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From The Editors

Dear Colleagues,

Welcome to the third issue of the *Journal of Entrepreneurship and Innovation Management* (JEIM). The JEIM is part of a growing research community and drawing great interest from many international researchers. Although launched locally, JEIM has gone beyond the borders and become global.

In this issue we have six papers submitted from six different countries. We also have papers from Globalics Congress, which was organized in Turkey. The topics of the papers are from a variety of fields in innovation and entrepreneurship: the ecosystem of start-ups, barriers to innovation, managerial cognition in high-tech companies, and cluster development. It is great to see all of these topics in JEIM; it is very good sign for the journal's future.

This growing interest also led us to make our journal available through the internet. We decided to set up a new website for JEIM (<http://www.betadergi.com/jeim/>) and publish on-line. Individual papers and entire issues will be available through the journal website, including the past two issues. We thank our publisher, Beta Yayinlik Company, for this motivating initiative and investment.

We also extended our Editorial and Reviewer boards by inviting well known researchers from different universities and countries. Currently, there are 46 members on both the Editorial Board and the Reviewer Board. We are also open for new applications to the Board of Reviewers. Please contact us via the email addresses provided in the contact list if you are interested in joining this panel.

We thank each of you for submitting your papers and following the papers published in the *Journal of Entrepreneurship and Innovation Management*. Of course, we're grateful to the reviewers who have done a great job, contributing a huge amount of time from their very busy schedules.

We hope this issue will help many of us to extend our understanding of the covered topics.

Best Regards

Assoc. Prof. Cevahir UZKURT
Editor-in Chief

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Identification of Structural Restricting and Driving Factors of Development of Corporate Entrepreneurship (CE): A Case Study

Sepideh Firouzyar*, Dr. Davood Kia Kojouri**

Abstract

Tourism and entrepreneurship have progressed on different paths and rarely have any major crossover occurred in each of their literatures to cross-fertilize the development of the subject areas. The tourism industry is often said to be less innovative than other industries. In order to make the organization more entrepreneur friendly and therefore innovative, driving and restricting factors need to be identified, improved and reinforced. This paper presents the identification of structural restricting and driving factors of development of Corporate Entrepreneurship (CE) in organization. The studied organization is one of the transportation companies in Iran. A questionnaire was designed according to the Likert Scale. The sampling has been done through census among 100 managers of the studied organization. By using SPSS software and analyzing the outcome of the questionnaires, restricting and driving factors are recognized. This study concludes that five factors such as information resource system, organizational structure, organizational strategy, task methodology, and process and physical opportunities are driving factors. The research and development system, control and supervisory system, wage and salary system, finance and budget system and human resource management are counted as restricting factors.

Key words: Tourism Management, Organizational entrepreneurship, Restricting factors, Driving factor.

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1. Introduction

These days environmental and competitive conditions are dynamic and complicated, so companies have to find logical solutions to survive. Due to the globalization and converting industrial society to that of the technological ones, companies cannot compete with small and medium-sized enterprises (SMEs) that are flexible and innovative. In order to maintain their growth and existence, most of the organizations are in serious need of innovation and find new opportunities (Dehnad and Mobaraki, 2010). Tourism and entrepreneurship have progressed on different paths and rarely has any major crossover occurred in each of their literatures to cross-fertilize the development of the subject areas (Ateljevic, 2009). Thus in this paper the relationship between tourism and entrepreneurship is analyzed.

The entrepreneurial function implies the discovery, assessment and exploitation of opportunities, in other words, new products, services or production processes, new strategies and organizational forms, new markets for products, and inputs that did not previously exist (Shane and Venkataraman, 2000). Entrepreneurship is a complex phenomenon with many definitions. Landsrom (2000) describes entrepreneurship as discovering new business possibilities, organizing necessary resources and exploiting the business possibilities on the market. Today the pace of changes is increasing dramatically in the society and accordingly, entrepreneurship is becoming more important for the development of societies. The society needs to develop both bigger and smaller businesses, old and new, to create conditions for the constantly present entrepreneurship that makes it possible for businesses to survive and develop in an unpredictable world (Mjornvik et al., 2008).

Tourism industry plays important role in business development in few past years (Bagherifard et al, 2013). The travel and tourism industry is the world's largest and most diverse industry. Many nations rely on this dynamic industry as a primary source for generating revenues, employment, private sector growth and infrastructure development (Gee and Fayos-Solá, 1997). Tourism development provides an avenue for overall economic development and a boost for local entrepreneurship (Ateljevic, 2009).

The main objective of this research is identifying structural restricting and driving factors of development of Corporate Entrepreneurship (CE) in an

organization. Therefore, the research question is defined as below: “What are the restricting and driving factors of development of CE in an organization?”. This paper explains concepts of tourism, organizational entrepreneurship and restricting and driving factors. After literature review, the conceptual model is shown, and data analysis is presented, followed by discussion and conclusion.

2. Literature review

Corporate entrepreneurship is a process, which occurs in interaction with the environment. It appears that the environment plays a profound role in influencing corporate entrepreneurship: the more dynamic, hostile and heterogeneous the environment, more emphasis the company puts on entrepreneurial activities. The corporate entrepreneurship literature highlights the importance of organizational factors for the pursuit of entrepreneurship in organizations (Heinonen and Korvela, 2003).

Literature indicates that a number of environmental factors present in organizations implementing corporate entrepreneurial concepts. Three initial factor descriptions are offered as fostering entrepreneurial activity inside corporations: (i) management support for corporate entrepreneurship, (ii) organizational structure, and (iii) resource availability. The empirical evidence supports the need for structure associated with entrepreneuring in various organizations, and validates corporate entrepreneurship as an important means for changing individual perceptions about the work environment (Kuratko et al., 1990). In another study, Antoncic and Hisrich (2001) mention that while differing somewhat in their emphasis, activities and orientations, the four dimensions of corporate entrepreneurship– New business venturing, Innovativeness, Self-renewal, Proactiveness– are factors of Schumpeterian innovation, the building block of entrepreneurship.

Covin and Slevin (1991) pointed out that internal organizational factors play crucial role in fostering corporate entrepreneurship. Many researchers have provided empirical evidence for the importance of these factors that include: company’s organizational structure, incentive and control system, managerial support and resources, and organization boundary (Tanha et al.,

2011; Gupta and Srivastava, 2013). Hornsby et al. (2002) pointed out that at least five internal factors are necessary in order to foster middle managers' activity, which are as follows: an appropriate use of rewards, gaining top management support, a supportive organizational structure, risk taking and tolerance for failure and finally, resource availability. Kuratko et al. (1990) also highlighted top management support, reward and resource availability, organizational structure and boundaries, risk taking and time availability as key internal factors able to enhance and support corporate entrepreneurship (Gupta and Srivastava, 2013).

Aghaee et al. (2010) found that performance evaluating system, mechanical organizational structure, payments and rewards systems, research and development system and budgeting and financial system are the main obstacles. The best solutions are performance based payment system, creating finance supportive departments, designing demand based research and development system, designing entrepreneurial organizational structure system and compiling opportunity based strategy for organizational entrepreneurship development in Iran National Petrochemical Company (NPC).

In another research, Dehnad and Mobaraki (2010) attempt to introduce the concept of corporate entrepreneurship and explain the organizational behavior factors as the most effective factors in the development of corporate entrepreneurship. The research results indicate that from the perspectives of Homa managers at various organizational units, there is a variety of hindering and encouraging behavioral factors influential in the development of corporate entrepreneurship. Lack of adequate planning and staff partnership in the outcome of their creative actions, the organization's inclination to functional management and employees' proficiencies are classified as the restraining forces; the driving factors include the organization's support from creativity and innovation, performance-based bonuses in the organization, risk culture, the organization's inclination to multiple-skilled employees, teamwork culture, and the creation of common goals and values as well as strengthening them. These findings were partially supported by other researchers (e.g. see Moghimi, 2004).

In sum, researchers have used different terms to refer to the "entrepreneurship inside an existing company" phenomenon. Terms such as Entre-

preneurship, Corporate Entrepreneurship and Corporate Venturing have been used to describe essentially the same phenomena (Quesada et al., 2011). Although, to date there is only limited empirical evidence about the factors promoting entrepreneurship rather than corporate entrepreneurship (Parker, 2009), some main research works were mentioned above, based on which this study was shaped.

3. Conceptual Framework and Hypothesis

CE activities enhance a company's success by promoting product and process innovations (Zahra et al,1999). It is brought into practice as a tool for business development, revenue growth, profitability enhancement, pioneering the development of new products and services and processes (Kuratko, Montagno, and Hornsby, 1990; Zahra, 1991; Zahra & Covin, 1995; Lumpkin & Dess, 1996; Zahra, Jennings, and Kuratko, 1999; Miles & Covin, 2002). These CE activities can improve organizational growth and profitability and, depending on the company's competitive environment, their impact may increase over time (Zahra et al,1999).

Lober (1998) believes that the three factors below cause development of organizational entrepreneurship: (i) Internal organizational factors, (ii) External environmental factors, and (iii) Individual characteristics (Moghimi, 2004). Internal organizational factors can be categorized as behavioral and structural factors. According to the literature review, the theoretical background of the conceptual model is shown in Figure 1. Descriptions of the variables have been mentioned in the Appendix.

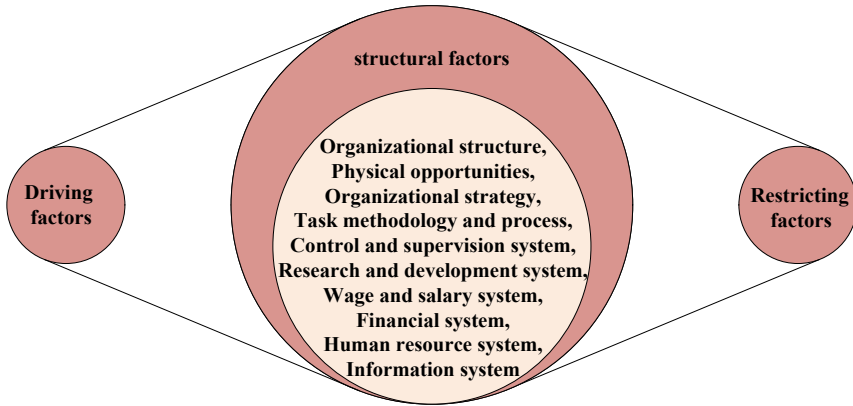


Figure 1: Conceptual model

4. Methods and Data Analysis

The data of this research was gathered from the senior managers of an organization which is actively working in the tourism industry for more than 50 years. Due to the limited number of managers, the census method was used. Research variables were identified from the literature review, and study of the relevant documents. For the data gathering phase, a questionnaire was designed. The questionnaire is designed based on Cornwall and Perlman's (1990) questionnaire and other questionnaires in organizational entrepreneurship. The questionnaire was designed according to the Likert scale (1-5). Managers of the firm which was analyzed, were asked to fill in the questionnaire. The gathered data was then analyzed using SPSS software. Therefore, t test and Friedman test were used for testing the research hypotheses, and to rank them. In this research coefficient, Cronbach's (alpha) is calculated by SPSS software and it is 0.968 based on a randomly selected sample of 30 questionnaire.

Demographic analysis shows that 66% of managers are male and 33% of them are female while 87.9% are below 50 years old and 21.1% are over 50 years old. Data analysis also indicates that 1% of the people who have filled

out the questionnaires have associate diplomas and 4% have PhDs and the rest have either a BA or an MA. About 50% of the respondents are over 20 years and 30% have more than 25 years of work experience.

T-test was used to identify the driving and restricting factor, and Friedman test to rank them from the most driving to the least driving or in other words, to the most restricting one. So, null and alternative hypothesis are defined as below:

$$\begin{cases} H_0 : \mu = 3 \\ H_1 : \mu \neq 3 \end{cases}$$

H_0 : The structural factors are a part of the driving factors in this survey.

Table 1: Result of t-test

	Test Value = 3					
	T	DF	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Organizational structure	0.952	99	0.344	0.05959	-0.0647	0.1839
Information System	3.121	99	0.002	0.21000	0.0765	0.3435
Organizational Strategy	0.208	99	0.835	0.01583	-0.1349	0.1665
R & D	-3.333	99	0.001	-0.22111	-0.3527	-0.0895
Task Methodology and Process	-0.229	99	0.820	-0.02000	-0.1936	0.1536
Control and Supervision System	-3.922	99	0.000	-0.31200	-0.4699	-0.1541
Human Resource System	-2.358	99	0.020	-0.18405	-0.3389	-0.0292
Financial System	-2.981	99	0.004	-0.20482	-0.3412	-0.0685
Wage and salary system	-3.044	99	0.003	-0.21833	-0.3606	-0.0760
Physical opportunity	1.864	99	0.065	-0.31120	-0.4869	-0.1631

According to the results in the Table 1, all of the factors is normally distributed. Based on the Student T-Test, the zero hypothesis should be accepted for the four factors, organizational structure, organizational strategy, task methodology and process, physical opportunities. However, zero hypothesis should be rejected for other factors, information system, research and development, control and supervision system, human resource system, wage and salary system.

According to the figures presented in Table 1, structural driving factors of development of corporate entrepreneurship includes the system of information resources, organizational structure, organizational strategy, task methodology and process, physical opportunities. However, the restricting factors consist of research and development system, control and supervisory system, wage and salary system, finance and budget system are all human resource management.

After classifying the factors to driving and restricting factors, Friedman test is used to rank the factors from the most driving to the most restricting factors. In the Friedman test, H_0 is defined by the similarity between the averages ranking among the factors. Rejection of H_0 means there are at least two factors that are inconsistent with the average. Table 2 ranks the factors from the most driving to the most restricting ones; information resource system is most driving factor and, control and supervision system is the most restricting factor.

Table 2- Mean Rank between variables

Variables	Mean Rank
Information resource system	6.98
Physical Opportunities	6.45
Organizational structure	6.21
Organizational Strategy	6.06
Task Methodology and Process	5.86
Research and Development System	5.03
Wage and Salary System	4.84
Financial System	4.62
Human Resource System	4.55
Control and Supervision System	4.42

5. Discussion and Conclusion

Research titled “Relation between organizational structure and organizational entrepreneurship (Case study: manufacturing companies in the west of Mazandaran province)”, shows that there is a significant relationship between organizational structure and organizational entrepreneurship. In addition, it shows that there is a significant relationship between organic organizational structure and organizational entrepreneurship, and between mechanic organizational structure and organizational entrepreneurship (Ooshaksaraie et al, 2011). Research titled “consideration of the obstacles and structural ways in the organizational entrepreneurship development in National Petrochemical Company (NPC) in Tehran: a research based in Q-Methodology” concludes that performance evaluating system, mechanical organizational structure, payments and rewards systems, research and development system, and budgeting and financial system are the main obstacles (Aghaee and et al, 2010).

Another research indicates that from the perspectives of Homa managers at various organizational units, there is a variety of hindering and encouraging behavioral factors influential in development of corporate entrepreneurship. Lack of adequate planning and staff partnership in the outcome of their creative actions, the organization’s inclination to functional management and employees’ proficiencies are classified as the restraining forces. Driving factors, on the other hand, are the organization’s support from creativity and innovation, performance-based bonuses in the organization, risk culture, the organization’s inclination to multiple-skilled employees, teamwork culture, and the creation of common goals and values (Dehnad and Mobaraki, 2010). Result of research titled “recognition of structural factors on college entrepreneurial development” shows that organizational factors are most important and assessment system factors have least importance (Yadolahi et al, 2011).

Based on the findings, organizational structure is part of the driving factors in this survey. Moreover, based on the description of organizational structure, one can conclude that structure of an organization is flexible and adaptable. In other words, it has organic structure. This means that it helps the organization to have the organizational entrepreneurship. Moreover, the information system factor is an advancing factor. Moreover, based on the

description of the information system, one can conclude that the information system of organization is up-to-date and information is accessible for the right person at the right time. This means that it helps the organization to have the organizational entrepreneurship. This is supported by previous research (e.g. see Heinonen and Korvela, 2003; Gupta and Srivastava, 2013).

On the other hand, the organizational strategy is part of the driving factors in this survey. Moreover, based on the description of the organizational strategy, one can conclude that the strategy of organization can identify new opportunities and threats or internal strengths and weakness. It also can assign a valuable mission. This means that it helps the organization to have the organizational entrepreneurship. Therefore, task methodology and process is part of the driving factors in this survey. Moreover, based on the description of task methodology and process, one can conclude that task methodology and process of organization is evaluated regularly. In other words, it has entrepreneurial process. This means that it helps the organization to have the organizational entrepreneurship. Also, the R&D system factor is a restricting factor. Moreover, based on the description of R&D system, one can conclude that R&D system of organization is not up-to-date. It shows entrepreneurs are not distributed in all sectors, managers do not pay attention to R&D. This means that it should reinforce to help the organization to have the organizational entrepreneurship. These findings are in line with previous works (see Kuratko et al., 1990; Aghaee et al., 2010)

In addition, the control and supervision system factor is a restricting factor. Moreover, based on the description of control and supervision system, one can conclude that control and supervision system of organization is not flexible. It shows controlling, rules, regulations and policies are much more than usual. This means that it should reinforce to help the organization to have the organizational entrepreneurship. Also, the human resource system factor is a restricting factor. Moreover, based on the description of human resource system, one can conclude that human resource system of organization is not entrepreneurial. It shows managers do not recruit based on meritocracy and fixed policy does not exist for recruitment. This means that it should reinforce to help the organization to have the organizational entrepreneurship (see Antoncic and Hisrich, 2001; Gupta and Srivastava, 2013).

Furthermore, the financial system factor is a restricting factor. Moreover, based on the description of financial system, one can conclude that financial system of organization is not entrepreneurial. It shows the firm's financial performance in the short term. This means that it should reinforce to help the organization to have the organizational entrepreneurship. Also, the wage and salary system factor is a restricting factor. Moreover, based on the description of wage and salary system, one can conclude that wage and salary system of organization is not flexible. It shows payment is not based on risk-ability and innovation of the workers, it is just based on the physical presence. This means that it should change their system to have the organizational entrepreneurship. In addition, physical opportunities are part of the driving factors in this survey. Moreover, based on the description of physical opportunities, one can conclude that physical opportunities of organization help the organization to have organizational entrepreneurship (Kuratko et al., 1990; Gupta and Srivastava, 2013).

In sum, the current research shows that Task Methodology and Process, Information system, Organizational structure, Organizational strategy and Physical Opportunities are driving factors while Research and Development system, Control and Supervision System, Human Resource System, Financial System and Wage and Salary System are restricting factors. Indeed, entrepreneurship has a vital role in all activities in the organization. Since in all the third world counties, the government has a vast participation in all the economic, social and cultural aspects, changing the structure of organizations from traditional and bureaucratic to entrepreneurial ones has high importance. This research indicates that different variables in the form of structural factors deeply affect and influence organizational entrepreneurship development. In addition, driving and restricting factors are identified by concentrating on different factors of organizational structure. The results of this research show that five factors of information system, organizational structure, organizational strategy, task methodology and process, physical opportunities are driving factors while R&D system, control and supervision system, wage and salary system, financial system, human resource system are restricting factors. Therefore, by establishing necessary background and with improving driving factors and reinforcement of restricting factors, one can contribute to the development of entrepreneurship in the studied organization.

6. Suggestions and recommendations

With the help of previous researchers below and from what is derived in this research, here are the authors' suggestions for restricting factors:

For developing Research and Development System it is suggested to: (i) Balance between fundamental and applied research, (ii) Considering long term rather than short term results, (iii) Select the projects based on clients and employees recommendations, (iv) Create new ideas through establishing R&D department to increase the satisfaction of clients. For the enhancement of Control and Supervision factor, the following are suggested: (i) Modification of control criteria to the number of novel ideas that officially have been accepted in the organization, (ii) Taking necessary actions in order to promote clarification in the organization, (iii) Annual evaluation of the organizational operations with the view to considering weaknesses and strengths of the organization.

For the enhancement of the human resource system, it is recommended that: (i) All directors should be chosen based on meritocracy in a unified method, (ii) Establishment of a fixed policy for employment and recruitment, (iii) Test administration for choosing qualified employees and corresponding the field of study and their specialty with the offered positions. For the enhancement of the finance and budget system, the following are suggested: (i) Budgeting in the organization based on the plans and programs, (ii) Distribution of financial resources among different units in the organization based on the priority of the programs, and (iii) Expediting financial resource allocations. For the enhancement of wage and salary systems, it is suggested that payments and salaries should be considered based on employees operation and creativities.

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Appendix

Descriptions of variables

Variables	Description	Source(s)/reference(s)
Organizational structure	Entrepreneurial organizations are flexible and adaptable, far from the bureaucratic and mechanistic organization.	Birch, 1987
Organizational Strategy	A stream of research suggests that entrepreneurship is linked to strategic management that enables public sector organizations to identify new opportunities and generate new process and service innovations.	Behn, 1991; Mokwa & Permut, 1981; Nutt & Backoff, 1993
Wage and salary system	As mentioned by Cornwall and Pearlman (1990), payments in salary system of an innovative organization are related to performance not physical presence. Payments are flexible and consider riskability and creativity criteria of individuals.	Atashi and Abdolpour, 2012
Financial System	Successful entrepreneurial accomplishments will inevitably affect the firms' financial performance in the long term, barely in the short term; there might be no association among the CE climate factors and firms' financial performance criteria due to project investments and firms' internal resource usages or possible losses.	Hayton, 2005
Research and Development System	Through redistribution of specialists between sectors and creation of favorable conditions for innovative activity in this organization, the effectiveness of existing science and engineering work would be increasing and this is only applicable by R&D system.	Egorov and Carayannis, 1999
Control and Supervision System	Controlling Rules, regulations and policies should be decreased to a minimum level and a free controlling system should be designed.	Moghimi, 2006
Human Resource System	Human Resources Management (HRM) is the function within an organization that focuses on the recruitment of, the management of, and providing direction for the people who work in the organization. Human resources provide a source for competitive advantage and the quality of HRM is a critical influence on the performance of firms, the strategic approach is a characteristic of HRM.	Hashemi, 2012
Physical Opportunities	Physical opportunities include all assets, buildings, office equipments, and vehicles.	Moghimi, 2004
Task Methodology and Process	Task methodology and process should be evaluated regularly in organizational entrepreneurship and managers should omit and/or merge the processes which are recognized as barriers of innovation and entrepreneurship or causes dissatisfaction of customers.	Moghimi, 2004
Information System	Information should be easily accessible throughout the organization. The decisions made based on the information are influenced by attitude and capacity to interpret information in order to make it meaningful and useful.	Beijerse, 2000

The Brazilian Entrepreneurial Ecosystem of Startups: an analysis of entrepreneurship determinants in Brazil as seen from the OECD pillars

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Abstract

This paper presents the main findings exacted from a quantitative and qualitative investigation into mapping the Brazilian startup entrepreneurial ecosystem. The analysis was set up as of the six entrepreneurship determinant categories defined by the Organization of Economic Co-Operation and Development (OECD), to wit: the regulatory framework; market conditions; access to finance; the creation and diffusion of knowledge; entrepreneurial capabilities; and entrepreneurship culture. The study involved gathering quantitative data from secondary bases underlying each one of the six pillars and interviewing Brazilian representatives of the determinants indicated above, to proceed to understand which development stage Brazil is in as concerns encouraging entrepreneurial practice and the favorability of the entrepreneurial ambience in the country.

