Huawei, all took a pattern of growth which is to catch up to rivals in the existing industry and then overtake them. However, DJI is different. The company has created a new industry and become the driving force. Therefore, as the innovator that changed the growth pattern of the Chinese enterprises, DJI must leave its name to the Chinese industrial history.

## Notes

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