Key words: Entrepreneurship. Startup. Ecosystem. Determinants. OECD.

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1. INTRODUCTION

High-growth startup companies tend to improve their chances of success when inserted in an entrepreneurial ecosystem that encourages business development and innovation. Two benchmarks are the Silicon Valley and Israel, world-acclaimed for their success in entrepreneurial development and for yielding, in one year, more successful startups than other nations could create in years or decades. Although their respective ambiances are completely different, both Israel and the Silicon Valley seem to contain a combination of variables in their ecosystem that encourages the entrepreneurial activity to blossom.

Thus, it is plausible to believe that different nations, albeit resting upon different contexts, are capable of building their own entrepreneurial ecosystems that can encourage the appearance of successful business concerns. For such, the strengths and weaknesses particular to any such community or country beg understanding to develop their entrepreneurship ecosystem on a par with the needs posed by local reality.

Isenberg (2010) postulates that “there’s no exact formula for creating an entrepreneurial economy; there are only practical, if imperfect, road maps”. This is akin to saying that it is not possible, for example, to replicate a new Silicon Valley in another community or nation by simply replicating the same characteristics of its entrepreneurship ecosystem; rather that, it is feasible to identify benchmark elements to be analyzed and developed according to each country’s specific reality.

For the purposes of this study, benchmark elements are the OECD’s entrepreneurship determinant groups, to wit: the regulatory framework; market conditions; access to finance; the creation and diffusion of knowledge; entrepreneurial capabilities and entrepreneurship culture. The research effort starts from these pillars to investigate who are the actors composing the Brazilian entrepreneurship ecosystem and what role they play as they operate and evolve. Thus, this effort systematically identifies the characteristics, strengths and weaknesses of the Brazilian entrepreneurship environment focusing on the development of startups, becoming a relevant tool to steer the progress of entrepreneurial practice in Brazil.

The research also indicates benchmark countries for each of the investigation's pillars and draws a comparison with the Brazilian reality, seeking to broaden the comprehension of the country's entrepreneurial ecosystem.

To meet the proposed objectives, the full study on which this paper is based was structured in two stages, the first being a qualitative research comprised of in-depth interviews with different actors in the Brazilian entrepreneurship environment, amidst which notably startup entrepreneurs, investors and investment fund managers, researchers from public universities and representatives of entrepreneurship supporting institutions, such as hubs, incubators, accelerators and law firms from five Brazilian states; and a second stage comprising a research effort involving the compilation of secondary quantitative data gathered from official institutions such as the World Bank, Unesco, the OECD, and the Brazilian Internal Revenue Service, among others, besides world-acclaimed research reports such as *Doing Business*, the *Global Competitiveness Report*, the *Global Entrepreneurship Monitor (GEM)*, *inter alia*.

Notably, the construction of the quantitative database was based on OECD-developed methodology and represents a pioneer effort in that there are no known previous efforts of applying this entrepreneurship investigation and mapping technology in Brazil – a country that is not an OECD member – at the level of detail and systematization applied in this study.

Finally, this paper is divided into 5 Chapters. The next Chapter presents the main theoretical references used in the construction of the database and for analysis. Chapter 3 contains information on the methodology employed. Chapter 4 presents the main research findings, while Chapter 5 ends this paper by outlining conclusions on the proposed theme and evaluating possibilities for future studies.

2. THEORETICAL FOUNDATIONS

Resorting to Schumpeter's classic Capitalism, Socialism and Democracy is one of the pathways – and arguably the most concrete – to understand the reasons for the permanent relevance of entrepreneurship and the space it broaches in the discussion agendas concerning public policies worldwide.

In his writings, Schumpeter posits that the business concern is the fundamental element for the capitalist system to operate and develop. This is precisely due to entrepreneurship, which allows the creation of new products, new production methods and new business models, besides being the main responsible for opening new markets. (Schumpeter, 1975).

Governments of different nations are aware of its importance and regard this theme as the indispensable element to preserve the viability and competitiveness of a country's economy. However, the great attention given the subject worldwide notwithstanding, measuring entrepreneurship locally, regionally, nationally or internationally has loomed as a major challenge for decades (OECD, 2009).

In this sense, a few efforts have been undertaken in the attempt to systematize what could be called "an entrepreneurial economy model", pinpointing the main variables to be considered while assessing entrepreneurship. For the purposes of this study, two such models were used as main frameworks: Isenberg's (2011) and the OECD (2011).

Daniel Isenberg's model stems from the initiative developed at the Babson College called BEEP – Babson Entrepreneurship Ecosystem Project. By studying the different attempts at fostering entrepreneurship elsewhere in the world, those involved in the project understood that there was not a unique, single characteristic to determine the success of local entrepreneurship, quite the contrary: an entire ecosystem of variables was needed to foster entrepreneurship sustainable along time and indeed bringing positive social and economic impacts upon the economy. Then the next step was to develop the concepts and the methodology to understand different communities and nations, and work with each of their stakeholders upon the necessary elements for a blossoming, healthy and structured entrepreneurship ecosystem. As indicated in Figure 1, the following domains of entrepreneurship were defined: policy, finance, culture, supports, human capital and markets.

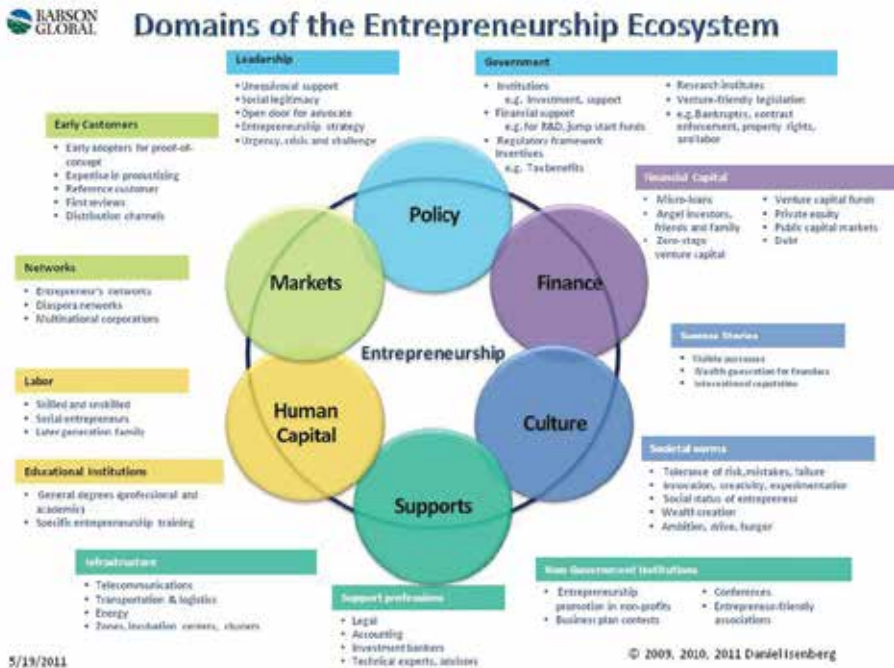


Figure 1: Domains of the Entrepreneurship Ecosystem

Source: ISENBERG, Daniel. **View the Ecosystem Diagram**, 2011. Available at: <<http://entrepreneurial-revolution.com/view-the-ecosystem-diagram/>> Accessed by: 25 april 2013.

Within the scope of *policy* are governmental institutions to support entrepreneurship, be they public universities that assume an important role by creating knowledge that will eventually be taken to market as a product, or regulatory bodies charged with the implementation of incentives for, or removal of bureaucratic barriers against, fostering business development.

Within the sphere of *finance* are private institutions in charge of entrepreneurship funding, such as angel investors, venture capital funds and seed capital, among others.

Culture encompasses all social characteristics of a community and the subjective aspects related to the manner by which individuals relate to each other, what they reproach and what is reason for recognition. All these aspects are evidently analyzed through the eyes of the entrepreneur. Fear of failure, for example, is a limiting cultural factor against the development of entrepreneurship.

Within the scope of *supports* are the institutions not belonging or related to government that play the role of entrepreneurship stimulators, such as hubs, accelerators, incubators, plus, for example, accounting and law firms required to provide support to the establishment of new companies.

Human capital include both those professionals who amassed their skills through entrepreneurship-veered education, and mass work force, an intrinsic need of a market seeking economic progress through the creation of new companies.

The *markets* orbit, finally, approaches the need of an existing consumer mass, ready to purchase new products and disseminate them via a domestic and international contact network.

Daniel Isenberg (2011) theorizes that the development of entrepreneurship will occur in fact only if these different ecosystem elements are handled altogether, albeit it is not necessary to “worry about changing everything on a full scale at once”.

That perception might be a complement of Bygrave point of view on the same issue. He also understand entrepreneurship by being “embedded in a massive structure: society, government, culture, the economy, legal issues, business environment and so on” (Bygrave, 1998).

Thus, it is possible to question, for example, why does Korea not create a greater number of startups, considering the great affinity Koreans have with technology. The answer resides in culture, a determinant variable that is a development-limiting factor in that country. “In Korea, one should not be exposed while failing. Yet, in early 2000, many entrepreneurs jumped on the bandwagon of a new economy [the internet bubble]. When the bubble burst, their public failure left a scar on entrepreneurship” (Senor and Singer, 2009). The presence of skilled professionals in this case demonstrates a well-developed “human capital” domain, favorable to entrepreneurial development. However, without expounding on the “culture” domain, an entrepreneurial revolution in that country is not viable.

Even when analyzing countries of one specific geographic region, like it is the Latin America and Caribbean, for example, different strengths and weaknesses can be observed and have to be addressed individually, taking into account each ecosystem’s peculiarities.

When analyzing the variables mapped to Latin America and the Caribbean in the 2012 edition of the Global Entrepreneurship Monitor (GEM) that are related to the individuals' attitudes and perceptions regarding the entrepreneurial environment of each country, it is clear that aspects such as entrepreneurship opportunities, training and fear of failure are differently perceived by each country's respondents and, therefore, differently affect the entrepreneurship development.

Table 1: Entrepreneurial Attitudes and Perceptions in the GEM Countries in 2012 by Geographic Region

Economy	Perceived opportunities	Perceived capabilities	Fear of failure*	Entrepreneurial intentions**	Entrepreneurship as a good career choice+	High status to successful entrepreneurs+	Media attention for entrepreneurship+
LATIN AMERICA & CARRIBEAN							
Argentina	50	63	27	29	74	67	63
Barbados	47	70	17	23	-	-	-
Brazil	52	54	31	36	89	86	86
Chile	65	60	28	43	70	68	66
Colombia	72	57	32	57	89	75	69
Costa Rica	47	63	35	33	72	72	79
Ecuador	59	72	33	51	88	84	79
El Salvador	43	59	42	40	73	72	62
Mexico	45	62	26	18	56	54	38
Panama	38	43	17	12	-	-	-
Peru	57	65	30	45	77	73	76
Trinidad & Tobago	59	76	17	37	78	76	64
Uruguay	51	58	27	20	61	59	51
Average (unweighted)	53	62	28	34	75	71	67

* Fear of failure assessed for those seeing opportunities

** Intentions assessed among nonentrepreneur population

+ These questions were optional and therefore not included by all economies

Source: Global Entrepreneurship Monitor 2012 Global Report

Table 1 shows that among the 13 countries analyzed in the region, Brazil has the highest rates in all of the three sub-categories under *societal impressions*, which are: whether starting a business is considered a good career choice; opinion about the association of entrepreneurship with high status and awareness of positive media attention for entrepreneurship. This means that 89% of Brazilian respondents perceive entrepreneurship as a good career choice; while only 56% of Mexicans, last on the list in this requirement, share this same perception. Also for the Brazilian respondents, entrepreneurs generally receive media positive attention (86%) and are afforded high status (86%), both variables evaluated by the Mexicans respondents with only 38% and 54% respectively.

On the one hand Brazil stands out when considering their *societal impression*, but, on the other, in the *individual self-perceptions* category Brazil barely stands among the top five of the 13 countries with regard to perceived opportunities, perceived entrepreneurial capabilities and entrepreneurial intentions.

Fear of failure seems to be one of the factors limiting Brazilian entrepreneurs to take advantage of the well-assessed social environment, for indeed engage in an entrepreneurial activity. While in Brazil, 31% of respondents claim to have fear of failure, only 17% of respondents share of this same perception in countries like Panama, Barbados and Trinidad & Tobago, the latter showing the highest rate on the perception of population's entrepreneurial capacity, 76%, against 54% in Brazil.

Following the vein of a similar line of thought and towards the same efforts pursued by the BEEP, the OECD pondered over the theme and also triggered off a movement to map out the experience of different administrations in the quest for entrepreneurship development. OECD's focus, however, lies in facilitating the definition of public policies by political leaders via an internationally comparable database that reflects the reality of different countries as of indicators representing the determinant elements of entrepreneurship.

Thus OECD's EIP – Entrepreneurship Indicators Programme – came into being in 2006. In 2007, the program joined forces with Eurostat, a system for the collection and organization of European country statistics to develop

definitions and concepts that would become the base for the construction of a database on the entrepreneurship phenomenon at the world level.

The result of the OECD-Eurostat partnership is depicted in the Figure 2:

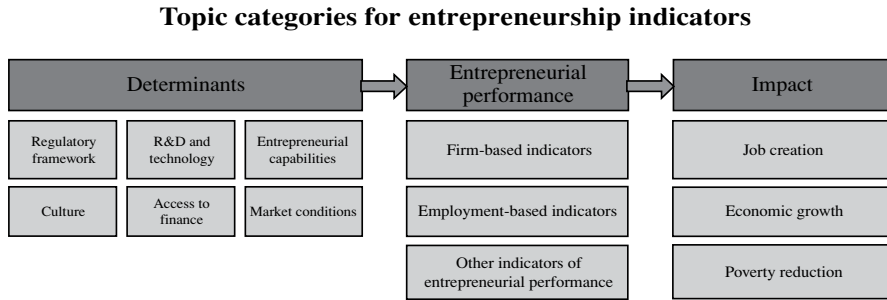


Figure 2: Top categories for entrepreneurship indicators

Source: OCDE. *Measuring Entrepreneurship: a Collection of Indicators*, 2009.

As seen in Figure 2, OECD identifies three different, however inter-linked, flows, which are important for the evaluation and formulation of entrepreneurship policies: determinants, entrepreneurial performance and impact. “The first stage of the model comprises various *determinants* which policy can affect and which in turn influence *entrepreneurial performance*, or the amount and type of entrepreneurship that take place. The final stage is the *impact* of entrepreneurship on higher-level goals such as economic growth, job creation or poverty reduction” (Hoffman and Ahmad, 2007).

Albeit recognizing the importance of studying the entire proposed flow, this research effort is concentrated upon the analysis of entrepreneurship *determinants*, as defined in the first quadrant of Figure 2¹.

¹ Because of model complexities, the variables are dynamic and have been constantly improved since their inception in 2006. Therefore, although Figure 2 is the most recent graphical representation of the model presented in the available articles, OECD’s website (<http://www.oecd.org/industry/business-stats/indicator-sofentrepreneurialdeterminants.htm>) shows the list of updated determinants as of 2011, with minor variations in the above-mentioned determinant nomenclature. For the purposes of this study, therefore, updated concepts are considered, where *technology and R&D* are recognized as *creation and diffusion of knowledge* and *culture* is specifically called *entrepreneurship culture*.

Notably, the qualitative approach pursued in this study seeks to map out the perceptions of the ecosystem actors, mainly as concerns entrepreneurship of high-growth startups, as construed according to Julie Meyer's (2012) concept, describing them as companies that start life small, but think big and, due to their great innovative potential, harbor a significant probability of early exponential growth.

Eric Ries argues that when an organization of any nature is based inside the startup thinking (focused on innovation, with as less costs as possible), it will become easier to make a business flow, by having feedbacks from the use of experimentation. The availability of entrepreneurs who takes advantage of experimentation requires actions from both governments and universities to encourage and give capacitation for these entrepreneurs to enter this world of opportunities and wealth creation (Ries, 2012).

3. METHODOLOGY

Quantitative and qualitative data collection happened between August 2012 and March 2013. Sections 3.1 and 3.2 describe in detail what was each stage's process like.

3.1. Qualitative stage

The snowball sampling method was used to gather qualitative data. This method resorts to indications and networking involving the respondents themselves, to establish contact with other individuals of interest to the investigation. That is, the sample is constructed simultaneously with the development of the research work, and this technique is used to broach access to important representatives of the theme in question, who might otherwise not be available for in-depth interviews if not for their prior relations with previously interviewed individuals.

Therefore, 30 in-depth interviews were conducted, all of them semi-structured such as to broach open dialogues over the six entrepreneurship pillars, as proposed by Daniel Isenberg (2011).

Sample diversification was sought by means of interviews with individuals playing different roles in the Brazilian entrepreneurship scenario. The authors also sought to approach representatives from different Brazilian states, notwithstanding the prevalence of the southeastern region due to its geographic proximity to the research center. The table below shows sample details.

Table 2: Description of qualitative interviews – Primary data

Classification	Number of interviewees	States
Entrepreneurs	6	MG/PR
Support Institutions	11	MG/SP/PR/SC
Investors	7	MG/SC
Researchers	2	MG
Consultants	4	MG/RJ/SP

Source: FDC Study – The Brazilian Entrepreneurial Ecosystem of Startups

Considering that the proposed quantitative approach does not specifically explore **startup** entrepreneurship, qualitative interviews were strategically designed to provide the research work with information and perceptions from this specific universe. Therefore, the interviewed entrepreneurs and investors concentrated their action focus upon high-impact companies still in their initial development stage, as well as the entrepreneurship support institutions, that comprised incubators, accelerators and hubs, besides agencies such as the Brazilian Small Business Administration – Sebrae and law firms veered towards supporting venture capitalists. Consultants are understood as the individuals who do not play a single role in the ecosystem, but command a general view of the subject and have shared their views as interested specialists in the Brazilian entrepreneurship phenomenon.

3.2. Quantitative stage

The quantitative database was constructed basing on the updated version of the entrepreneurial determinants as defined by OECD in their website section dedicated to entrepreneurship², where the investigation's six main

² <http://www.oecd.org/industry/business-stats/indicatorsofentrepreneurialdeterminants.htm>

pillars are available and determinant factors and sub-factors of each one of them are specified. OECD also suggests, in the same documents, the sources whence the data corresponding to each variable can be extracted. However, a major part of these is focused upon the study of European countries and, therefore, do not contain data about Brazil. Therein lays the main challenge to the construction of a Brazilian quantitative base.

Therefore, an extensive research effort was developed to find alternative – yet corresponding – variables to those whose specified sources did not provide numbers relating to the Brazilian reality.

Although not all of them are approached in this paper, it is important to mention that the database constructed considered a total of 103 variables as suggested by OECD, being 92 of them mapped – of which 55 were original and 37 were corresponding variables – which represents a success mapping rate of approximately 89%³.

3.3. Definition of benchmark countries

Aiming at enriching this study comparative analyses were drawn between Brazil and benchmark countries for each of the six studied pillars. An additional research effort was put forth to elect these countries, in compliance with the following methodology: countries were selected that appeared as top countries in the reports from which the quantitative variables under analysis were extracted. This means backtracking to the sources of each one of the variables that were successfully mapped for Brazil and the 10 best-rated countries in each of them were mapped out. The investigation then took as a benchmark country that country that appeared among the 10 first positions in the largest number of variables. In the cases where two or more countries appeared the same number of times, the definition criterion was the number of incidences in the first 5 positions. It is important to observe, therefore, that the definition of benchmark countries considered the list of participants in the consulted studies and not the total number of countries

³ An approximation. The alternative variables are either **similar** or **complementary** to the originals. It is not possible to guarantee 100% correspondence among the variables as originally suggested by the OECD, whose values were not found in Brazil, with those alternatively suggested.

on the planet, and countries not mapped by the reports in question may have been left aside.

4. DISCUSSION OF RESULTS

Table 3 shows the main insights taken from the set of qualitative interviews. The perceptions gathered from the 30 in-depth interviews were mapped considering the six OECD pillars and explored by each respondent's profile. The data analysis is presented right after, condensing the qualitative insights with the quantitative findings so it is possible to understand in what cases the perceptions validate or go against the secondary quantitative data analyzed. The quantitative data provided are for the last year that was available for each indicator. The quotations from the qualitative interviews are not identified in respect to the confidentiality policy applied at the request of the interviewees.

Table 3: Main insights of qualitative interviews - primary data

QUALITATIVE INTERVIEWS - DETAILING			
RESPONDENTS PROFILE	REGULATORY FRAMEWORK	MARKET CONDITIONS	ACCESS TO FINANCE
ENTREPRENEURS	<p>Positive aspects:</p> <ul style="list-style-type: none"> . Availability of government financial incentives for technological research development; . As long as the entrepreneur have a good project to apply he will probably get public subvention; <p>Negative aspects:</p> <ul style="list-style-type: none"> . No periodicity/predictability of government incentives = entrepreneurs usually are not prepared to apply in short notice under government's conditions; . To much bureaucracy on project approval and financial incentive release = entrepreneur may lose market timing for sales (mainly in IT companies); . Specific industries have huge problems to get their products approved by the National Agency for Sanitary Viglance (ANVISA) - it can take up to six years or more to have a product approved for commercialization. 	<ul style="list-style-type: none"> . New Brazilian companies usually already starts aiming international markets; 	<ul style="list-style-type: none"> . Brazilian startups entrepreneurs tend to invest their own capital as seed money to make the company run; as well as their human resources, being full time dedicated to the business since its conception; . Entrepreneurs perceptions is that it is very tough to attract Venture Capital investments; . When they do attract investments the process is very slow and bureaucratic - more focused on business analysis and less in entrepreneur profile; . The greatest part of investments on research come from the government;
INVESTORS	<ul style="list-style-type: none"> . Perception is that the investments on startups in their initial developing stage is government responsibility; 	<p>–</p>	<ul style="list-style-type: none"> . Investors feel that Brazil is about 20 years behind USA considering the Venture Capital/Private Equity/Angels environment and development; . Investors tend to evaluate if entrepreneurs have a partner or a owner mentality. If the entrepreneur do not accept very well to work with partners in his/her business he/she won't deal well with investment funds; . Other aspect investors evaluate is entrepreneurs' ambition - must to be high; . Skills to adapt the business to the market needs are mandatory for success; . Investment funds in Brazil invest really high amount of money, but in lower risk operations;
SUPPORT INSTITUTIONS	<ul style="list-style-type: none"> . There is a lot of research financial support from the government but with no criteria linked to the research implementation on the market/ startups misses resources for marketing and a good commercialization strategy; 	<ul style="list-style-type: none"> . Main startups success cases are of those ones that had the ability to adapt their business to the market changes or needs; . Incubator startup selection evaluate the business model focusing on market size and product demand; . The market understanding is usually weak on incubated startups. Sometimes they have a well developed product but do not understand their market for effective commercialization; . Incubators tend to approve companies with high-growth potential that already starts focusing in international markets; . Incubators usually give market strategy advice to their startups; 	<ul style="list-style-type: none"> . Startups can even get a first investment round but can hardly get a second round ("about 3 out of 30 companies evaluated get a second investment"); . Incubated companies miss investments for scaling their products; . High-technology companies developing disruptive innovation does not attract many investments in their beginning as it demands high amount of capital associated with high risk operations;

QUALITATIVE INTERVIEWS - DETAILING CONT. 1			
RESPONDENTS PROFILE	REGULATORY FRAMEWORK	MARKET CONDITIONS	ACCESS TO FINANCE
RESEARCHERS	<ul style="list-style-type: none"> . Belief on the triple helix model - it is necessary to work the complex relationship between government, private companies and universities; 	-	-
CONSULTANTS	<ul style="list-style-type: none"> . There are regulation laws according to which public employees as university teachers/researchers are not allowed to constitute a company while working at the university - can't be both researcher and entrepreneur; . From the point of view of the investor it is very complicated to invest in a technology being developed inside the university because there are no guarantees for the freely commercialization of the technology in the market; . Brazilian tax system gives no incentive for those who make investment in innovation; . There is no significant differentiation of taxation by size or turnover of companies (could have a turnover of 2 or 50 millions and the same costs and statements are applied); . Legally there is no difference between companies that already have revenues of those who are still in the process of raising capital; . The investor in Brazil has no regulatory protection; . Companies seek Brazil despite the regulatory framework; . Regulatory framework is focused on developed companies and not in companies in the development stage; 	<ul style="list-style-type: none"> . There is a favorable market in Brazil as a consequence of the mobility of the middle class mainly in the last years; 	<ul style="list-style-type: none"> . The universe of Venture Capital, Private Equity and Angels institutions is concentrated in southeastern Brazil. In other states that community is still very weak; . It feels that there is a delay of 40/50 years with respect to the U.S. and its investment environment of VC / PE / Angel;

QUALITATIVE INTERVIEWS - DETAILING CONT. 2				
RESPONDENTS PROFILE	CREATION AND DIFFUSION OF KNOWLEDGE	ENTREPRENEURIAL CAPABILITY	ENTREPRENEURSHIP CULTURE	SUPPORT INSTITUTIONS
ENTREPRENEURS	<ul style="list-style-type: none"> . The major part of the research development in Brazil is made inside the universities - it is necessary to help academics to develop applied technology, focused on market needs; . Researchers have difficulties in scalability of their technologies - they get a laboratory scale but can't insert it in a production line; 	-	<ul style="list-style-type: none"> . It might be a limitation of the Brazilian culture - not to be open to talk with neighbor countries as it does with more facility other countries in Latin America - might be a language issue or a localism aspect of the Brazilian culture; 	<ul style="list-style-type: none"> . Incubators help to build a network between companies - favorable environment for developing business partnerships;
INVESTORS	<ul style="list-style-type: none"> . It feels like in Brazil the researcher has no obligation to present practical results out of its work, therefore there is no concern on the application of the knowledge or technology to solve real problems or attend real market needs; 	<ul style="list-style-type: none"> . There is a lack of entrepreneurship education, therefore the country misses entrepreneurs with good entrepreneurship mentality; . Brazilian entrepreneurs are lacking the main characteristics investors evaluate (see Access to Finance); 	<ul style="list-style-type: none"> . Main cultural problems: . Lack of tolerance to failure; . Risk aversion; 	-
SUPPORT INSTITUTIONS	-	<ul style="list-style-type: none"> . Entrepreneurs enter the incubator with a very short market view, they are very technical, with no long-term plans for their business; 	<ul style="list-style-type: none"> . Brazilian investors also have risk aversion and usually does not support high risk business as, for example, highly innovative startups; 	<ul style="list-style-type: none"> . Advice of consultants or support institutions on building a strong business model is determinant for startup success;
RESEARCHERS	<ul style="list-style-type: none"> . The most innovative companies that emerge are rooted in universities' research; . IT vs. Eco technologies: IT companies come more from the perception of an opportunity while eco technology comes more from research. . Entrepreneurs and researchers speak different languages - entrepreneurs: technology commercialization/ researchers: it is all about the technology development; . Lack of expertise on patent transfer and negotiation; . Main issue: . The researcher does not want to divide among its research activities and duties from a company. There is no interest for looking the research under a business perception; 	-	<ul style="list-style-type: none"> . Brazilian culture seems to be characterized by the need for socialization in a very informal level and lack socialization to talk about business, or about skills; . The catholic cultural values seems to understand wealth as a sin, what might be an obstacle for entrepreneurship development; 	-
CONSULTANTS	<ul style="list-style-type: none"> . The process of transferring technology that is produced at the university does not work well today in Brazil; . Patent is absolutely linked to the university which discourages potential private investments in the technology development process; 	-	<ul style="list-style-type: none"> . The culture of Brazilian investors determines more investments in low risk opportunities (e.g. Franchises). It is important to encourage investors to look for alternative, higher-risk businesses, which bring higher results not only for the entrepreneur, but for the country economy in general; 	-

Source: FDC Study – The Brazilian Entrepreneurial Ecosystem of Startups

4.1. Regulatory Framework

The qualitative perceptions about this pillar stress the quantitative findings and point towards the Brazilian regulatory framework as a problem for the country's entrepreneurial development.

Concerning quantitative analysis, since there are a considerable number of variables involved in assessing the regulatory framework, the authors

decided to split the set of sub-factors into three categories that facilitate understanding, to wit:

Variables in progress: these are the variables that have evolved in the past few years in the sense of facilitating new business in Brazil.

Stagnant variables: these are variables that have not evolved or have regressed in the past few years, showing variations smaller than one unit in the indices analyzed.

Regressing variables: these are the variables that have regressed in the past few years in the sense of facilitating the development of new business in Brazil.

Table 4 shows the classification of all variables analyzed according to the categories above, their corresponding factors within the regulatory framework pillar and, also, the comparison between Brazilian and Singaporean models - Singapore being the country chosen as the regulatory framework benchmark according to the methodology described in the previous section.

Table 4: Mapped variables for the Regulatory Framework pillar

Variables	REGULATORY FRAMEWORK										Singapore	Year*	Responsibilities	
	2007	2008	2009	2010	2011	2012	2013	2013	2013	2013				
Variables in progress														
Costs Required for Starting a Business	9,3	10,4	8,2	6,5	7,3	5,4	4,8	0,6	2013	Administrative Burdens				
Number of Days for Starting a Business	149	149	119	119	119	119	38	2013	Administrative Burdens					
Cost to Build a Warehouse	60,2	59,2	46,7	50,3	48,3	40,2	38	16,2	2013	Administrative Burdens				
Number of Procedures for Starting a Business	15	15	15	15	15	15	15	15	2013	Administrative Burdens				
Time to Prepare, File and Pay the Corporate Income Tax, VAT and Social Contributions	41	41	46	46	46	46	46	31	2013	Administrative Burdens				
Private expenditure on health procedures of total expenditure on health	58,2	57,2	56,4	59	ND	ND	ND	63,7	2010	Social and Health Security				
General government expenditure on health as a percentage of total expenditure on health	41,8	42,8	43,4	43	ND	ND	ND	36,3	2010	Social and Health Security				
Taxes on financial and capital transactions (% GDP)	1,7	0,7	0,6	0,7	ND	ND	ND	ND	2012	Business and Capital Taxes				
Cost of capital	1,7	2,4	1,9	2,2	2,6	2,8	ND	7,2	2012	Business and Capital Taxes				
Singapore variables														
Burden of Government Regulation	1,9	1,9	1,8	1,9	2	2	ND	5,6	2012	Administrative Burdens				
Minimum Capital Required for Starting a Business	0	0	0	0	0	0	0	0	2013	Administrative Burdens				
Procedures to Build a Warehouse	17	17	17	17	17	17	17	11	2013	Administrative Burdens				
Costs for Register Property	2,8	2,8	2,7	2,6	2,7	2,6	2,6	2,9	2013	Administrative Burdens				
Time it Takes to Prepare, File and Pay the Corporate Income Tax, VAT and Social Contributions	2,6	2,6	2,6	2,6	2,6	2,6	2,6	82	2013	Administrative Burdens				
Actual Costs to Close a Business	12	12	12	12	12	12	12	1	2013	Administrative Burdens				
Actual Time to Close a Business	4	4	4	4	4	4	4	4	2013	Administrative Burdens				
Immigration Laws	6,1	5,5	5,4	5,0	5,6	5,5	ND	5,6	2012	Product and Labour Market Regulation				
Difficulty of Firing*	0	0	0	0	0	0	0	0	2010	Product and Labour Market Regulation				
Rigidity of Hours Index*	66	66	66	66	66	66	66	ND	2010	Product and Labour Market Regulation				
Pay and productivity	3,8	4,2	4	3,7	3,7	3,8	ND	5,4	2012	Product and Labour Market Regulation				
Enforcing Contracts - Cost in % of claim	16,5	16,5	16,5	16,5	16,5	16,5	16,5	25,8	2013	Court & Legal Framework				
Enforcing Contracts - Time	731	731	731	731	731	731	731	156	2013	Court & Legal Framework				
Total expenditure on health as a percentage of GDP	8,5	8,3	8,6	9	ND	ND	ND	4,6	2010	Social and Health Security				
Taxes on income, profits and capital gains (% GDP)	7,3	7,8	7,3	6,9	ND	ND	ND	ND	ND	Income taxes: Wealth/Request Taxes				
Payroll taxes - paid by the employer (% GDP)	3,8	3,8	3,9	3,9	4,0	ND	ND	ND	ND	Income taxes: Wealth/Request Taxes				
Payroll taxes - paid by the employee (% GDP)	1,9	1,9	1,9	1,9	2,1	ND	ND	ND	ND	Income taxes: Wealth/Request Taxes				
Taxation of Corporate Income (% of GDP)	3,7	4,0	3,8	3,4	ND	ND	ND	ND	ND	Business and Capital Taxes				
Intellectual Property Rights	3,3	3,3	3,0	3,1	3,2	3,5	ND	6,1	2012	Patent System Standards				
Property Rights	4,3	4,6	4,4	4,3	4,4	4,7	ND	6,4	2012	Patent System Standards				
Regression variables														
Number of procedures for register property	13	13	13	13	13	13	14	5	2013	Administrative Burdens				
Time for register property	33	33	33	33	33	33	34	21	2013	Administrative Burdens				
Days to build a warehouse	37,5	46,9	46,9	46,9	46,9	46,9	46,9	26	2013	Administrative Burdens				
Bankruptcy recovery rate	12,1	14,8	17,1	17,1	17,1	17,1	17,1	17,9	2013	Bankruptcy regulations				
Difficulty of hiring	67	78	78	78	78	78	78	0	2010	Product and Labour Market Regulation				

Source: FDC Study – The Brazilian Startup Entrepreneurial Ecosystem

ND: Unavailable data.

*Year: indicates to what year the data specified for Singapore corresponds. *Difficulty of Firing; Rigidity of hours index and Difficulty of hiring; all data referring to *Doing Business* were pro-

vided directly by the report organizing committee. The documents provided to Fundação Dom Cabral listing the requested data included the observation in these specific variables that the indicators are being revised. The figures were then extracted from the *Doing Business* reports available online. A full description of each variable mentioned above is presented in **Appendix I** at the end of the paper.

The entrepreneurial environment requires dynamism to develop; thus the importance of a regulatory framework that will break with the bureaucratic hamstringing of the entrepreneurship development process.

Mainly, when startup entrepreneurship is discussed, it is necessary to consider that the speed of setting up a business and the facilities that encourage its rapid growth are key factors for success. Young entrepreneurs are usually at the helm of these companies, bringing innovative ideas that break away from traditional product standards or business models. They think ahead of their time and their reality seems to run on a faster track.

In this context, two variables currently regressing in Brazil call attention: personnel hiring difficulties and the bankrupt company recovery rate.

On a scale from 0 to 100, the latter being the highest the score and the greater the influence of laws and regulations representing hurdles against personnel hiring, Brazil was rated at 78 points. Hiring personnel appears, therefore, to be a major limiting factor of the country's dynamism. Entrepreneurs are grid-locked in the face of administrative charges levied against personnel hiring that hamstring their budgets or when labor laws, focused upon workers' needs, do not contemplate the employer's requirements.

“If a company wishes to create job opportunities there's no difference, no different treatment to create these new work stations[...].”

“[The Brazilian] labor market is completely different from that of seventy years ago, but it still has the same law of seventy years ago; extremely protective and hardly flexible...”

The numbers also indicate that there is no easing in Brazil concerning the regulations applicable to the recovery of bankrupt companies. The rate of recovery assessed above is recorded as cents to the dollar recovered by creditors by means of reorganization, liquidation or debt foreclosing procedures.

In Brazil, therefore, once a company slips into red territory and contracts debt for recovery, only 15.9% of total assets committed are expected to be recovered.

Consequently, Brazilian companies have followed the opposite rationale of a favorable entrepreneurship environment; where entrepreneurs should find ease to venture serially and bankruptcy cannot loom as a limiting factor to the continuity of their efforts towards new businesses. It is precisely the possibility of restarting that strengthens the ecosystem with continual innovative ideas that increase the possibility of successful companies existing in the marketplace.

Besides, for those companies that require proper space to develop technologies through laboratory studies and more complex prototyping studies to manufacture a marketable product, the slowness of the facility building process and the bureaucracy involved in property registration, which are two other regressing variables in Brazil, can be development-limiting factors.

On the other hand, it is of the essence to note that the costs of building a warehouse decreased substantially in the past few years and that there has been remarkable progress in the process of starting a business, entailing a significant reduction both of the number of days required to start a business and also of the costs and number of procedures involved in the process.

The Brazilian federal administration created the Individual Micro-entrepreneur modality via Complementary Law no. 128, dated 12/19/2008. This is an example of official action that facilitates the establishment of companies, reducing the time required to obtain a valid corporate taxpayer number (CNPJ) down to 15 minutes, via the Internet. This measure contains many limitations since it is only applicable to entrepreneurs who are enjoying maximum sales of R\$60,000 per year and who do not hold equity interest in another company as a partner or owner. However, it does benefit self-employed professionals who are trying to start their own business and offers them the possibility of issuing fiscal invoices, together with the facility of opening a corporate checking account and entering into loan agreements for the company when necessary⁴.

⁴ <http://www.portaldoempreendedor.gov.br/mei-microempreendedor-individual> - 4/16/2013.

Another federal government measure whose purpose is to stimulate the economy and facilitate the development of companies concerns the reduction of payroll taxes, a stagnant variable in Brazil for years.

Tax exemptions upon payroll were implemented in 2011 and extended application to more industries in April 2013, currently favoring 42 sectors of the Brazilian economy by the reduction of taxes levied upon workers' wages. The measure contemplates the substitution of a 20% contribution on the payroll of companies, made to the National Institute of Social Security (INSS), for a fee varying between 1% and 2% of companies' sales. It is an interesting reaction by the government to the negative evaluation of personnel hiring in Brazil and, indeed, may stimulate the creation of jobs in the country and improve Brazilian corporate competitiveness⁵.

Although advances have been made in merit recognition because of the important influence it brings to Brazilian entrepreneurial development, the Brazilian regulatory framework is far from being a role model for entrepreneurship incentive. Among the 34 elements mapped above, 25 of them, or approximately 74% are stagnant or regressing considering the period between 2007 and 2013. This scoring is evidence of a negligent facet of the Brazilian reality that has scantily changed in the past few years in the sense of stimulating the regulatory model such as to facilitate corporate development in Brazil.

"[...] as concerns the regulatory framework, having worked in this market for such a long time, my understanding is that Brazil is attractive despite the regulatory framework. There is nothing in the regulatory framework that will make Brazil an interesting country. The regulatory part does not reduce the Brazil Risk".

"[...] Brazil as a rule finds it difficult to regulate companies. The regulatory system is a hurdle, a weakness in the area of specific entrepreneurship regulation".

"[...] before earning a profit, long before compensating investors and others, we are compensating the government, paying

⁵ <http://www.fazenda.gov.br/portugues/documentos/2012/cartilhadesoneracao.pdf> - 4/16/2013.

taxes for a long time before we can yield results. We were having negative net margins in the beginning, that is, costs were greater than revenues. Negative margins and even so you must pay taxes all the same, that means one incentive less, one advantage less to encourage you to be enterprising”.

Still, even considering the results found with variables that denoted some progress in the past few years, a marked contrast can be found between Brazilian and Singaporean numbers, which once more demonstrates the pillar’s shortcomings.

Table 5: Singaporean government measures towards entrepreneurship

Singaporean government measures towards entrepreneurship	Corresponding years
Established an online business registration	2007/2008
Allowed the company registration and tax declaration to be made through a single online form	2008/2009
Facilitated the obtaining of building permits by improving the internal process of electronic data processing	2009
Further facilitated the process of obtaining building permits with a new Regulation of Health and Safety that allows low-risk industries to submit documents online	2010
Facilitated the property registration through improvements in the country’s digital system	2010

Source: *Doing Business* reports for corresponding years

Therefore, the reforms implemented by the Singaporean government since 2007 stand as an interesting tool to guide future measures in the sense of developing public policies in Brazil. According to previous years’ reports by *Doing Business*, the actions described on Table 5 are notable.

4.2. Market Conditions

Qualitative interviews indicated that individuals who are involved with entrepreneurship in Brazil have an optimistic view of the Brazilian market as concerns the possibility of attracting new business and technology. For

these people, the increased population purchasing power in the past few years, together with a growing access to digital tools and the Internet characterizes an exceedingly fertile environment for the development of startups. Technologies already saturated in markets such as the United States, i.e, highly scalable ideas through e-commerce and which are already commonplace in other countries, find a practically untapped market in Brazil, daily increasing its thirst for digital consumption.

“[...] [the e-commerce market] is a brisk market all over the world and there’s a lot of space for this type of market in Brazil too, that is, ideas that appear consistently in these markets, I think they stand good chances of [creating] differentiated startups”.

“Companies that bring innovations from abroad to this country envision only one thing: our market. We are an emerging economy, with markets sometimes totally untapped, look at the electric car issue, they’re coming to explore our market”.

Indeed, the numbers unveiled an impressive e-commerce growth in Brazil. Sales from digital commerce increased from R\$ 8.2 billion in 2008 to R\$ 22.5 billion in 2012 in Brazil (E-bit Company, 2012). However, the consumers’ sophistication level did not increase on a par with their purchasing power increase. The country’s evaluations in this respect showed minimal variation, and have remained below average (between 3.8 and 3.6) for the past seven years, 1 being the score that indicates who base their buying on low price only while 7 denotes consumers who base their buying upon sophisticated product performance analysis (World Economic Forum [WEF], 2012).

This is a peculiar characteristic of the Brazilian entrepreneurship ecosystem, which does not necessarily minimize its development potential but should certainly be considered by young entrepreneurs at the time of conceiving their business, since the actual purchasing intention is obviously a determinant factor for product and service success or failure.

Another important point to be highlighted is the degree of governmental adaptability vis-à-vis changes in the economy, that scored 4.59 in 2012, representing an increase of nearly 2 points compared to the 2007 score of 2.67.

The scale considered here contains 10 points, where 0 means low adaptability and 10 represents high governmental policy adaptability (Institute for Management Development [IMD], 2012).

Although it is possible to notice some progress in this respect, a comparison with the Singaporean index – 8.25 in 2012 – Singapore being a benchmark country elected for this pillar as well, indicates that Brazil is still much behind what would be a benchmark adaptability level and, therefore, needs to identify and overcome possibly existing fetters in its market policies such as to follow up the speed of an entrepreneurial economy.

One suggestion is, for example, the facilitation for Brazilian companies to project themselves internationally. Many startups are born international and resort to information technologies to eliminate barriers among countries. It behooves the economies to understand and facilitate this movement as a manner to retain Brazilian best companies in the country, minimizing the risk of losing them to international markets.

“[My startup] had to be born international already, because the games industry in Brazil is mostly pirated software, 80% to 90% of everything is pirated. Then major international partners simply didn’t communicate with Brazil, didn’t invest in games in Brazil”.

“[...] the businesses we have approved here at the incubator are fast-growing companies, companies that have great potential. In fact, some of their customers are here in Paraná, but most of them are outside the country”.

The great issue is that such international projection in Brazil is being hindered by the export rates that grew exponentially in the past few years. According to *Doing Business* data, export costs nearly quadrupled for companies, from US\$ 630 per container in 2007 to US\$ 2215 per container in 2013 (World Bank, 2013a).

4.3. Access to Finance

Respondents note a growing supply of capital in Brazil. The economic prosperity this country has experienced for the past few years not only in-

creases the purchasing power of class C but also allows a greater accumulation of wealth by the individuals who were already at the top of the pyramid during crisis times. Such capital accumulation together with a dropping interest rate encourages investors to cast their eyes upon new investment opportunities, since fixed income investments are no longer so financially attractive.

“[...] Interest income is dropping and fixed income investments lose attraction. It wasn't too attractive before, now it's not at all, because investors will find an actual interest rate of 3% per year at best [...]”

Besides that, the numbers show that, indeed, credit availability in the country has increased in the past few years. The percentage of credit extended to the private sector, for example, was 61.4% in 2011, from 47.8% in 2007 (World Bank, 2013b). Probably a reflection of improvement of the country's credit rating, from 61.2 in 2007 to 70.9 in 2011, in a scale from 0 to 100, where 100 represents the greatest probability of obtaining credit (IMD, 2012).

The *Investor protection*⁶ variable, however, indicates that the economy growth movement is not on a par with adaptations for the improvement of investor conditions. In Brazil, it has been stagnant for the past seven years at the score of 5.3, for an almost 4-point difference compared to the Hong Kong score – 9 –, a country defined as a benchmark for this pillar, showing the distance between Brazil and a protection benchmark country (World Bank, 2013a).

Likewise, the variable *Venture Capital Availability* is also stagnated in Brazil, with scores below 3 from 2007 to 2012. On a scale 1 to 7, 1 means it is impossible to get a bank loan in the country with only a good business plan and no collateral and 7 means it is easy to get a loan in these conditions (WEF 2012).

Thus, on the one hand entrepreneurs complain of not having access to the capitals available in the country and stress the reality in that the do-

⁶ This variable is an average of the evaluation of three indices: transparency in transactions, responsibility for self-dealing and the capacity stockholders have to sue directors and executive officers for mismanagement.

mestic capital-tapping capacity does not directly influence the ease for entrepreneurs to obtain investments or loans for their businesses during the embryonic stage of their startups.

“[...] in Brazil today it takes us one year to obtain venture capital funds, it’s very tough”.

“[...] fella has his business, proved it works and everybody’s dying to give him money; now fella who doesn’t have any, who needs resources to develop, no way, he’s got to prove it works on his own and after he’s proven, when he doesn’t need money anymore, then he’ll find money”.

“[...] even with [public] subventions, in this specific case I tried, I had to apply through another company, because a company that doesn’t sell isn’t approved. Because they take up part of the technological risk but they don’t assume any commercial risk, then, if the company doesn’t sell, it doesn’t have a commercial life with technology, they don’t even invest”.

On the other hand, investors argue that a legal framework is lacking, such as to prompt them to invest in higher risk ventures. Investor insecurity looms as the great hurdle in the process. Most times investors will opt for transactions with larger sized companies, requiring heavier investments, but offering an attractive return at a smaller risk associated to the operation.

“[...] one thing is to take a piece of your personal assets and plough it into some venture. If it succeeds, fine. If it doesn’t, I kiss my resources goodbye. One thing is to take a piece of my personal assets, plough it into some productive activity and if this activity goes south I’ll be liable not only for the amount I’ve invested but will risk everything I own. This discourages investing in production activities.”

“I know of several investment funds that don’t invest less than 10 million; I know many that don’t invest less than 50 million”.

“[...] the groups that have investment potential in Brazil are not prepared for startup companies. They look for solid compa-

nies. We participated in an application call for credit in 2010 and one of the awarded companies had revenues to the tune of 5 billion reals that year. My question is: does a company that sell 5 billion reals really need 3 million to invest in the development of a new product? And this money really makes a difference to those who need it the most, the startup company, the company that is only just starting, the small business”.

The growth of domestic mergers and acquisitions in Brazil – from 351 in 2007 to 410 in 2011, for example – is an indication that, indeed, large-size businesses have increased in number in this country and emerging enterprise investments end up not being a first option (KPMG, 2012). Of the 11,677 investment funds on record with the CVM – the Brazilian Securities and Exchange Commission – in 2012, only 34 are on record as **Emerging Enterprise** Mutual Investment Funds (FMIEE), which signifies a share of only .3% of this universe (CVM, 2013).

4.4. Creation and Diffusion of Knowledge

Respondents understand the two axes composing this pillar in different manners. On the one hand, there is a belief that relevant knowledge has been created in the academy, that is, the *creation of knowledge* is not seen as a major problem in Brazil. On the other hand, the *diffusion* of this knowledge has not been satisfactory, that is, the results of efforts veered towards research do not necessarily become business and often times remain mothballed in academic shelves broaching no dialogue with the market. This lack of dialogue appears as a consequence of the incapability of two parties – researchers and entrepreneurs – to understand each other’s language. The researcher’s idealism cannot connect to the entrepreneur’s pragmatism, and this lack of communication between academia and enterprise ends up becoming a major hurdle to transform new ideas into successful companies.

“Academic researchers have a soft spot for invention; inventors are always quite myopic [...]. I strutted high toting my patent and thought I would save the world with my environmental area invention. I talked to industry people and disaster hit [...]. We speak different languages. In my mind [I thought]: sure, they’ll

be interested in an invention that'll save the world! We then began to talk and they began asking questions I couldn't answer, and very obvious questions for those in the private area, who are thinking about the use, marketing the technology. This evidently vexed me, why couldn't those people understand the beauty [of the invention]? Sure, from the chemical view point it was too cool!"

"[...] the hardest, in fact, is having expectations that a researcher, a person who prepared himself to be a researcher at the university, should have an entrepreneurial behavior. Some companies in the fund found some difficulties because of this profile gap."

Quantitative evaluation indicates that the collaboration between university and industry is, indeed, below Finnish levels – Finland being the pillar's benchmark country – confirming the Brazilian shortcomings as qualitatively seen in this respect. However, a small growth can be seen in the past few years' indices. On a scale where 1 represents a minimal to non-existent level of collaboration between academia and enterprise and 7 represents an intense and continual level of collaboration, Brazil scored 3.4 in 2007 and 4.1 in 2012, not too far from the Finnish score of 5.6 for the same year (WEF, 2012).

On the other hand, the effective creation of knowledge – assessed by the number of patents registered in the country in the past few years – are behind Finnish indices, depicting a less optimistic reality than that seen by respondents.

In the reference year of 2010 the number of patents granted to inventors residing in Brazil, a country of approximately 196 million inhabitants⁷, is almost three times smaller than Finland's, a country of only 5.39 million inhabitants⁸ (OECD, 2013).

⁷ Data referring to 2011 extracted from the WIPO – World Intellectual Property Organization site – http://www.wipo.int/ipstats/en/statistics/country_profile/countries/br.html

⁸ Data referring to 2011 extracted from the WIPO – World Intellectual Property Organization site – http://www.wipo.int/ipstats/en/statistics/country_profile/countries/fi.html

Within the scope of technological availability and acceptance – another factor that affect the Creation and Diffusion of Knowledge pillar according to the OECD framework – a fast-growing ambiance is already noticeable in Brazil. The increase in digital business, that almost tripled in the past five years driven by the 13 percentage point increase in the percentage of individuals who purchase products and services via the Internet between 2007 and 2011 is evidence that at least the basic technological structure – computers and the internet – has become more available to the Brazilian population in the past years and, more importantly, has been absorbed by individuals (CETIC, 2011). That is, the country wins on both sides: on the one hand, when a greater number of potential entrepreneurs has the possibility to access what is developed elsewhere – being capable of transforming information in subsidies for the creation of new businesses – on the other, chances to absorb digital business⁹ increase by the day, due to the growing mass of consumers.

Finally, the low level of cooperation among Brazilian companies in 2012 – 4.7 –, compared to Finland – 7.5¹⁰ – demonstrates that large Brazilian companies also have space for supporting the process of entrepreneurship development in Brazil, inserting embryonic companies in their production chains as suppliers of specific technologies, for example, playing an important incentive role in the creation of a greater number of startups in the country (IMD, 2012).

4.5. Entrepreneurial Capability

The entrepreneurial capability development process, according to the OECD, is determined by two main elements: the presence of education veered towards entrepreneurship and migratory flows bringing qualified foreigners professionals into the country.

Both interviews and quantitative data depict the Brazilian reality in a similar fashion. Education in Brazil, almost entirely, does not approach entrepreneurship themes neither in the traditional formation courses nor in higher education courses such as business management, engineering and

⁹ Segment to which most startups interviewed in Southeastern Brazil have veered.

¹⁰ The index is based on a scale from 0 to 10, where 0 means technological cooperation among companies is lacking and 10 means that cooperation is well-developed.

economics, for example, in which applied entrepreneurship curricula would be applicable. However, these courses are limited to the classic education to develop professionals who are mostly trained to be fine employees of great organizations – a synonym with professional success – but not to establish their own business.

“[...] as far as I know, universities have practically nothing, at most they have a junior company, which is something very different. I think all courses, engineering, IT, chemistry, medical courses – because there are several companies in the medical area as well – all courses should offer some type of training, of guidance, for [the students] to become entrepreneurs. The student finishes school, how is he going to venture?”

Even Brazilian business schools, which represent an alternative option for those who seek more specific education with the development of enterprising skills, have quality indices below those found in the United Kingdom, a benchmark country for this pillar. The scale evaluates the quality of business schools in different countries, where 1 means poor or limited quality and 7 denotes the presence of schools classified as the best in the world. Brazilian score in 2012 was 4.4 against 6.1 of United Kingdom in the same year (WEF, 2012).

Another worrying factor is the access to basic higher education, with or without entrepreneurship elements, that in 2010 was benefit of only 12% of the Brazilian population, a number in stark contrast with the 46% of the United Kingdom population trained in higher education in the same year, which unveils a precarious reality as concerns the availability of skilled human resources for the large scale development of enterprises in Brazil (IMD, 2010).

Given this scenario, it would be interesting for the country economy to make Brazil attractive for skilled foreign professionals who come to this country to share ideas and abilities with local potential entrepreneurs.

However, considering the year 2010 as the baseline, a comparison between the number of foreign students in Brazil – 14,738 – and in the United Kingdom – 389.958 – is a warning of the lack of attractiveness to welcome foreigners and possibly retain them in the country (UNESCO, 2013).

4.6. Entrepreneurship Culture

Culture is the backdrop of all elements of an entrepreneurial ecosystem and directly affects its operations and growth. In this pillar, behavioral preferences and characteristics of individuals in favor or against entrepreneurship are assessed, besides contemplating entrepreneurial education in a subtly different manner than how it was approached in the previous pillar. Here, investigating the development of an entrepreneurial mindset in individuals from their basic schooling is more important than understanding whether is any knowledge about entrepreneurship being taught in intermediary school and higher education.

Starting from an analysis of preferences and characteristics, we note in the respondents' statements an interesting counterpoise between the fear of failure and entrepreneurial initiative. The qualitative issue of greatest eminence was precisely the resistance that Brazilians offer against failure and, possibly as a direct consequence of this element, their risk aversion. Failure, in Brazil, often times seems to come hand in hand with hard to overcome social stigmata that loom as impediments or hindrances to the entrepreneur restart.

“Brazil has a complicated problem, that is, the lack of a failure culture. And you don't have any venture capital, no innovation, nothing of the sort here, if there's no tolerance for failures”.

“[...] today there's more space to create and innovate, but I also think that the fear of failing is still great. If you've ventured and failed, I think society in general [...] the person is recognized as a flop, a person who can't manage nor create a company”.

Risk aversion, in turn, affects the other side of the coin. Since collateral for investors still has not reached satisfactory levels, as shown in the *Access to finance* pillar analysis, the risk aversion cultural aspect influences investors even further into resisting greater aggregate risk, represented by the startup companies.

Nevertheless, Brazilians are still seen as people of great initiative. However, such initiative is motivated by the need to find an income generation

manner in situations where other alternatives are not available. The fear of failure, in this case, seems to strengthen the profile of the “necessity driven entrepreneur” as a counterpoise to what is expected from entrepreneurs and startup investors, who opt for assuming great risks in exchange for the possibility of achieving significant financial gains. These are the so-called “opportunity driven entrepreneurs”.

“I think it’s changed a little, the entrepreneur has been a little more acknowledged, but I think he is seen as a jobless person, you don’t know what to do so you open a little company around the corner [...] out of need instead of out of opportunity [...]”

Quantitative data, differently from the qualitative approach adopted during the interviews, seem to turn to a different face of entrepreneurship. While respondents voiced their views concerning the entrepreneur/startup investor and the characteristics required to be at the helm of a high-growth, high-risk business, some quantitative variables seem to approach entrepreneurship merely through the eyes of the individual who would rather be self-employed than an employee. The first profile requires a different range of skills that the Brazilians, as expounded in previous paragraphs, must still improve.

The second profile is more intimately related to the wish of opening a business, no matter if it is a retail activity such as a restaurant, a bakery, a convenience store, etc. The propensity of Brazilians to pursue this type of activity is high. The 2012 data indicate that the Brazilian individual harbors many more wishes to both open his/her own business and to be a self-employed professional than Norwegians, Norway being the country selected as a benchmark for this pillar (Xavier, Kelley, Kew, Herrington & Vorderwülbecke, 2012).

On the other hand, stressing the qualitative view, Norwegians are positioned 11 percentage points ahead of Brazil considering opportunity-driven entrepreneurship. This index represents the percentage of individuals involved in entrepreneurial activities in their initial stage who claim to be motivated by the opportunity as opposed to not finding any other gainful employment (Xavier et. al, 2012).

5. CONCLUSION

The Brazilian regulatory framework, albeit showing subtle signs of improvement, does not seem to follow the entrepreneurial movement in Brazil at the same speed as its milieu. Brazilian decision-making regulatory bodies seem not to have yet perceived the role of extreme importance they play in the country's economic development by means of encouraging the creation of new companies, and the need to eliminate legal and regulatory constraints to stimulate the birth and growth of companies in the country.

The market for Brazilian companies, on the other hand, presents itself as a major force in Brazil, with a huge amount of potential consumers. The question that remains, however, is whether the Brazilians are willing to overpay for an innovative product. For emerging businesses it is necessary to study in depth their target audience to understand its peculiarities and develop products and services that can be, in fact, absorbed by them.

With regards to the access to financing, it is clear that the progress of the Brazilian economy has created potential investors, that is, people with disposable capital for myriad investments who are at the crossroads of making their investment decisions. Therefore, Brazil has a very important resource with which to move its entrepreneurship ecosystem forward – the capital – and the country needs to apply efforts towards making the *New Enterprise* a more attractive option to these individuals. Measures for investor protection, for example, can smooth the Brazilian's risk aversion trait, serving as an incentive to transfer investments into larger companies to investments into startup enterprises.

Concomitantly, the creation of knowledge and capacity-building professionals for the market – entrepreneurs or otherwise – are ecosystem elements also behind their potential, and require attention both from public bodies and other ecosystem players.

Indeed, public investment in education and measures to encourage the entrepreneurship mindset are of the essence to create a greater number of relevant research that can become businesses and, just as importantly, to place skilled professionals in the marketplace such as to meet the demand for labor during their growth process.

On the other hand, the responsibility for the great functioning of the ecosystem is incumbent upon all the players in it; entrepreneurs and researchers should also take up important roles in this evolution. Since there is evidence that much knowledge has been created and is mothballed on Brazilian academia shelves, for example, it behooves researchers and entrepreneurs to bring it out in the open and to help each other identify applications for this knowledge that are interesting to both parties.

Besides that, Brazilian entrepreneurs possess basic abilities for the entrepreneurial development in the country, such as initiative and the desire to break away from subordinated employment. It is necessary to develop these abilities in the sense of more intensely encouraging high-growth entrepreneurship that yields large-scale economic and financial returns to the country.

This change may occur by means of capacity building and entrepreneurship culture, which are complementary pillars. Entrepreneurial capacity building may influence a country's culture change towards entrepreneurship, which would probably return as encouragement to advances in entrepreneurial capacity building investments.

It is well to consider that greater visibility for the country begets a greater market, attracts foreign talent from abroad and increases the chances of retaining them in the country, awakens investor interest and, more importantly, encourages the implementation of measures by the government to accelerate economic progress. Thus, considering the growing Brazilian international exposure in the past few years and the exposure it will have at least until all sports events end in 2016, the time is definitely favorable to invest in the progress of the Brazilian entrepreneurial ecosystem, aiming at a fast development of the features that require attention indicated in this study; in an effort to leave, for future generations, not just stadiums and memories, but a diverse portfolio of new successful businesses.

The authors reiterate that this paper is an initial effort to systematize data on entrepreneurship in Brazil resorting to an official database enabling international comparisons, and its prime objective is to be a starting point to establish a dialogue and join efforts with research and professional organizations and domestic and international academicians who are motivated by

the same wish to understand world entrepreneurship and who wish to add their observations or share relevant data to allow the constant improvement of the database presented here. A very interesting next step would be, for example, to develop comparative studies among Brazil and the others Latin American countries in which regards their entrepreneurial ecosystem, its characteristics and evolution.

Also, a longitudinal study combined with joint efforts to map out the indicators for which Brazilian data could not be found will allow an understanding of the evolution of entrepreneurship. For this purpose, the Determinants scope alone can be considered, as done by the authors; also fitting is expanding the understanding of the model proposed by the OECD as of the study of two other scopes approached: Impacts and Performance.

Considering this study's qualitative stage, the authors have met with resistance while discussing failure experiences with entrepreneurs who were not successful with their startups. Amassing a greater number of statements concerning this issue may contribute enriching information to understand the reason for enterprise failure, adding a more comprehensive dimension of the phenomenon to the study.

Besides, in such a diverse country as Brazil, regional studies are always interesting and unveil surprising realities. Close analysis of the country's peculiarities – mainly those belonging to the north, northeast and center west regions, not approached by this investigation – stand out as another possibility for a study capable of creating deeper knowledge about the subject.

Finally, greater efforts should be prosecuted upon the study of pillars *Entrepreneurial capability* and *Entrepreneurship culture*. Because these aspects are more subjective than the others are, available data are scarcer, therefore limiting understanding. The contribution from Brazilian and international bodies that may share data of this magnitude is of the essence, such that the effort may indeed reach world comparability proportions.

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Appendix I - List of mapped variables on regulatory framework and their respective description and sources

OECD VARIABLES		Description	Data Sources
Regulatory Framework			
Administrative Burdens (Entry and Growth)			
Burden of Government Regulation		Survey responses to the question: how it is to comply with administrative requirements (permits, regulations, reporting) issued by the government in your country? (grades going from 1 to 7: 1=burdensome, 7=not burdensome).	Global Competitiveness Report (WEF)
Costs Required for Starting a Business		The official cost of each procedure in percentage of Gross national Income (GNI) per capita based on formal legislation and standard assumptions about business and procedure.	World Bank, Doing Business
Minimum Capital Required for Starting a Business		The paid-in minimum of capital requirement that the entrepreneur needs to deposit in a bank before registration of the business starts.	World Bank, Doing Business
Number of Days for Starting a Business		The average time spent during each enterprise start-up procedure.	World Bank, Doing Business
Number of Procedures for Starting a Business		All generic procedures that are officially required for an entrepreneur to start an industrial or commercial business.	World Bank, Doing Business
Procedures to Build a Warehouse		The total number of procedures required to build a warehouse. A procedure is any interaction of the company's employees or managers with external parties.	World Bank, Doing Business
Days to build a Warehouse		The total number of days required to build a warehouse. The measure captures the median duration that local experts indicate is necessary to complete a procedure in practice.	World Bank, Doing Business
Cost to build a Warehouse		Cost is recorded as a percentage of the economy's income per capita. Only official costs are recorded.	World Bank, Doing Business
Number of procedures for Register Property		The total number of procedures legally required to register property. A procedure is defined as any interaction of the buyer or the seller, their agents (if an agent is legally or in practice required) or the property with external parties.	World Bank, Doing Business
Time for Register Property		The total number of days required to register property. The measure captures the median duration that property lawyers, notaries or registry officials indicate is necessary to complete a procedure.	World Bank, Doing Business
Costs for Register Property		Cost is recorded as a percentage of the property value, assumed to be equivalent to 50 times income per capita. Only official costs required by law are recorded.	World Bank, Doing Business
Time it Takes to Prepare, File and Pay the Corporate Income Tax, VAT and Social Contributions		The time it takes to prepare, file and pay (or withhold) the corporate income tax, the value added tax and social security contributions (in hours per year).	World Bank, Doing Business
Bankruptcy Regulations			
Actual Cost to Close a Business		The cost is measured in percent of estate, based on a standard business closure.	World Bank, Doing Business
Actual Time to Close a Business		Time is recorded in calendar years. The indicator is based on a standard business closure.	World Bank, Doing Business
Bankruptcy Recovery Rate		The recovery rate estimates how many cents on the dollar claimants - creditors, tax authorities and employees - recover from an insolvent firm.	World Bank, Doing Business
Possibility of a Fresh Start		The indicator measures an entrepreneur's possibility to resume running a business after experiencing financial difficulties. A fresh start can be attained through a restructuring of the existing business to avoid bankruptcy or by restructuring debt.	OECD one-off survey "Policy questionnaire on bankruptcy"

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OECD VARIABLES		
Regulatory Framework	Description	Data Sources
Product and Labour Market Regulation		
Difficulty of Firing*	The index measures whether laws or other regulations have implications for the difficulties of firing a standard worker in a standard company, based on factbased (yes/no) questions, remodelled into a 0-100 index.	World Bank, Doing Business
Difficulty of Hiring*	The index measures whether laws or other regulations have implications for the difficulties of hiring a standard worker in a standard company, based on factbased (yes/no) questions, remodelled into a 0-100 index.	World Bank, Doing Business
Ease of Hiring Foreign Labour	Survey responses to the question: Does labour regulation in your country prevent your company from employing foreign labor? (grades going from 1 to 7: 1 = prevents your company from employing foreign labor, 7 = does not prevent your company from employing foreign labor).	Global Competitiveness Report (WEF)
Extent of Incentive Compensation	Survey responses to the question: what is the extent of cash compensation of management? (grades going from 1 to 7: 1 = is based exclusively on salary, 7 = includes bonuses and stock options, representing a significant portion of overall compensation).	Global Competitiveness Report (WEF)
Rigidity of Hours Index*	The indicator is an index with five components: (i) whether night work is restricted; (ii) whether weekend work is allowed; (iii) whether the work week consists of five and a half days or more; (iv) whether the workday can extend to 12 hours or more (including overtime); and (v) whether the annual paid vacation days are 21 days or less. (grades goes from 0 to 100, when higher grades indicates stronger rigidity of hours).	World Bank, Doing Business
Immigration Laws	Survey responses to the question: Does immigration laws in your country prevent your company from hiring foreign labor? (grades going from 0 to 10: 0 prevents - 10 does not prevent).	IMD World Competitiveness Yearbook
Pay and productivity	Survey responses to the question: To what extent is pay in your country related to productivity? (Rate: 1 = Not related - 7 = Strongly related).	Global Competitiveness Report (WEF)
Court & Legal Framework		
Enforcing Contracts - Cost in % of claim	Cost is recorded as a percentage of the claim, assumed to be equivalent to 200% of income per capita. No bribes are recorded. Three types of costs are recorded: court costs, enforcement costs and average attorney fees	World Bank, Doing Business
Enforcing Contracts - Number of Procedures	A procedure is defined as any interaction between the parties, or between them and the judge or court officer. This includes steps to file the case, steps for trial and judgment and steps necessary to enforce the judgment.	World Bank, Doing Business
Enforcing Contracts - Time	Time is recorded in calendar days, counted from the moment the plaintiff files the lawsuit in court until payment. This includes both the days when actions take place and the waiting periods between.	World Bank, Doing Business
Social and Health Security		
Public Expenditure on Unemployment Support	Public expenditure on unemployment per unemployed in US\$, current PPPs. Public expenditure includes both partly, full public pay and any other program expenditures the public has.	OECD, Public expenditure and participant stocks on Labour Market Policy (LMP)
Public Health Care Coverage	The share of the population eligible for a defined set of health care goods and services under public programmes.	OECD Health data
Total expenditure on health as a percentage of gross domestic product	This is a core indicator of health financing systems. It provides information on the level of resources channeled to health relative to a country's wealth.	World Health Organization
Private expenditure on health as a percentage of total expenditure on health	This is a core indicator of health financing systems. This indicator contributes to understanding the relative weight of private entities in total expenditure on health. It includes expenditure from pooled resources with no government control, such as voluntary health insurance, and the direct payments for health by corporations (profit, non-for-profit and NGOs) and households. As a financing agent classification, it includes all sources of funding passing through these entities, including any donor (funding they use to pay for health).	World Health Organization
General government expenditure on health as a percentage of total expenditure on health	This is a core indicator of health financing systems. This indicator contributes to understanding the relative weight of public entities in total expenditure on health. It includes not just the resources channeled through government budgets to providers of health services but also the expenditure on health by parastatals, extrabudgetary entities and notably the compulsory health insurance payments. It refers to resources collected and pooled by the above public agencies regardless of the source, so includes any donor (external) funding passing through these agencies.	World Health Organization

OECD VARIABLES		Data Sources
Regulatory Framework	Description	
Income taxes: Wealth/Bequest Taxes		
Average Income Tax plus Social Contributions	The average rate of taxation in percentage of the gross wage. The indicator is based on a standard case: single (without children) with high income. [% GDP].	OECD Revenue statistics
Highest Marginal Income Tax plus Social Contributions	The highest rate of taxation in percentage of the gross wage. The indicator is based on a standard case: single (without children) with high income.	OECD Revenue statistics
Revenue from Bequest Tax	The revenue from bequest tax as a percent of GDP on a 3 year moving average.	OECD Revenue statistics
Revenue from Net Wealth Tax	The revenue from net wealth tax as a percent of GDP on a 3 year moving average.	OECD Revenue statistics
Taxes on income, profits and capital gains (% GDP)	Federal or central government's revenue from income, profits and capital gains taxes as a percentage of GDP	OECD Revenue statistics - Latin American Countries
Payroll taxes - paid by the employer (% GDP)	Contribution of employers, private or governmental, to public pension schemes.	Receita Federal do Brasil
Payroll taxes - paid by the employee (% GDP)	Contribution of employees - of public or private sphere - to the social security system.	Receita Federal do Brasil
SME Tax Rates	Not specified at OECD framework	OECD Revenue statistics
Taxation of Corporate Income (% of GDP)	Corporate Tax Revenue as a percentage of GDP.	OECD Revenue statistics
Revenue	As percentage of GDP on a three year moving average.	Not specified at OECD framework
Taxation of Dividends - Top Marginal Tax Rate	Not specified at OECD framework	OECD Tax database
Taxation of Stock Options	The average tax wedge for purchased and newly listed stocks. Average incomes are used.	OECD, The Taxation of Employee Stock Options - Tax Policy Study No. 11
Taxes on financial and capital transactions (% GDP)	Federal or central government's revenue from financial and capital transactions taxes as a percentage of GDP.	OECD Revenue statistics - Latin American Countries
Cost of capital	Survey question: Cost of capital encourages business development. [RATE: 0 Detracts - 10 Encourages].	IMD World Competitiveness Yearbook
Patent System: Standards		
Intellectual Property Rights	Survey responses to the question: intellectual property protection in your country (1 = is weak or nonexistent, 7 = is equal to the world's most stringent).	Global Competitiveness Report (WEF)
Property Rights	Survey responses to the question: property rights, including over financial assets (1 = are poorly defined and not protected by law, 7 = are clearly defined and well protected by law).	Global Competitiveness Report (WEF)

REGULATORY FRAMEWORK:

- Variables suggested by the OECD for which it was possible to find data from Brazil = 24
- Variables suggested by the OECD for which it was **not** possible to find data from Brazil = 13
- Alternative variables added to the initial list provided by the OECD = 10

* Difficulty of Firing; Rigidity of hours index and Difficulty of hiring: all data referring to Doing Business were provided directly by the report organizing committee. The documents provided to Fundação Dom Cabral listing the requested data included the observation in these specific variables that the indicators are being revised. The figures were then extracted from the Doing Business reports available online.

Cluster Development in Low Resource Settings: the Case of Bioethanol and Fruit Processing Clusters in Uganda

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Abstract

In this paper, bioethanol and fruit processing clusters in Uganda were taken as sectoral innovation systems, and enabling conditions and barriers to their growth analysed from a technoscientific and innovation systems perspective. Active participation of entrepreneurial university scientists in the clustering process appears to be an enabling factor. Absence of goals and incentives for investing in the cluster areas and for driving formation of markets for cluster products is a major barrier. Adopting more inclusive innovation policies, and having in place good community engagement strategies, could help overcome the barriers and expand opportunities for clusters in low resource settings to grow and become competitive.

Key words: bioethanol, cluster, fruit processing, innovation system, Uganda.

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INTRODUCTION

Cluster development is widely regarded as one of the ways of ensuring competitiveness of firms and accelerating industrial and economic growth (Brakman & Van Marrewijk, 2013; Mwamila & Diyamett, 2011). A cluster is a concentration of firms in a geographic region that are interconnected by the market they serve and the products they produce, as well as by the suppliers, trade associations, and educational institutions with which they interact (Colgan & Baker, 2003). According to Porter (2000), clusters 'represent a new way of thinking' about economic growth at all levels, but which requires new roles for companies, government agencies, universities and other organizations in enhancing competitiveness.

The cluster concept is relatively new in Uganda. Typical cluster initiatives started to be promoted in Uganda and in most of eastern Africa around 2004, mainly by proactive university scientists, who view it as a collaborative platform between universities, industry and government (Mwamila et al., 2004b). This effort led to the creation of the Makerere University-led Innovation Systems and Clusters Programme (ISCP-Uganda), which is also affiliated with the Pan African Competitiveness Forum (PACF).

Clusters are recognized in Uganda's industrial policy of 2008. The policy encourages formation of innovative clusters as a mechanism to enhance sharing of knowledge, coopetition¹, learning, value chain coordination and increased access to markets (Ministry of Tourism Trade and Industry, 2008). By their nature, clusters should thrive on their innovative potential and the value they create in their goods and services.

The aim of this paper is to highlight challenges of developing clusters and mechanisms to foster cluster growth and competitiveness in low resource settings. Specifically, the paper identifies and discusses some of the key enabling conditions and barriers to growth of clusters in Uganda. This is done using case studies of two clusters viz: the Bioethanol and Fruit Processing clusters. The case studies are approached from a technoscientific²

¹ "Coopetition" is a term that refers to firms competing and cooperating at the same time (Walley, 2007)

² This approach is based on the understanding and experiences of triple helix, mode 2 (Nowotny et al., 2001) as well as of Donna Haraway and her situated knowledges (Haraway, 1991)

and innovation systems perspective, but with a specific technological innovation system (TIS) scheme of analysis. The TIS has been highlighted, for example, by Bergek et al. (2008) as an analytic framework for understanding the strength and weakness of an innovation system. It is a variant of the concept of innovation systems framed around a technology, product or service (Lundvall et al., 2002; Bergek, Hekkert, & Jacobsson, 2008; Edquist, 2005). Thus the bioethanol and fruit processing clusters were taken as sectoral innovation systems, focusing on the product(s) or service (s) around which the clusters were formed (Niosi, 2010). An innovation system is an open and evolving relationship among a diverse group of actors involved in the production, diffusion and use of knowledge (Lundvall, 2010). A technoscientific perspective is emphasized here in recognition of the way knowledge production is distributed and often situated (Haraway, 2007; Nowotny et al., 2001). The triple helix as university-industry-government relationship (Etzkowit, 2003) is also considered, as it is the main concept driving the clustering process in Uganda. In this paper, therefore, TIS is seen as creating conditions for bioethanol production and fruit processing clusters and fostering their innovation processes. Table 1 summarizes the TIS scheme of analysis as proposed by Bergek, Jacobsson, et al., 2008.

Table 1: Functions of technological innovation systems (bioethanol and fruit processing)

Function	Description
1. Knowledge development and diffusion	The breath of scientific, indigenous and local knowledge with respect to fruit processing or bioethanol production;
2. Influence on the direction of search	Factors which make investment in fruit processing and bioethanol production attractive, including incentives, policy preferences, new markets, etc.
3. Entrepreneurial experimentation	Emerging entrepreneurial activities, for example, new firms venturing into fruit processing and bioethanol production;
4. Market formation	Trends in the development of the market for processed juice or bioethanol, type of the market, potential size of the market, and what is generally driving the formation of this market;
5. Legitimation	General perception about processed juice and bioethanol or production and acceptability of these products by the community and other actors.
6. Resource mobilization	Resources that are available, e.g. financial, human, and other complimentary services to support fruit processing and bioethanol production;
7. Development of positive externalities	External economies brought about by the performance in the above functions-political support, advocacy coalitions, etc.

Methods used in the study are described in the following section. Results are presented and discussed in two parts: Part I discusses the Bioethanol cluster, and Part II the Fruit processing cluster. Conclusions and recommendations are presented in the last section.

METHODS

Twelve out of about 35 members of the Bioethanol cluster (in Jinja, eastern Uganda) were purposively selected and invited to a focus group discussion. Similarly, 10 out of about 30 firms of the Fruit processing cluster (in

Luwero, central Uganda), were purposively selected and invited to a focus group discussion. Invitations were written and addressed to the identified cluster members/firms. Furthermore, three members purposively selected from each cluster were interviewed separately. Academia representatives in the cluster and local government officials in the respective districts were also interviewed. Fruit juice processing was observed in two fruit juice processing firms in Luwero district, and ethanol brewing was observed in five ethanol brewing stations in Jinja district. Each stage of the juice production or ethanol brewing process was explained by production managers, who also addressed all questions and issues put to them. Data from the group discussions and interviews as well as relevant observation notes and pictures were transcribed and analysed in accordance with the technological innovation systems scheme of analysis presented above.

RESULTS AND DISCUSSIONS

Part 1: The Bioethanol Cluster in Jinja

1.1 Historical Context

The Bioethanol Cluster is located in Kakira near Jinja, about 80 km east of Uganda's capital city, Kampala. The cluster was formed in 2005 with the aim of producing ethanol from molasses for automobile and other industrial uses. The motivation for the cluster is to transform the historical brewing of crude ethanol, locally known as '*Waragi*', in and around Kakira Sugar Works (KSW), into a modern bioethanol industry, subsequently improving the standard of life of the local community. *Waragi* production around KSW started in the 1970s after economic collapse under the dictatorial regime of President Idi Amin. When the sugar factory closed, there were no salaries paid to workers. The workers resorted to brewing alcohol as a source of income. This brewing business continued as a fall-back position for people, who retire from or get retrenched from the sugar factory. An estimated 500 people of mixed ethnic backgrounds are directly engaged in *Waragi* production in and around KSWs. Both women and men are involved in producing and selling ethanol, although women appear to be the majority (about 70%) compared to men.

1.2 Key Actors

Figure 1 shows key actors in the Bioethanol cluster. Ethanol production progresses when there is financing and human capital available, and enabling governance regimes exist, e.g. policies, laws and regulations. Actors in the Bioethanol cluster can, therefore, be grouped appropriately as those directly supporting or engaged in ethanol production, those financing it, or those supplying the necessary human capital (knowledge and skills). Some of the actors may play single roles (sr), some dual roles (dr), while others may have multiple roles (mr). Local brewers, for example, make alcohol, but also use their locally generated funds and savings to finance their operations. KSW, on the other hand, plays one important single role, that is as a source of molasses. On the other hand, Makerere University plays multiple roles of financing, providing human resource and value addition to the ethanol production process.

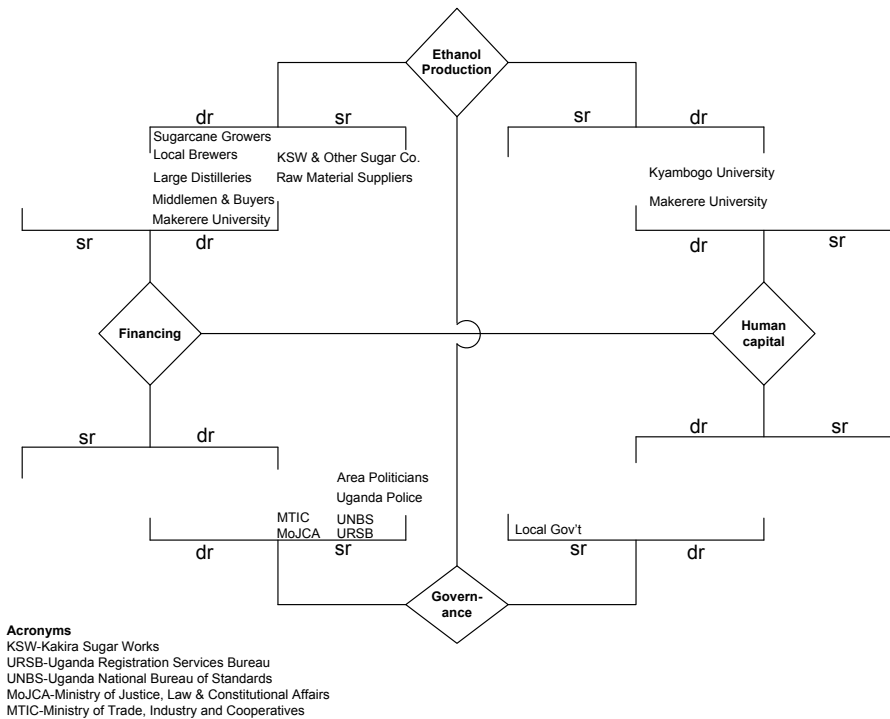


Figure 1: Key actors in the bioethanol cluster

Source: Structure adapted from Ecuru, et al., 2012.

1.3 Bioethanol Production in the Cluster

Around 1985, before the sugar factory became operational again, jaggery (crude sugar cane juice) was used as feedstock for making ethanol. Molasses started to be used again, when the factory resumed sugar production in the 1990s. Middlemen buy molasses from the sugar factory and sell some of it to local breweries. Supplies of molasses are brought also from other sugar companies in the region as far as western Kenya and western Uganda.

Brewing is done locally using metallic drums of 100 litres each arranged in series of three to five, placed over traditional earthen stoves. Firewood is the fuel used for boiling during the distillation process. In order to get 20 litres of ethanol, local brewers mix about 40 litres of molasses with 80 litres of water and 40 litres of vinase, i.e. distillery waste water known by the local brewers as '*Salala*'. Vinase is used as a fermentation medium. Ethanol produced by the local brewers is about 40% v/v, much of which is sold for human consumption.

Disposal of leftover vinase or '*Salala*' is a problem for both local brewers and local government. Vinase has high chemical oxygen demand and biological oxygen demand, which destroy plant life if indiscriminately disposed of in open fields (Chandraj, et al. 2013). In dry season, local brewers spread the vinase along the road to cover dust, but they also believe it could make a good binder in brick making and house construction.

1.4. Functioning of the Cluster

1.4.1 Knowledge Development and Diffusion

The Bioethanol cluster wants more efficient ways of using molasses, water and firewood to get more and higher quality ethanol for possible industrial use. In early 2000, the area Politician learnt about this need and introduced the group to an industrial development not-for-profit organization, which was supporting small scale industries in Uganda. The latter organization through a local scientist (chemical/mechanical engineer) at Kyambogo University trained the local brewers and connected them to ISCP-Uganda. With support from ISCP-Uganda, the scientist and local brewers organized themselves and established a cluster to produce high quality bioethanol.

This collaboration involved design and testing of a distillation column. The experiment yielded ethanol of between 80-90% v/v, which successfully powered an automobile and a generator. Unfortunately, the success was short-lived (less than a year) as one of the columns reportedly stained (with rust) and the other broke down.

1.4.2 Entrepreneurial Experimentation

There are nearly 70 brewing stations, each with approximately five to 10 people. Brewing drums per station vary from one to 10. Each station brews at least once or twice daily. Together, the local brewers produce about 500 litres of ethanol per day. New entrants in brewing alcohol come and go as they get into other businesses. Although the production of bioethanol did not progress, local brewers still believe that with a properly functioning distillation column, they can organize themselves as a cottage industry to produce and sell bioethanol for industrial uses. One of the local brewers said optimistically, “...if we could get support and come up with a cottage industry, we would be in a position to buy this Waragi from our distillers and centralise it in one place and purify it, and do packaging, bottling and market it worldwide”. Jaffe and Azumi (1960) used the term ‘cottage industry’ referring to economic activities, e.g. a small scale retail business or processing unit, which is carried out on, at, or near the home of the worker or proprietor, and usually run by the proprietor’s family members (Jaffe & Azumi, 1960).

1.4.3 Influence on the Direction of Search

The Bioethanol cluster aspires to produce bio-ethanol for industrial uses partly because of the increasing global pressure to reduce greenhouse gas emissions by developing alternative environmentally friendly renewable fuels. The Organization for Economic Cooperation and Development (OECD) projects global ethanol production will rise from 100 billion litres in 2011 to nearly 160 billion litres by 2019; and predict that whereas the feedstock for ethanol production will be coarse grains in developed countries, for developing countries it will be root and tubers and molasses (OECD/FAO, 2012). As countries explore green growth strategies, bioethanol production is expected to become more and more important in Uganda and the region. The challenge, however, is though the national energy policy and national sugar poli-

cy both recognise biofuels as a potentially renewable energy resource, there is no strategy, incentives and programs yet to translate this into action especially for bioethanol production (Ministry of Trade Industry and Cooperatives (MTIC), 2010). No national standards exist so far for bioethanol. Bioethanol does not feature prominently as one of the energy priorities for Uganda.

1.4.4 Market Formation

Most of the ethanol produced by the cluster is consumed as beverage. But with the distillation column functioning well, the cluster has potential to produce ethanol of over 80% v/v for industrial uses. One cluster member said, *“If we could come up with ethanol, pure ethanol, ours would be marketable. We did it to the range of 90% v/v. These people (i.e. the potential buyers) would come and buy—the hospitals would buy, it would be used by big hotels, the universities, laboratories and so many others because whatever (i.e. ethanol) is used in Uganda right now comes from outside Uganda.”* However, if a market for bioethanol is to be created, government regulation requiring, for example, blending with fossil fuels, would be necessary like it is elsewhere, in USA, Brazil, Europe, China, and was also tried in Zimbabwe, Kenya, and Malawi (Shiyan, 2012; Amigun et al., 2011). The challenge would be to mobilise capacity to produce sufficient amounts of bioethanol, and to address dual concerns of food and fuel competition. Also, the cluster could link with bigger distilleries to buy the ethanol, provided local brewers get fair returns for their efforts. Additionally, the ethanol could replace kerosene in local stoves and lamps.

1.4.5 Legitimation

Ethanol for industrial purposes is generally acceptable. However, local authorities are concerned about potential for its abuse if not controlled. Some members of the community have negative perception about production of ethanol by this cluster. The cluster members are aware of this but they try to cope with it. One of the cluster members said, *“People enjoy it (the alcohol) but they do not want to be associated with its production”*. Another member said, *“...there is a tendency of citing these Waragi brewers saying they make the environment dirty, and yet it is a business sustaining so many households”*. Some people also view it as an illegal trade. The *Enguli* (Manu-

facturing and Licensing) Act of 1966 prohibits the manufacture and sale of alcohol without a license. *Enguli* is an indigenous word for locally brewed alcohol. In their 2004 report the Justice Law and Order Sector observed that production and consumption of *Enguli* is widespread in the country. The report recognized that the 'selling of *Enguli* is a source of revenue especially to the rural poor and some local administrations and as a result the Act has outlived its usefulness and recommended decriminalization of the Act, given also that other big companies are by law authorised to produce a similar product (Ministry of Justice and Constitutional Affairs, 2004). However, in 2010, Uganda Youth Development Link (UYDL), a local Non-Governmental Organization published a report calling for strict implementation of the *Enguli* Act to prevent alcohol abuse and its associated dangers (UYDL, 2010). The local brewers, however, seem to find solace in the national sugar policy which they believe gives them more leverage to produce ethanol from molasses coming from sugar works. The sugar policy specifically recognises the potential of diversification in use of molasses to make portable alcohol, industrial alcohol and gasohol (MTIC, 2010).

1.4.6 Resource Mobilization

Most of the local brewers are former sugar factory workers. The skill of brewing ethanol is learned through apprenticeship within this community. Some members gained additional skills through training in, for example, entrepreneurship. The local competence base for producing more purified and standardized ethanol can be acquired from local universities and associated beer industries in the country. With respect to financing, local brewers use their own savings. The local brewers are reluctant to acquire bank loans for their businesses. Red tape, high interest rates and lack of collateral seemed to be their main concerns/barriers to accessing credit.

1.4.7 Development of Positive Externalities

The Jinja district local government is interested in this community of local brewers. The local brewers pay taxes to the local council. To improve their living conditions and waste management, the district plans to acquire land, to which the local brewers would be relocated, hopefully with better amenities. Other than forming themselves into a Bioethanol cluster, there is

no presence of advocacy groups or associations that are specifically promoting bioethanol as an alternative form of fuel. Support from civil society and the political elites will be essential for the bioethanol enterprise to grow.

1.5 Summary Conclusions

The Bioethanol cluster in Jinja is isolated with a number of policy, social, and technical challenges. The cluster could benefit from a specific policy effort, strategy and incentives aimed at promoting bioethanol for industrial uses. In the absence of such strategy and incentives, ethanol production in the cluster may remain for human consumption only, but with social and health ramifications when it is abused, including for example, domestic violence, destruction of family structures, severe and dangerous situations for the children. Therefore, the bioethanol cluster initiative, in trying to transform local ethanol brewing into a modern industrial bioethanol production, should also try to secure practices that minimize risk of alcohol dependency associated with unregulated brewing of ethanol.

Part II The Fruit Processing Cluster in Luwero

2.1 Historical Context

The Luwero Fruit Processing Cluster (LFPC) is located in Luwero district, 65 km north of Kampala City. It was established in 2005. Fruit processing in Luwero started around 1999. The main fruits are pineapple, mangos, passion fruits, papaya, avocado, jackfruit, and tomatoes. Uganda has a sizeable share of these fruits in east and central Africa (Agona, et al. 2002). The motivation for fruit processing in Luwero is value addition to create jobs for the youth and to diversify household incomes. With this goal, individual local entrepreneurs began their own small fruit processing units in their homes (cottages). Nearly 30 micro and small scale fruit processors exist in the district and approximately 70 exist country-wide.

2.2 Key actors

Figure 2 shows key actors in the Fruit processing cluster. A good number of processors supported by organized farmer groups and farmer-centred

associations are present. Private sector, government and development partners appear to have provided the necessary financial resources. The supply of skilled personnel in fruit processing seems adequate, and there is also emphasis on entrepreneurial skills, notably by Enterprise Uganda. In terms of governance, the agencies exist such as ministry responsible for agriculture, trade and investments and bureau of standards.

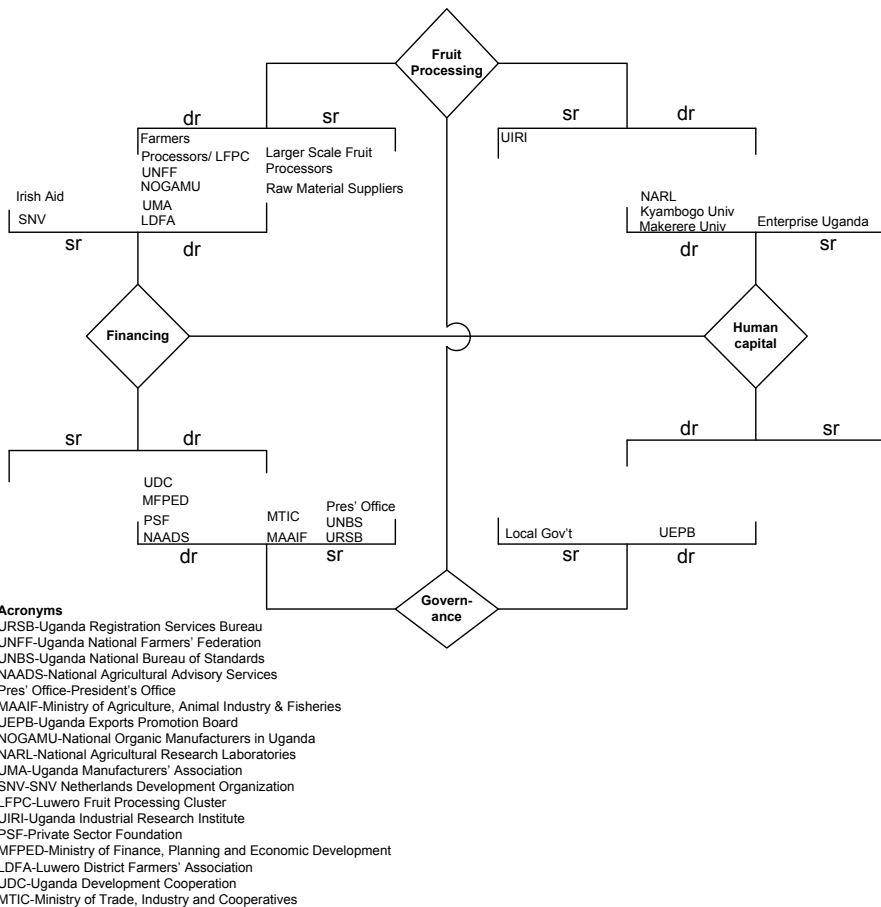


Figure 2: Key actors in the fruit processing cluster

Source: Structure adapted from Ecuru, et al., 2012

2.3 Fruit processing by the Cluster

The Cluster produces mainly mixed fruit juices comprised of pineapple, papaya, passion, and oranges. They also produce jam and tomato souce. The fruits are screened, cleaned with water, crushed and manually squeezed to extract crude juice. The crude juice is then filtered using special nets bought from supermarkets in Kampala. The filtrate (juice) is mixed in certain ratios, and preservatives (sodium benzoate, potassium sorbate, citric acid or sulphur dioxide) and additives (food colour and sugar) added. The juice (mixed) is then pasteurized at 70 – 75 degrees Celsius (for fruits) and 80-87 degrees Celsius (for jam), cooled to about 60 degrees Celsius and packed in glass bottles ready for sale.

The cluster developed plant based preservatives for their juices, which they claim works very well with a reported shelf life of two years. The idea was conceived by one of the cluster members after attending a training workshop organized by a network of indigenous people and researchers in east and central Africa. The cluster then developed the idea further, perfecting it through trial and error until they obtained a formula that seems to work well for them. The ISCP-Uganda is assisting to protect their intellectual asset.

2.4. Functioning of the cluster

2.4.1 Knowledge Development and Diffusion

The main interest for the cluster is to develop different formulations and to try out juices from a variety of fruits (blends). Some of the cluster members have started using plant based preservatives. However, the efficacy of these particular plant based preservatives is yet to be ascertained with modern scientific tools. A challenge is high cost of packaging materials, which accounts for more than half of the production cost. One processor lamented: *“Packaging is a problem. It limits our production, because at the end of the day, the production cost goes high”*. A 500ml bottle costs about one US dollar. Being small processors, the cluster does not enjoy the economies of scale to make large orders, and orders made take too long to be delivered.

2.4.2 Entrepreneurial Experimentation

The number of fruit processors in Luwero district has increased slightly since 1999. In 2008, the President of Uganda at the Luwero farmers' request promised to support building of a fruit processing factory in the region. Land for the factory was acquired, but the plan stalled when a prospective investor pulled out of the deal (Kiwanuka, 2010). For the cluster members, it seems that the factory would be of value, if it helped them grow as a cottage industry. One member said emphatically, "...our strategy is to fight poverty through cottage industry so that people can be productive right from their homes". Any future investment strategy in fruit processing in this community should weigh opportunity cost of investing in a large scale juice processing factory verses developing a fruit processing cottage industry. There are experimental fruit processing projects at the Uganda Industrial Research Institute, which is processing juice from mango and passion fruits and at the School of Bio-engineering, Food and Nutrition at Makerere University, which also houses an incubator for fruit and vegetable products. These developments within the fruit processing sub-sector in the country could enhance profitability of the LFPC through building stronger synergy among the actors.

2.4.3 Influence on the Direction of Search

Value addition and agro-processing is one of Uganda government's priorities for economic growth and development. Local processors also boast of an organic market for their juices. Although, there is no specific strategy so far for fruit processing at district and national level, it is promoted as one of agro-processing and value addition opportunities. Fruits and horticultural crops are ranked in the Agriculture Sector Development and Investment Plan (DSIP) 2010/11 – 2014/15 as a commodity generally small in size without a significant contribution to the export market, but having a high return on investment and a high potential future impact (Ministry of Agriculture Animal Industry and Fisheries, 2010).

2.4.4 Market Formation

The market for fruits is believed to be growing as people change their dietary habits in preference to fruits and vegetables. The regional market (Kenya and South Sudan) as well as the local market is also believed to be

expanding. Luwero's central location makes it a potential fruit hub, serving both local and regional markets. The fruit processors believe that they can have an edge in the organic market. One of them confidently stated, "*for us we use purely fruit juice; that makes us different from the others*". However, to sustain this unique attribute of the 'Luwero fruits', the processors would have to formally certify their 'organic' fruit claims. They would also have to label their products as organic and possibly register trademarks for the products. But most processors are not aware of trademarks, and how it is acquired or registered. Furthermore, to sustain the fruit market, the production side of it must be supported by breeding systems and good agronomic practices to ensure a steady supply of fruits, and to help maintain a distinction between organic and non-organically produced fruits. This support can come from agricultural extension agents and university partners in the cluster.

2.4.5 Legitimation

Generally, people like fruits, both fresh and processed for different consumption preferences. Parents normally buy processed juice concentrates for their children returning to boarding school. Locally processed fruits juices are also acceptable in hotels and restaurants. Local processors believe their products are well received: "*It depends*", said one processor. "*Some individuals prefer this (processed juice) others prefer fresh; whereas other families pack it (processed juice) for their children when they are going back to school*". Another describing the eating habits of customers, said, "*The pineapples you chew live; now you will not be surprised after eating this one, the pineapple, then he asks for his juice: 'Ndetera ku juice wange (translated, "please, bring me my juice")'*". The challenge with locally produced juice is that consumers do not distinguish its price from the one conventionally produced. One processor was disappointed, and said, "*people believe that all these (conventional and organic) juices are the same; so they expect you to sell it at say Uganda Shillings 500, when your bottle alone is Uganda Shillings 2,300...*". Customers tend to tag the same price on all juices in the market. They do not differentiate price and quality. Cluster firms should also bear the cost of securing quality marks for their products.

2.4.6 Resource Mobilization

The necessary human resources can be available from the local universities. In addition, the Uganda Industrial Research Institute, Uganda National Bureau of Standards and the National Agricultural Research Laboratories have specialist capacities to support the fruit processing sub-sector generally and the Luwero Cluster in particular. Other capacities exist in larger more established formal fruit processing industries within the country. With respect to financing, there are some challenges with access to credit. There have been initiatives such as the youth entrepreneurship scheme, bank loans and micro credits, but red tape and high interest rates (not less than 10% per annum) appear to discourage cluster firms from getting credit.

2.4.7 Development of positive externalities

The juice processing industry in Uganda is both non formal and formal. But there are no organized associations or advocacy groups for locally processed juices. However, the Farmer's Federation appears to be quite strong, although their focus is on productivity and welfare of the farmers.

2.5 Summary Conclusions

The LFPC has the potential to grow into a regional fruit hub. However, for this to happen, the Cluster needs to broaden its membership to encompass the multiplicity of actors in the fruit processing subsector and interactions promoted among actors.

CONCLUSION AND RECOMMENDATIONS

The active involvement of academia is paramount in any innovative cluster development effort. The university can fill a knowledge gap and catalyse innovative activity of cluster firms. However, this requires the university to maintain a significant presence in the cluster community. Establishing a field cohort for joint projects, including offering incubation support, could be part of the university's long term engagement strategy with clusters.

If the two clusters are to evolve and grow, deliberate policy measures will be necessary to guide and drive innovation and create market opportu-

nities for the bioethanol and fruit processing sub-sectors. There is need for specific targets and incentives to drive ambitions and lines of inquiry into product development and innovations within these clusters both at national and local levels.

Both the bioethanol and fruit processing cluster members seem to prefer a cottage type of industrial growth. A cluster development strategy should therefore strike a balance between investing in larger more industrial processing plants and supporting community centred cottages. This notwithstanding, the clusters must be inclusive of other actors in fruit processing and bioethanol production. More emphasis should be made on delivering products and covering the geographical spread and concentration of the actors involved; and in identifying cluster facilitators with more convening power and ability to build trust among cluster firms.

For both the bio-ethanol and fruit processing clusters, the role of the community is important in determining the direction and growth of the cluster since both clusters are community based. An active community engagement strategy is essential for clusters in these types of settings.

In conclusion, a technoscientific and innovation systems perspective can be used to identify enabling conditions and barriers to cluster development in low resource settings.

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Managerial Cognition in R&D Processes Within Indian hi-tech firms: A Conceptual Framework

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Abstract

New products are a source of firms' competitive advantage. Research on R&D investments, processes and performance has majorly been at the level of analysis of organizations. In this research, we theorize and build theoretical arguments on managerial cognition in R&D projects and impact on performance within firms at an individual level entrepreneurial decision-making and resource utilization processes. We bridge behavioral-decision with cognitive perspective in building propositions on R&D processes. We examine corporate R&D managers, under resource constraints and high uncertainty, apply cognitive processes to take decisions and how it affects performance. We argue that cognitive processes are moderated by political skills of R&D manager and how it affects performance. This research also builds our understanding of managerial cognition under uncertainty within large organizations.

Key words: management of innovation, R&D, emerging economies, resource constraints

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INTRODUCTION

Innovation and R&D are important factors for growth and profitability of organizations and play an important role in economic development of nations. Innovation positively impacts firm level competitiveness, national standards of living and a nation's ability to eradicate poverty (Dutz, 2007). Therefore, researchers, practitioners and organizations are actively interested in identifying determinants of successful innovation and R&D outcomes. The research on innovation and R&D in organizations began with Schumpeter (Schumpeter, 1947) proposing that larger monopolistic organizations are responsible for most technology innovations that reach the market (Cohen & Levinthal, 1990). With the emergence of the behavioral and managerial cognition perspective over the last forty years, scholars began to study innovation and R&D challenges at the micro level of the scientist, the innovator and the product champion (Burgelman, 1983). Recent research has found the roles of innovator, product champion and manager to overlap and affect the outcomes and process of R&D and innovation, irrespective of their formally assigned roles.

Decisions to invest and decisions to disintegrate or persist with an idea can influence investments in R&D over time as well as long run outcomes. These decisions in R&D projects are taken in an uncertain environment and hence, are risky, with potential payoffs only realized in the long run. Furthermore, they are based on temporal tradeoffs between firms' short term profitability and long term gains (Deutsch, 2007). According to resource dependence theory, irrespective of potential benefits to the firm in the longer run, not all stakeholders of the firm will be interested in making R&D investments. R&D managers need to operate and realize novel ideas in organizational settings while operating with similar issues that entrepreneurs face - limited resources and other constraints during the new product development. Hence, an unconventional entrepreneurial approach to manage risky R&D decisions will play crucial role in supporting managers to deviate to the path of new product development and innovation in firms.

The managers of R&D projects choose specific ideas from a number of proposals of new products operating in the same R&D setting. Hence, managers use their own domain specific knowledge bound by cognitive biases and firm dynamics to assess the R&D project in terms of both short term and

long-term benefits. This process requires managers and hence, their firm, to identify relevant resources that aid such projects from already constrained internal and external environments. Identifying the cognitive issues of experienced managers, working in similar uncertainty as in entrepreneurial settings, provides us insights on how managerial style (effectual, causal and bricolage) facilitates R&D performance and in turn, informs us on how managers should deal with R&D and innovation. In this research, we examine managers of R&D projects through the lens of cognition processes (taken from entrepreneurship literature) within the boundaries of a firm.

IMPACT OF MANAGERIAL COGNITION ON R&D PERFORMANCE

Investments in R&D and innovation processes in large organizations pose a challenge in terms of valuations made by conventional management practices (Klein & Sorra, 1996). For instance, the goal of the R&D process may change with the development process and the targets and solutions might not be clear. So if a new product is being developed, it becomes difficult to accurately identify potential market and demand functions. The typical managerial issues that arise around the development and conceiving of the idea for a new product that is yet to be developed include: How do we design the process flow for this product? How do we identify, value and seek resources for its development? How do we convince the top management to provide support and to shelter the development processes? These are some common issues arising in R&D intensive areas on a regular basis (von Zedtwitz, Gassmann, & Boutellier, 2004). The managers in R&D are therefore forced to be more entrepreneurial as compared to the managers in routine operations (Busenitz & Barney, 1997; Lyon, Lumpkin, & Dess, 2000).

Some of the most common conflicts faced by R&D managers in an organization are to rationalize the process of creation and predict the creation at the same time (Davenport & Short, 1990). Data such as demand functions, market estimation and goal specification are often required to be presented to stakeholders including top management in large organizations for investment purposes. This justification is the key to acquire resources and to get the internal legitimacy to the process of creation, which might be crucial for subsequent stages of development (Deeds, Decarolis, & Coombs, 2000). We,

therefore, argue that entrepreneurial cognition of managers positively affects their innovative behavior and performance in R&D (including output and efficiency). We propose that R&D managers, in resource constrained corporate settings, who learn from their entrepreneurial expertise, who employ effectuation and bricolage and use their political skills, are better decision-makers in product innovation when viewed through the lens of organizational performance standards.

ENTREPRENEURIAL COGNITION IN DECISION-MAKING

Organizations in general deal with both exploration and exploitation constantly as in ambidextrous organizations (O Reilly, 2004). For example, exploration of a particular opportunity or an idea might require more entrepreneurial thinking and actions whereas exploitation will require goal orientation and setting targets (Sarasvathy, 2001). Exploration and exploitation processes are integral to uncertainty and the R&D context and lead to an emergent strategy (Mintzberg & Waters, 1985). In recounting of R&D success, the organizations depict the successful output as a direct result of the choices and decisions that they made. Similarly, exploration and exploitation might be viewed as a result of an intended set of decisions in a corporate context where decision makers are answerable to internal polity and external stakeholders. Hence, individual behavior becomes crucial when managers get involved in decision-making processes of the organization that are bound by a set of resources, stakeholders, and social structures. However, there can be different ways in which individuals intrinsically think, gather data, process information, make certain choices and act upon them in any social settings (Salancik & Pfeffer, 1978). Thus, the difference in choices and actions is where entrepreneurial actions in corporate settings begin.

LINKAGES BETWEEN MANAGERIAL COGNITION AND R&D PERFORMANCE

Investments, intensity and outcomes in R&D have been globally used to measure innovation management inputs (Adams, Bessant, & Phelps, 2006). Several scholars have linked R&D intensity (ratio of investments or expendi-

ture or number of people employed along with variety of roles and some expression of R&D output) with innovation performance and firm performance at firm level (e.g. Deeds, 2001; Greve, 2003; Parthasarthy & Hammond, 2002). R&D has been studied at firm, entrepreneurial and individual level. There are several behavioral studies which focus on personality traits of R&D managers and comparative analyses with entrepreneurs, intrapreneurs and general managers (cf. (Scott & Bruce, 1994). Several studies have shown innovative efforts of employees and management as one of the key factors influencing innovative performance of the firm (Bedrock & Watson, 1993; Hoffman, Parejo, Bessant, & Perren, 1998). However, we can see a clear gap between the behavioral, cognitive and micro studies in R&D and their implications on individual as well as team based performances and innovativeness. When financial and other constraints are imposed on R&D in organizations, R&D managers may choose to invest and continue to invest as per the organizations criteria to evaluate such projects. Even then, their evaluation is not always be empirical or based on net present value calculations. They may use their earlier experiences and expertise to analyze the R&D opportunity and synthesize it into a holistic view before making a specific R&D investment. Since their expertise, ability to think holistically and cognition has not been studied before in terms of their impact on performance, this is a clear research gap in the area.

ENTREPRENEURIAL COGNITION IN CORPORATE SETTINGS

The entrepreneurial cognition concepts of effectuation and bricolage have largely been studied in the context of independent entrepreneurs and start-ups in organization research. However, there are only a few articles that study bricolage and effectuation in larger corporate settings (Brettel, Mauer, Engelen, & Küpper, 2011; Senyard, Baker, & Steffens, 2010). R&D and innovation provide an interesting context to examine effectual and bricolage cognitive processes in contrast to traditional approaches of planning and rationality to explore and exploit opportunities in resource constraint environments. Our research examines the application of the entrepreneurial cognition concepts of effectuation and bricolage to R&D and innovation decision-making and its performance in large corporate settings.

Effectuation

Sarasvathy discusses four principles of entrepreneurial cognition displayed by entrepreneurial experts that shows how entrepreneurs think, process information and make key decisions through effectuation (Sarasvathy 2001). When compared to the causal school of thought, effectuation refers to processes that start with “a set of means as given and focuses on selecting between possible effects that can be created with that set of means” while causation builds on prediction and processes that “take a particular effect as given and focuses on selecting between means to create that effect” (Sarasvathy, 2001). The principles of effectuation can be applied to the context of R&D decisions in uncertain environments (Dew et al., 2009). The first principle, known as bird-in-hand or means, broadly highlights what the present status is in terms of “who I am”, “what I know” and “whom I know” (Brettel et al., 2011). The possible courses of effectuator arise driven by available means rather than a goal or target. Secondly, effectuation uses the concept of affordable loss rather than expected returns to be the evaluation criteria for potential investments (Chandler, McKelvie, DeTienne, & Mumford, 2011). This contradicts the process of routine planning, estimation, break-even points in business plans and finally, expected returns from the finished product. The effectuation process therefore uses an upside down approach when compared to conventional strategic planning with competitive analysis (Chandler et al., 2011). The third principle of effectuation emphasizes the importance of self selected stakeholders and strategic alliances/partnerships, where pre-commitments are important to reduce uncertainty and to remove entry barriers and hence, to an extent, have some control on the future events. The willingness to change the course of action and the ability of stakeholders to view such changes as another opportunity plays a very important role in effectual logic and decision-making. However not all stakeholders in large organizations are likely to view unexpected outcomes or events to be windows of opportunities rather than hurdles to the process (Wiltbank, Dew, Read, & Sarasvathy, 2006). Organizing to avoiding such “shocks” in the development process is typically considered to be of utmost importance in corporate settings. Managers in large corporate settings, who are keen to invest in developing new businesses, may find that these four principles of effectuation lead to new opportunities to plan different courses

of actions and may also provide a safer approach of making such investments under uncertainty in large corporate settings.

Bricolage

Levi-Strauss first defined bricolage in 1966 anthropology as making do with current resources, and creating new forms and new order from tools and materials available at hand. Bricolage specifically addresses cognitive patterns displaying resource orientation rather than goal orientation and the term has been adopted in management theory on improvisation and similar processes (Baker, Miner, & Eesley, 2003; Weick, 1993). However, bricolage is conceptually much more than simply being a “resource seeker”; it involves intimate and in-depth knowledge of existing resources, specific domains of application and the context of application. Hence, bricolage may appear quite similar to improvisation activity and improvisation seems to imply that bricolage will occur (Baker et al., 2003). Bricolage also helps organizations and existing set-ups to view resources in a different light for its possible new uses, applications and combinations which were not considered to be relevant or practical earlier. Instead, like means in effectual logic, the bricoleur considers the current set of resources as the potential starting point for a new idea (Senyard et al., 2010).

INNOVATIVE BEHAVIOR AND R&D PERFORMANCE

At the micro level, individual measures in R&D have been typically restricted to a few constructs such as innovative behavior, innovative outcomes and innovator-adaptor measures. Studies show relationships between team diversity and team innovative performance (Kessler and Chakrabarti, 1996) and prior exposures to experience of team members with teams’ innovative outcomes (Bantel and Jackson, 1989) but the individual linkages have not been clearly drawn so far. Since an individual placed in charge of a team primarily does the decision-making in an R&D team, it is logical to study the individual decision-maker and his/her orientation in R&D investments. Earlier studies have shown relationships between propensity of teams to innovate and the teams’ innovative output. But at the individual level, such studies are rare due to measurement issues.

Since R&D decisions and investments are being studied at the individual level, analyzing the outcomes and efficiency measures for the individual decision-maker provides a consistent approach to analyze impact of R&D investments and decisions on individual's own performance. Performance in the context of R&D and innovation has always been measured through proxies and it has been difficult for scholars to agree on a single measure of performance. Hence, we argue that innovative behavior (idea generation, promotion and realization), and innovative outcomes emerge from the individual's self ability to perceive and develop novel ideas along with longer term benefits of enhancement of knowledge, expertise and initiatives for future potential ideas (Brettel et al., 2011). Thus, the performance measure is not dependent on the temporal element in the context of R&D and considers a longer benefit approach as the best approach to study and analyze innovative performance. For this study, innovative behavior, innovative outcomes and efficiency are terms adapted from earlier works (Brettel et al., 2011; Scott & Bruce, 1994). Innovative behavior measures individual's contribution to three stages in R&D and innovation process where idea is generated, promoted and realized in the firm through development and negotiation processes with other stakeholders in the organizational setting. Innovative outcomes are defined in terms of individual's perceived value of the work, future potential of the work, individual expertise and competencies. Individual's efficiency has been defined in the standard way of benchmarking their progress using budgeting, timelines and performance standards set by the firm.

POLITICAL SKILLS OF MANAGERS IN R&D

Since at the individual level, the ability to negotiate and actively explore new resources is important for gaining or even realizing resources at hand, the individual needs to constantly interact with the reporting structure and with entities such as higher management, colleagues, technology experts, marketing executives or even customers. Within the context of large organizations, the individual's capability to negotiate with others, understand them effectively and to use such knowledge to influence others to act in such a way that it enhances ones or the organizational objectives is known as their political skill (Ferris et al., 2005; Mintzberg & Waters, 1985).

Politically skilled individuals at work use social astuteness and capacity to adjust behavior to different and changing situational demands in ways that appears to be sincere so to inspire support and trust. They effectively influence and control the responses of others (Ferris et al., 2007). Political skill also influences the ability of individual to network positively (Ferris et al., 2007) and networking is crucial in effectual logics. The ability to influence others at work (interpersonal influence) is also positively affected by the political skill of the individual (Ferris et al., 2007). We argue that political skill will be crucial in organizations where individuals actively seek resources, network with others for further knowledge, pre-commitments and more resources. And finally, political skill is crucial when the goal orientation is weak and the individual is effectually constructing the path of development for innovation and R&D.

PROPOSITIONS ON ENTREPRENEURIAL COGNITION IN R&D SETTINGS

We develop a set of propositions on the use of bricolage and effectuation in the process of innovation and R&D in large corporate settings.

Individual Innovative Behavior

Research suggests that different levels of innovativeness require different sets of resources in terms of scale and scope (Green, Welsh, & Gordon, 2003). This represents the constant dilemma faced by R&D managers in organizations in justifying investments in major resources without any clear expected potential return. The literature on innovative behavior of individuals at workplaces examines intentional creation, introduction, and application of new ideas within a work role, group, or organization, in order to benefit role performance, the group, or the organization (West & Farr, 1989). Scott & Bruce (1994) argued that individual innovative behavior is complex and consists of three behavioral tasks (idea generation, idea promotion, and idea realization). Hence, in spite of different levels of innovativeness, individuals who actively explore and exploit different bundles of means might be more innovative and successful in creating and completing R&D projects than those who keep a larger goal such as creating disruptive or incremental innovations.

Proposition 1a. In the context of large organizations, means orientation of R&D managers is likely to positively affect innovative behavior of R&D managers.

Proposition 1b. In the context of large organizations, bricolage orientation of R&D managers is likely to positively affect innovative behavior of R&D managers.

Individual Innovative Outcomes

We relate effectual logic of means and bricolage to the innovative outcomes at the individual level. The outcomes of R&D processes have been measured in various ways at the individual level of analysis (Scott & Bruce, 1994). Effectuation through the means principle closely relates to the absorptive capacity of the firm (Cohen & Levinthal, 1990) – its ability to value the resources at hand and to incorporate and implement that knowledge to take effective R&D decisions. Lichtenthaler (2009) argues that as the difficulty in predicting developments in highly innovative environments increases, prior resources become particularly crucial. The concentration on existing resources helps firms to access additional knowledge and resources and to successfully proceed on their development paths. Lichtenthaler (2009) concludes that the cumulative resources and knowledge generation that are based on existing resources and knowledge is particularly important in uncertain environments because institutions constantly face new challenges. As shown earlier, the individual's political skill influences their ability to network positively (Ferris et al., 2007). We argue that political skill will be crucial in organizations where individuals actively seek resources, network with others for further knowledge, pre-commitments and more resources and finally, political skill is crucial when the goal orientation is weak and the individual is effectually constructing the path of developments for innovation and R&D.

Proposition 2a. In the context of large organizations, means orientation of R&D managers, moderated by their political skills, is likely to positively affect R&D managers' individual outcomes.

Proposition 2b. In the context of large organizations, bricolage orientation of R&D managers, moderated by their political skills, is likely to positively affect R&D managers' individual outcomes.

Individual Efficiency

Though seeking several bundles of resources will provide individual decision makers an opportunity to explore and exploit several courses of action, such R&D projects will not be as efficiently implemented as R&D projects with well-defined goals (Brinckmann, Grichnik, & Kapsa, 2010). Similarly, individual decision makers that work on several projects with ill-defined goals will struggle to meet efficiency targets in the R&D context. While attempts to increase efficiency in various ways (such as guiding the process, defining schedules and budgets, reducing errors), are desirable in general, several research studies suggest the opposite for innovative outcomes of R&D processes (Fredrickson & Iaquinto, 1989; Seidel, 2007; Wiltbank et al., 2006). They find that comprehensive planning activities in the R&D context are negatively associated with performance as well as with the organization's ability to notice important changes in environment, and with innovation process outcomes. This is primarily due to the changing goals and ambiguity involved in the R&D process (Seidel, 2007). Hence, R&D managers using means and bricolage will struggle to meet their efficiency targets.

Proposition 3a. In the context of large organizations, means orientation of R&D managers is likely to negatively impact R&D managers' individual efficiency.

Proposition 3b. In the context of large organizations, bricolage orientation of R&D managers is likely to negatively impact R&D managers' individual efficiency.

Affordable Loss

Affordable loss is the advance commitment of what the effectuator or stakeholder is willing to lose in the R&D process and is opposite to the investment orientation with expected outcomes or positive returns at the end of the process (Saravathy, 2008). Affordable loss is akin to decisions in R&D processes that aim to minimize risk and losses. R&D managers may choose different paths to minimize risk, such as strict budgeting, strict schedules and adhering to specifications provided already by organizations or even by customers for developing the idea. This might lead to increase in efficiency of the individuals' performance and their impact on R&D but it will also

bind them into pre-existing notions of the development process for a product, which is not yet in existence. In contrast, the logic of affordable loss gives the freedom to stakeholders to control the situation without making any promises of outcomes and returns.

In the R&D process, where uncertainty is high, reliable predictions and forecasting of the development processes require information, which cannot be assessed easily (for example, customer acceptance of a new product, demand function or sales function for a new market). In fact, such information cannot be gathered reliably even by formal market analysis or other means of getting external data as the potential of a highly innovative idea will remain unclear till actualized. Dew et al. (2009) concludes that the acceptable downside potential or affordable loss is far easier to estimate keeping the current situation in mind while upside data is usually difficult to estimate and is generally not discriminating and reliable enough to make key decisions. Neoclassical investment theory (Campbell, 1992) states that decisions to maximize expected returns (which equally considers upside and downside information) leads to superior operational performance and, as a result, higher process efficiency. Pre-commitments to budgets and schedules for projects avoid overspending on resources and hence, effectuators play to be on the safer side. We therefore propose that effectual logic of affordable loss positively impacts efficiency at individual level for R&D processes.

Proposition 4a. In the context of large organizations, affordable loss orientation of R&D managers is likely to positively impact R&D managers' efficiency in implementing R&D projects.

However, affordable loss along with pre-commitments to schedules and budgets may restrict the behavioral tasks of idea development, promotion and realization. Pre-commitments to budgets and schedules will draw boundaries, thereby blocking out-of-the-box thinking of the effectuator. Ideas may have to be tailored to meet apriori deadlines. Since the reliability of their predictions will be questioned, effectuators will tend to rely on the downside of the outcomes. The urge to get pre-commitments on large resources and make major investments will be low. This in turn will negatively influence innovation in the project. Similar patterns may also follow in the promotion of new ideas and the realization of new ideas – keeping the downside of outcomes as the priority. Hence, we propose that the principle

of affordable loss will negatively influence innovative behavior of the R&D manager. There is no available research (conceptual or empirical) that links affordable loss orientation with the behavioral perspective.

Proposition 4b. In the context of large organizations, affordable loss orientation of R&D manager negatively impacts innovative behavior of R&D manager in implementing R&D projects.

Partnerships and Co-creation

Partnerships or alliances in effectuation refer to the involvement of stakeholders in decision making and innovation processes in order to expand the means available and to co-create new possibilities (Saravathy, 2008). This is crucial to cross-functional integration in organizations and to acquire resources from the environment which might be necessary for organizational survival (Olson, Walker, Ruekerf, & Bonnerd, 2001). Stakeholders such as customers and suppliers may also provide crucial information and new resources to reduce the ambiguity and uncertainty in R&D processes and in turn positively impact R&D output (Griffin, 2002; Petersen, Handfield, & Ragatz, 2003). Read, Song, & Smit (2009) in their meta-analysis of effectuation and venture performance found a positive relationship between self-selected stakeholders and new venture performance.

In the context of uncertainty in R&D and innovation, the conventional market and competitors' analysis (causal approach to making decisions) is inappropriate as there are no sources of reliable information and data about the potential market for the potential product. Partnering with interested stakeholders tends to bring in more clarity rather than haziness to the R&D process, positively impacting the innovative outcome. For example, an interested customer may agree to test the prototype at no cost and give feedback at a stage when formal market testing may not be feasible as the product is not yet complete. This pre-commitment by a customer might also help in better idea realization and even promotion of the product. It has been found that integration of market knowledge into decision-making improves innovation performance (Grinstein, 2008). Hence, we propose that seeking partnerships positively impact innovative behavior of the R&D managers and their performance output.

Proposition 5a. In the context of large organizations, partnership orientation of R&D manager is likely to positively affects innovative behavior of R&D manager.

Proposition 5b. In the context of large organizations, partnership orientation of R&D manager is likely to positively affect innovative outcomes of R&D manager.

DISCUSSIONS

In our conceptual framework, we have theorized on how entrepreneurial cognitions within large organizations lead to performance in the context of uncertainty of R&D and innovation. The propositions developed can be tested in R&D settings in different industry sectors with different technological intensities. Apart from implications for research and practice in innovation and R&D, there are implications for our understanding of managerial cognition in highly uncertain environments. We contribute theoretically to our understanding of the moderating effect of political behavior in the context of organizational decision-making under uncertainty. The theoretical arguments offer insights on how individuals make a difference in R&D processes through their innovativeness and their political skills. This reflects how politics at an individual level can support, facilitate and nourish activities in the uncertain environments within organizations. The research builds on the cognition and behavioral theories in the management and organizational research. It also contributes to the literature of entrepreneurial perspectives from an organizational point of view. In summary, this research will contribute to literature in the areas of R&D, innovation, managerial cognition and the political process within behavioral decision-making in large organizations.

RECOMMENDATIONS FOR FUTURE RESEARCH

The dearth of research work in this field calls for scholars from around the world to study R&D and to contribute to both academia and practice. This field is particularly of interest to both the groups, as it has the ability to bring profitability and competitive advantage for the firms. Through this

research, we see a great potential for overcoming hindrances to study R&D and innovation within established firms using diverse lenses of cognition, behavior and entrepreneurship theories. This will enrich scholarly understanding for R&D and will be crucial to broaden the field. Empirical studies will support and strengthen the theory building in the field. The scholarship in the R&D literature needs both qualitative and quantitative approaches to study R&D to connect to the realities of the field and in order to create value for the practitioners.

Research on the R&D performance is also needed, especially at the individual level as much of the literature on R&D performance has kept the organizational level as their main focus. And connecting performance to the dimensions of decision-making, utilization of resources, and dimensions of product development in the firms will be important. It will also be crucial to study R&D performance and linkages with decisions, resources and product development in the context of entrepreneurship and young firms. Through these research directions, scholarship will be broadened to discuss the issues of performance in practice. It is important to understand measurement of both success and failure of individual leadership and management in R&D in future studies. Hence, the future studies could incorporate objective measurements for performance and effective or disruptive management styles for leaders or managers or even their decision-making teams in terms of their individual financial measures, resource utilization measures and divergent process outcomes. While future studies should verify if our theoretical arguments hold, it would be interesting to test the arguments using standardized measurement scales and experimental designs already existing in the field. It will also be important to study the context of emerging economies and Asian cultures to contribute and enrich understanding of R&D practices around the world. As emerging economies have started playing an important role in the global markets, the scholarly and empirical work in these contexts have been long due. Longitudinal datasets will also play a role in understanding evolution of R&D processes where the transition of performance and expected outcomes from R&D could be monitored. These longitudinal datasets will also allow researchers to understand how R&D has evolved with the firm and how they have influenced competitive advantage, profits and strategy building.

CONCLUSIONS

We theorize and build arguments on R&D processes within established firms using lenses of managerial cognition. We discuss how entrepreneurial cognition impacts R&D keeping in mind the central role of individuals and how individual cognition influences the aspects of R&D process including outcomes and efficiency at the individual level. This research contributes and builds on cognitive and behavioral research in the context of R&D and organizational research.

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Barriers In Partnerships In Open Innovation Process

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Abstract

Today, innovation is a receipt for most of the problems the firms are facing. Today, firms can't develop innovations merely contenting themselves with their own effortful struggles. In addition to such initiative, they should cooperate with other actors. Cooperating with other actors outside the firm opens the innovation process. Open innovation has lots of advantages which can be categorised in two main groups : increasing revenues, and decreasing costs. The main idea in open innovation strenghtens the relations with external environment by increasing knowledge and technology inflows and outflows. However, dealing with the boundaries of the firm, there are barriers related with knowledge and technology flows. This research aims to explain evolution of open innovation, partnerships as main actors in knowledge and technology outflows, and intellectual property as the concept that protects knowlledge flows. external environment of the firm.

Keywords: *Open innovation, Partnerships, Intellectual Property, University,*

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INTRODUCTION

There have recently been inevitable social, economical and technological changes in global marketplace. Innovation is the key solution in the process of adaptation to these changes. Innovation has considerable effects on the national, regional, industrial and firm level. First theoretical approaches to innovation state that in innovation process only one actor (an individual or a company) is considered responsible for the innovation process. This paradigm causes firms to be strongly self-reliant, because they can't be sure of the quality, availability and capability of others' ideas. (Chesbrough, 2004, Research Technology). Furthermore, as Huizingh (2011) argues trends such as outsourcing, agility, and flexibility has already forced companies to reconsider their strategies and processes in other areas and to become network organizations. Hence, "do-it-yourself" mentality in innovation management is not valid anymore. Besides, innovation processes consist of complex social and disorderly interactive interactions which these earlier models cannot embrace and now become central in an array of innovation theories (Chesbrough, 2003; Sorensen et al., 2010). Since open innovation is concerned with the ability of many external factors to influence the rate and direction of innovation activity, it is rather associated with a different set of organizing assumptions than traditional firm-based innovation. (Lakhani and Tushman, 2012). Scanning, gathering and absorbing knowledge from the external environment is necessary in realizing open innovation projects. Hence, effective partnerships is unavoidable in open innovation projects. Traitler (et al, 2011) complement "innovate or die" with the new mantra "partner or perish". Partnerships are created to solve problems, fill gaps, or find answers more effectively and rapidly (for example, time to market). Effectiveness and speed are the operative and overriding principles of any innovation partnership.

In this paper, first open innovation concept will be introduced with the distinguishing factors of open innovation with respect to closed innovation second, partnerships and intellectual property as way of managing external knowledge and protecting knowledge will be introduced. The research aims to contribute to the relevant literature by examining how knowledge inflows and outflows as well as how to protect knowledge.

1. OPEN INNOVATION

The strengthening of the knowledge-based component in products and adoption of information and communication technologies has encouraged firms to seek new sources of opportunities from networked collaboration such as open innovation. Lichtenthaler (2011) defines open innovation as systematically performing knowledge exploration, retention and exploitation inside and outside an organization's boundaries throughout the innovation process. Open innovation has offered more possibilities for firms to operate over country borders in a much more open environment than before. (Edelmann and Volchek, 2010). Chesbrough(2003) is the first to define "open innovation", however; Vujovic and Ulhøi (2008) argue that the first applications of open innovation can be traced back to the UK iron industry and US steel industry in the third quarter of the nineteenth century. Toward the end of the 20th century, a number of factors were influential to rethink about closed innovation. The main factor was the rise in the mobility and number of knowledge workers, making it difficult for companies to control their ideas and expertise. Another important factor was the growing ability of private venture capital which has helped to finance new firms and their efforts to commercialize ideas that have spilled outside of the corporate research labs (Chesbrough, 2003b). Chesbrough (2008) identifies 8 points that differentiates open innovation from the earlier innovation theories. These can be summarized as: increased importance of external knowledge, the importance of business model, the ability to turn unsuccessful R&D projects into successful ones, purposive outflow of knowledge and technology, abundant knowledge landscape, proactive role of IP management, the rise of innovation intermediaries and new metrics for innovation capability and performance.

In the past, internal R&D was a valuable strategic asset, and also a barrier to entry by competitors in many markets. Open innovation paradigm opens up the classical funnel to encompass flows of technology and ideas within and outside the organization: the duration of creation, recognition and articulation of opportunities can be drastically shortened if ideas come not just from the R&D department (Carbone et al., 2012). Hence, having effective partnerships have gained importance in open innovation. Mostly preferred partnerships are suppliers, customers, research organizations and universi-

ties (Luoma et al.,2010; Sorensen et al.2010; Evens; 2009). Furthermore; Sorenson (et al., 2010) and Evens(2009) complements generally accepted partners with competitors, spin-offs from large firms, knowledge intensive service firms, partners, government, private laboratory and other nations. However, the internal interfaces such as the business units, processes and structures are also as important as the external partners. (Edelmanand Volchek, 2010).

Herstad (et al., 2008) argue that the broader the range of actors and actor groups firms interface with, the higher the probability that ideas and knowledge complementary to own activity and capabilities is identified, and the higher the likelihood of something novel emerging. Besides, external actors can leverage a firm's investment in internal R&D through expanding opportunities of combinations of previously disconnected silos of knowledge and capabilities (Dahlender, Gann, 2010). The open model assumes that the value of a creative work can be increased by allowing more potential innovators to contribute to its development, and economic value is gained as a result. (Maxwell, 2006).

Hence, open innovation has become the umbrella that encompasses, connects and integrates a range of already existing activities. Firms that manage to create a synergy between their own processes and externally available ideas may be able to benefit from the creative ideas of outsiders to generate profitable new products and services. Available resources become larger than a single firm can manage; they enable innovative ways to market or to create standards in emerging markets. Such synergies can be created by relying on the external environment and by taking an active part in external developments (Dahlender et al., 2008). Lee (et al, 2012) identify the necessity of collaboration with that of other world-class firms to develop the internal competencies of firms. External networking is another important dimension which is consistently associated with open innovation. It comprises both formal collaborative projects and more general and informal networking activities. External participations enable the recovery of innovations that were initially abandoned or that did not seem promising (Van de Vrande et al.,2009). Open innovation has gained popularity for at least three reasons as (Barge-Gil, 2010):

- 1) It reflects the changes to work patterns where professionals are seeking portfolio careers rather than a job-or-life, and work contexts that involve increasing divisions of labour,
- 2) Improved market institutions (property rights, venture capitalists, standards) are enabling increased trade knowledge,
- 3) New technologies are easing coordination across geographical distance.

Though there is a trend toward open innovation, most of the firms hesitate to open up their innovation processes. However, it seems that there is a clear trend toward open innovation which will continue or even intensify in the future (Lichtenthaler, 2008). Besides, some industries need to continue to operate in a Closed Innovation regime. Nuclear reactors and aircraft engines are two industries in which reliance on one's own ideas, and internal commercialization paths to market appear to be valid. (Chesbrough, 2003a). Meanwhile; Enkel (et al, 2009) suggest using an appropriate balance between open and closed innovation since too much openness may lead to faster loss of control and core competences. Open innovation is mostly realized by pioneering firms whereas other companies still follow a relatively closed strategy. Luoma (et al., 2010) show that most of the companies have cooperation with other parties and many of them are unconsciously utilising open innovation to some extent. Evens (2009) compares closed innovation and open innovation. According to the precise conclusion of this comparison, in closed innovation, the main idea is that they have to do everything on their own, while, in open innovation the focus is on opening up to the external ideas.

Table 1: Comparing and Contrasting Principles of Open and Closed Innovation

	Closed Innovation	Open Innovation
Field of Expertise	The smart people in our field work for us.	Not all the smart people work for us so we must find and tap into the knowledge and expertise of bright individuals outside our company.
Function of the own R&D	To profit from R&D, we must discover, develop and ship it to ourselves.	External R&D can create significant value, internal R&D is needed to claim some portion of that value.
Attitude regarding research	If we discover it ourselves, we will get it to the market.	We don't have to originate the research in order to profit from it.
Market ambition	If we are first to commercialize an innovation, we will win.	Building a better business model is better than getting to market first.
Sources for idea	If we create and the best ideas in the industry, we will win.	If we make best use of external and internal ideas, we will win.
Intellectual property	We should control our intellectual property so that our competitors don't profit from our ideas.	We should profit from others' intellectual property, we should buy others' IP whenever it advances our own business model.

Source: Ili, Albers and Miller (2010) adapted from Chesbrough (2003)

The open innovation paradigm balances the role of internal and external sources of knowledge. Open innovation also requires a number of changes within firms in order to effectively best manage the use of purposive in and outflows of knowledge. Stahlbrost and Bergvall-Kareborn (2011) point out three elements in open innovation as *culture*, *structure* and *business model*. Having an open innovation approach forces organizations to embrace an entirely different culture in their way of thinking. The change in structure means that it's more important to develop mechanisms in support of importing and exploring knowledge and ideas. Lee (et al., 2012) and

Van der Meer (2007) explain the stages to open innovation beginning from closed innovation. Journey from closed to open innovation involves four main dimensions of the firm's organization, *inter-organizational networks*, *organizational structure*, *evaluation processes* and *knowledge management systems*, along which can be managed and stimulated. (Gassman, et al.,2010; Huizingh, 2011). Open innovation reflects much less a dichotomy (open versus closed) than a continuum with varying degrees of openness. Open innovation also encompasses various activities, e.g. inbound, outbound and coupled activities. Each of these activities can be more or less open. Open innovation measurement scales should therefore reflect this multi-dimensional nature. Three core processes can be differentiated in open innovation such as (Enkel et al.,2009):

- 1) Outside-in process enriching the company's own knowledge base through the integration of suppliers, customers and external knowledge sourcing.
- 2) The inside-out process referring earning profits by bringing ideas to market, selling IP, and multiplying technology by transferring ideas to the outside environment.
- 3) The coupled process referring co-creation with (mainly) complementary partners through alliances, cooperation and joint ventures during which give and take are crucial for success.

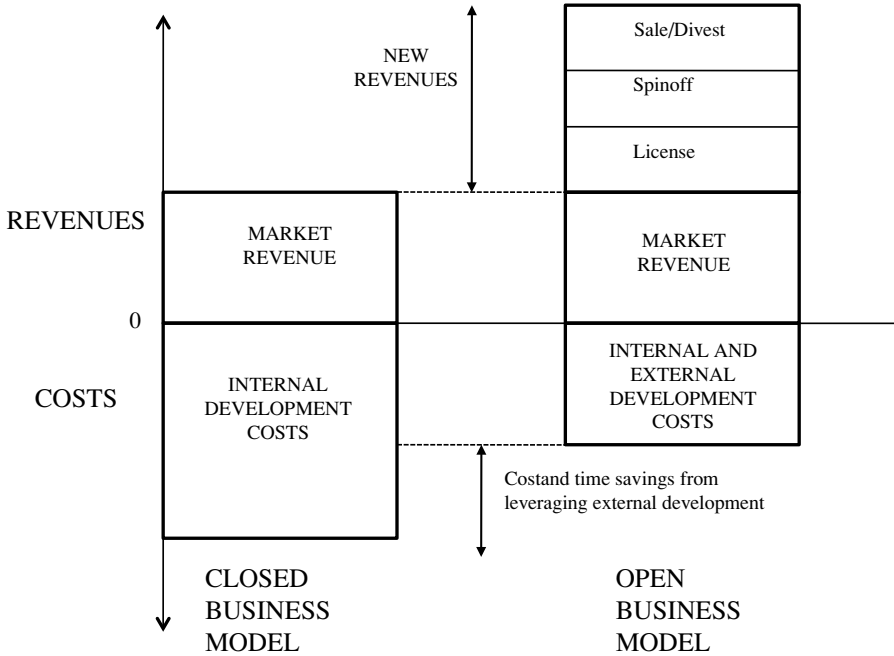


Figure 1: Open and Closed Business Models Compared Regarding Revenues and Costs

Source: Chesbrough(2007)

Chesbrough (2007) tells that to offset the trends of rising development costs and shorter product life cycles (left bar), companies must experiment with creative ways to open their business models by using outside ideas and technologies in internal product development and by allowing inside intellectual property to be commercialized externally (right bar). Reed and Barnes(2012) propose that open innovation reduces the barriers related with economies of scale and capital requirements.

Evens (2009) points out that there are a lot of things to be learned about open innovation since it's only at the beginning of its existence. It is stated that the focus of open innovation is usually on the benefits, however, the evidence of possible barriers research is scarce (Luoma et al, 2010). Further-

more, Vega (et al., 2012) define identification of barriers as relevant entry points to get immersed in the system of innovation in order to identify system failures.

Luoma (et al, 2010) group open innovation barriers in two main categories such as: *company-specific factors* and *environment-specific factors*. Many researchers detailed company-specific and environment-specific factors with different viewpoints. West and Gallagher(2006) define open innovation barriers related with processes in open innovation. Roper and Dundas(2013) point out the role of various channels in managing the relations between external environment. Munos(2011), Stone and Keating (2010) define open innovation barriers as the difference between actors involved. Birkinshaw (et al., 2007) define barriers related with network formation. Savitskaya (2011) comments that external influences are stronger in creating barriers to open innovation than internal practices which companies may develop and improve over time. Successful partnerships are effective to manage the barriers in external environment. In this research, barriers related with two important partnerships and intellectual property as a bridge between these partnerships will be discussed.

2. PARTNERSHIPS

Luoma (et al., 2010) point out the barriers related with partners and collaboration in network management. The difficulties can be summarized as: 1) To recognise possible partners from the network 2) To find new reliable partners 3) To understand partners and negotiate with them and 4) To build trust.

2.1. PUBLIC-PRIVATE PARTNERSHIP

The main aim of the PPP idea is to bring together the public and private sector organizations in mutual benefit (Awe et al., 2011). There are four sets of arguments in support of PPP – synergy, transformation, budget enlargement and capacity enlargement (Oyebanji et al., 2011). In case PPP provide a better service by aligning the social and private benefits, they will end up producing a better outcome for society (Rangel et al., 2011). Successful

partnerships should be collaborative, operational, operational, contributory and consultative (Wettenhall, 2003). Munksgaard (et al., 2012) state that there are barriers between private and public actors in innovation process. Besides, the barriers within between PPIP(Public Private Innovation Partnerships) are harder to solve. As long as the public sector widely pursues dissemination of partnership, the conditions for organizing processes seem difficult. In case of successful partnerships, win-win becomes the name of the game.

The differences between public and private actors and how these differences affect innovation partnerships are explained as follows:

1) The first difference is the diverse objectives for engaging in innovation projects held by public and private partnership respectively.

2) The second difference is balancing the divergent planning and implementation horizons which is a delicate matter also related to the timing of goal achievement of the partners.

3) The third difference is that public and private actors tend to perceive risk differently leading to differences in their risk behaviour. Risk is shared commonly in the public sector whereas risk is assumed individually based in the private sector.

4) The fourth difference relates to incentives for participation and expected rewards. Private actors prefer incentives and expectations of economic rewards whereas public actors aim to prefer creating public value through innovations.

5) The fifth difference is related with the viewpoint of innovation. Public actors view innovations as creating new knowledge whereas private actors define innovation in terms of added value through new applications.

Relations between organizations should be conducted on the basis of specialization and cooperation rather than hierarchical diktat. (Pollitt, 2005 in Skelcher). In *Learning Collaborative* model; partners, which are selected based on their experience, share freely and stay focused on the shared goal of translating discoveries from laboratory to marketplace and also improve the processes. (Weir et al., 2012).

As the conditions on joint innovation differ in every project, a need exists for more flexible governance modes how to cooperate between public and private actors. Furthermore, there is a need to change the traditions and cultures for innovation in the public setting.

2.2. UNIVERSITIES AS PARTNERS

Howells (et al., 2012) claim that firms see universities as being poor sources for innovation information. More importantly, in terms of the open innovation and networking agenda, we may infer from this that universities are seen as low priority, low-order partners for forming collaborations and in the development of network architectures. Hagen (2002) also emphasizes that partnership process is an extremely high risk strategy at the level of implementation. However once established, this study reveals that collaborations by firms with universities and other Higher Education Institutions were found to have a very positive and significant effect on innovation. Melese (et al, 2009) identify two major areas that affect industry-academia collaborations in terms of strategy and operations: organizational and cultural issues and funding challenges.

Kaiv-oja (et al., 2010) explain the evolution of universities beginning from knowledge store, knowledge factory, knowledge hub to innovation factory and added that universities are not ivory towers, but innovation engines and learning environments in contemporary sciences. Melendez and Moreno(2012) emphasize the new role of universities that changed from that of ivory tower to knowledge broker. On the contrary, Hagen(2002) states that due to fragmented nature of knowledge generation and dissemination, universities are no longer the only knowledge and innovation centers. Furthermore, universities are seen as the vehicle to develop processes for dissemination of new knowledge mostly at a regional level. However; the opportunity to build on these relationships and extend them to others within the organization is not well understood. Besides; these collaborative activities are often based on personal relationships between individuals in each organization. As a result, it is rarely realized that the company and the university are losing important opportunities to leverage existing research relationships and broaden the scientific focus.

Knowledge Transfer Exchange (KTE) is an important factor to sustain satisfactory results. KTE process generally follows such phases as: *carrying out scientific discovery, securing intellectual property, marketing intellectual property and realizing profit*. Interestingly, the only agent that could be involved in all activities is the researcher. Thus, the understanding of which factors influence researcher engagement in KTE is of key importance.

Johnston (et al., 2010) identify eight inhibitors affecting exchanges between researchers tasked with KTE activities:

- 1) Adapting the research cycle to fit real-world timelines;
- 2) Establishing relationships with decision makers;
- 3) Justifying activities that fit poorly with traditional academic performance expectations;
- 4) A perceived lack of knowledge of the research process;
- 5) The traditional academic format of communication;
- 6) Research that is not relevant to practice-based issues;
- 7) A lack of timely results; and
- 8) The lack of time and resources to participate in KTE.

Johnston (et al., 2010) identify seven emerging themes influencing Higher Education Institution-industry KTE interactions.

- 1) The importance of network intermediaries;
- 2) Flexibility, openness and connectivity of network structures.
- 3) Encouraging network participation.
- 4) Building trust in relationships through mutual understanding.
- 5) Active network learning
- 6) Strengthening cooperation through capacity building, and
- 7) Culture change

Fabrizio (2006) advises that to successfully embrace the open innovation paradigm, firms must develop the ability to identify, assimilate, and make use of external knowledge and ideas. University-based research con-

tribute to firms' knowledge base. However, firms should also develop their internal research expertise. Roper and Dundas(2013) suggest that knowledge co-production with other organizations, such as company-based and university-based public funded research centers, as part of their R&D or knowledge-generation activities are likely to be important. They also define spatial distribution, cognitive proximity and organizational proximity as important factors for creating knowledge spillovers. Significant differences emerge between university-based and company-based public research centers, with university-based research centers more likely than company-based public research centers to engage both in knowledge sharing and the co-creation of knowledge as well as knowledge-supply activities. Concerns about intellectual property protection seem to be particularly important in limiting the external connections developed by company-based public research centers.

2.3. INTELLECTUAL PROPERTY

Wikhamn and Knights(2011) state that much of the open innovation process is contingent on a contractual use of intellectual property in terms of trading (both buying and selling) on the market or with selected partners. West and Gallagher(2006) emphasize that open innovation is a powerful framework encompassing the generation, capture, and employment of intellectual property at the firm level, however, as (Maxwell, 2006) points out openness is challenging the conventional closed model of intellectual property resulting with a difficult combination between intellectual property and open innovation (Luoma, et al., 2010). The logic of the publish-versus-patent approach is an example of open innovation thinking. In Closed Innovation, firms that make new discoveries would think first about how to own and protect this knowledge. In Open Innovation, firms choose to patent core knowledge, but carefully consider "publish" as well. The decision between patent-and-publish is related with the business model. The model helps the firm create value throughout the value chain and then positions the firm to capture some portion of that value (Chesbrough, 2003a).

The use of intellectual property rights such as patents, trade marks and copyright may help to bring the intangible intellectual assets more tangible and manageable which may be of value especially in collaboration situation(Varis and Olander, 2010). Intellectual property rights may also help

in capturing value from innovations as they enable protection over the innovation and thus the patent owner for example may exclusively use and out-license the product. Increasing intellectual property concerns in an arena previously characterized by open knowledge sharing may create barriers and administrative burdens that can be a drag on innovation (Fabrizio, 2006).

Lli (et al., 2010) relate the intellectual property rights with the changing role of R&D in open innovation. Herstad (et al., 2008) state that outsourcing R&D may provide cost-efficient problem solving on a project basis but comes with the organizational cost of knowledge accumulation. West and Gallagher(2006) suggest that firms must make use of intellectual property as a supplement to, not a replacement for, internal R&D. Savitskaya(2011) conclude that the greater the complexity and cost of intellectual property protection, the less likely firms will engage in open innovation. West and Gallagher(2006) say that firms question to contribute to intellectual property since it's also going to be made available to their rivals.

Varis and Olander(2010) state about the usage of intellectual property that firms which engage in R&D in order to find new solutions to existing problems or creating totally new knowledge and innovations have several possible strategies related to innovations. They also argue that firms might either decide to apply for intellectual property rights (for example, a patent) to protect the innovation from imitation or in order to license the right to use the innovation to other firms, or they may want to keep the innovation a secret to prevent knowledge about the innovation from spreading around, which might give them lead time in developing the innovation further. Some firms are believed to choose patenting for reasons of ensuring future freedom of operation while others might fear a failure in patenting process or that a competitor would be granted one before they had the chance, and thus decide to publish their innovations for defence.

As the open innovation framework makes clear, the best way for a firm to gain value from innovations that do not fit the firm's own set of complementary assets is to look outside of the firm for a licensee or spin off to develop the innovation. Traitler (et al., 2010) suggest understanding clear definition of partners' needs in solving the contradictions related with intellectual property.

Savitskaya (et al, 2010) relate the problems in intellectual property rights system as weak appropriability regime, strong intellectual property rights protection and costs of intellectual property protection and procedure of claiming intellectual property. Under a weak appropriability regime, firms are encouraged to protect their innovations and thus less inclined to share their internally generated knowledge with others. Hence, firms have less incentive to conduct in-house R&D; therefore the amount of research surplus would decrease as well. Weak intellectual property rights protection may lead to the overall rate of private sector R&D decreasing below the levels needed to sustain long-term private returns from innovation and may therefore necessitate public support for in-house R&D. In strong protection of intellectual property, firms are supposed to increase the willingness of companies to develop own technologies in house. Hence, the involvement of companies into open innovation may depend on the strength of intellectual property rights protection and associated with its costs and formal arrangement. Giannopoluou (et al., 2010) mention that different strategies of open innovation require particular intellectual property management.

The other partnership that should be considered in intellectual property is the relation between universities. Melese (et al. 2009) state that intellectual property rights continue to pose a challenge for cultivating collaborative environments that support innovation. They also propose giving more thoughts to structure contractual agreements that promote innovation while continuing to respect the intellectual property rights of the collaborators. If the intellectual property protection terms are too broad, it will be difficult for academic researchers to collaborate. If intellectual property protection reaches too far into the future to include research that might be performed after the collaboration ends, the result will be to restrict research with other collaborators. This serves to unnecessarily limit or tie all inventions exclusively to one partner and will therefore be a major barrier to innovation.

CONCLUSION

Innovation is an effective solution for many of the problems resulting from inevitable changes. However, rapid and uncontrollable changes in the external environment force companies to collaborate with actors in external

environment. These mentioned developments have caused a new type of innovation to emerge which is defined as open innovation. In open innovation, the advantages can be briefly described as increasing revenues via decreasing costs. Besides, ideas from actors' knowledge about problems increase the probability of novelty of innovations. However, increasing number of partnerships cause barriers in developing innovations. In this research, barriers related with universities and public partnerships are discussed. Intellectual property acts a bridge between firms and the external actors during innovation process. In open innovation, building trust is important for the relationship. Partners should begin collaboration with appropriate agreements. Although the importance of intellectual property in open innovation is admitted in literature, there is a lack of intellectual property issues in the literature. One of the main problems between actors is the difference in their goals. It is advisable that a person be assigned for supporting open innovation processes. In open innovation process, external environment should be scanned carefully, partners should be selected carefully and external knowledge should be integrated to the knowledge created in the firm. However; firms should think carefully whether to innovate openly or not. As stated in the literature, open innovation is not suitable for all firms and industries. Firms should think whether they need to rely on their own ideas. If this occurs, they should not innovate openly. One of the other point that needs to be considered is the need to change for open innovation. All of the partners in open innovation should change their structures, cultures and processes and change their business model. The last point that needs to be mentioned is that firms should also consider other interactive channels of knowledge transfer such as conferences, consulting and informal interactions.

In this research, a literature review open innovation and role of partnerships to have effective open innovation projects are provided. Partnerships are means of knowledge inflows and outflows in open innovation. However, there are also barriers in building effective relationships. Barriers are also explained in this research. In future studies, each barrier should be examined in detail. In-depth interviews should be conducted in different cases related with open innovation.

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OECD Ülkeleri ve Komşu Ülkelerin Bilgi Düzeylerinin Bilgi Haritası Yöntemi İle Analizi

OECD Countries and Neighbor Countries' Knowledge Level Analysis by Using Knowledge Mapping Method

Cem Iřık*

Özet

Bilgi, refahın kaynağı olmakla birlikte sahibine ekonomik güç katan çok önemli bir değerdir. Günümüzde kaynağını bilgidен alan ekonomiler bilgi ekonomisi bu ekonomiyi icra eden toplumlar ise bilgi toplumu olarak bilinmektedir. Bilginin bir üretim faktörü olarak karşımıza çıktığı yeni ekonomilerde rakabetçi üstünlük yaratan faktörleri analiz etmek kalkınmanın derecesini belirlemede önemli hale gelmiştir. Bu nedenle çalışmanın amacı ekonomik olgu ve olayları bilgi ekonomisi rakabetçi üstünlük değişkenleri çerçevesinde analiz ederek bir yol haritası oluşturmaktır. Bu çalışmada bilgi ekonomilerinin rakabet üstünlüğü oluşturulmasına etki eden Ar-Ge, İnovasyon, Patent ve Bilgi Teknolojileri açısından Türkiye'de dâhil olmak üzere OECD¹ ülkeleri ve komşularımızın² bilgi düzeyleri "bilgi haritası yöntemi" kullanılarak analiz edilmiştir. Daha sonra ülkelerin bilgi düzeyleri, OECD bilim ve teknoloji göstergeleri ile tespit edilen sonuçlarla karşılaştırılarak değerlendirilmiştir. Çalışma sonuçları gösteriyor ki Türkiye bilgi ekonomisi rakabetçi değişkenlerine daha fazla önem vermeli ve bu alanda çalışmalarını sıklaştırmalıdır.

Anahtar Kelimeler: Bilgi, Bilgi Haritası, OECD, Bilgi Düzeyi

Abstract

Knowledge is an important value that adds economic power to his/her owner and foundation of the prosperity. Today, economy that takes foundation from knowledge is known as knowledge economy and people who live in society are known as knowledge society. Therefore, this study aims at contributing people who want to constitute knowledge economy works in Turkey. The purpose of the study is to make comprehensible of the economic fact and situations in the framework of knowledge economy. In this study, it is determined that the factors, which influence the establishment of competitive advantage in knowledge economies, including Turkey, OECD countries and neighbors knowledge levels were analyzed by using "knowledge mapping method". Then, information level of countries were evaluated by comparing the results of OECD Science and Technology Indicators. According to results, Turkey should increase knowledge works in this area.

Keywords: Knowledge, Knowledge Mapping, OECD, Knowledge Level

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¹ OECD ülkeleri: ABD, Almanya, Avusturya, Belçika, Danimarka, Fransa, Hollanda, İngiltere, İrlanda, İspanya, İsveç, İsviçre, İtalya, İzlanda, Japonya, Kanada, Lüksemburg, Norveç, Portekiz, Türkiye ve Yunanistan.

² Azerbaycan, Bulgaristan, Ermenistan, Gürcistan, Irak, İran, Suriye ve Yunanistan.

1. Giriş

Ülkeler sahip oldukları bilginin ne düzeyde olduğu, hangi bilginin ne zaman, nerede kullanılması gerektiği ve var olan bu bilginin nasıl saklanabileceği konusunda yeterli bilgi sahibi değildirler. Bilginin sürekli değişen yapısı ekonomileri bilgiyi saklama, değerlendirme ve kontrolüne yönelik adımlar atma zorunluluğuna sevk etmektedir. Ülkeler bilginin etkin kullanımını ve sahip oldukları bilginin ne düzeyde olduğunu görmeleri için bilgi haritalarına ihtiyaç duymaktadır. Bilgi haritası; çeşitli metinler, rakamlar, şekiller ve sembollerin kullanılmasıyla hazırlanan ve bilgi kaynaklarıyla bilgiye gereksinim duyanlar arasındaki bağlantıyı sağlayan temel bir erişim aracı olarak tanımlanmaktadır (Zack, 2000; Haggie, 2003; Özdemirci ve Aydın, 2007). Grey'e göre de organizasyonun sahip olduğu bilginin yerini, sahibini ve değerini tespit ederek, bunlardan en faydalı şekilde yararlanma yollarının keşfedilmesini içeren sürekli bir çabaya işaret etmektedir (Grey, 1999). Ayrıca, inceleme ve sentez sürecini içermekle birlikte bilginin elde edilmesi ve akışının açıklanmasıdır. Bu sayede ekonomide tanımlanmış, sınıflandırılmış ve düzenlenmiş bilgiye farklı bir ortamda nasıl ulaşılabileceği belirlenmektedir. Bilgi haritası; bilgiyi depolamaya yarayan bir araç değil, bilgiye nasıl ulaşılabileceğini gösteren bir rehberdir. Bu sebeple öncelikle ekonomide bilgi varlıklarının isimlendirilmesi, gruplandırılması ve sahiplerinin ortaya konması gerekmektedir. Daha sonra bu sonuçlar, referans kişiler katalogu, aranabilir veritabanı, sürekli güncellenebilir arayüz ve dinamik raporlar gibi teknik çözümlerle sunulmaktadır. Sistematik bir yaklaşımla ele alınması gereken bilgi haritası yönteminde bilgi tüm çeşitlerde olabilmektedir (açık-kapalı, resmi-gayri resmi). Bilginin düzenlenmesi, saklanabileceği her alanda (süreçler, dokümanlar, ilişkiler) yakalanması ve hukuksal düzenlemeler ile ele alınması önem arz etmektedir (Pınar ve Kamaşar, 2008).

Son yıllarda teknolojiye ortaya çıkan gelişmeler sayesinde bilgi Ar-Ge ve inovasyon sonucu ortaya çıkan yenilikler ile bilgi teknolojilerindeki hızlı ilerlemeler sayesinde toplumun her kesimine hızlı bir şekilde yayılmaktadır. Sosyo-ekonomik kalkınmanın bir belirleyicisi haline gelen Ar-Ge, inovasyon, patent ve bilgi teknolojileri rekabetçi üstünlük kurulmasında ülkelere önemli avantajlar sağlamaktadır. Bir ülkenin bilim ve teknolojiyi daha etkin kullanması bilgiye dayalı karar alma süreçleri ile daha fazla değer üreten, küresel rekabette başarılı ve refah düzeyi yüksek bir konuma çıkma hedefini de beraberinde getirmektedir (DPT, 2006-2010).

Çalışmada, ekonomilerin sahip oldukları bilgi düzeyinin rakip ekonomiler ile karşılaştırılabilir olması bilgi haritası metodunun seçilme nedenidir. Bilgi haritası üzerinde yer alan semboller ve grafikler, ekonomi ve rakiplerin bu harita üzerindeki yerini belirtecek şekilde oluşturulmasıdır. Örneğin bir ekonomi x bilgi alanında ileri seviyede bir bilgiye sahipken, rakip ekonomiler temel seviyede bir bilgi düzeyine sahip olabilmektedir. Bilgi matrisinin oluşturulması, ekonomilerin kendi durumlarını görüp bilgi seviyelerini arttırmak için strateji geliştirmeye yardımcı olurken, bilgi matrisine göre ülkelerin ileri bilgi düzeyini aşmaları, yenilikçi bilgi düzeyinin yakalanmasıdır.

OECD ülkeleri bilgi düzeyi bakımından komşularımıza rol model ülkeler olabilecek konumdadır. Bu çalışma OECD ülkeleri ve komşu ülkelerin bilgi düzeylerinin bilgi haritası analizleri yöntemi kullanarak Ar-Ge, inovasyon, patent ve bilgi teknolojileri açısından bilgi düzeyinin belirlenmesi amacıyla taşımaktadır. Bu çalışma dört bölümden oluşmaktadır. Birinci bölümde bilgi haritası ve matrisi açıklanmış, ikinci bölümde bilgi haritası konusunda literatür çalışmalarına yer verilmiş, üçüncü bölümde metodoloji ve son bölümde elde edilen sonuçlar tartışılmıştır.

2. Bilgi Haritası Literatür Araştırması

Michael Zack'in (1999) literatüre kazandırdığı bilgi haritası kavramı daha önceleri sistematik bir şekilde uygulanmamasına rağmen hayatın içerisinde yer almıştır. Elde edilen bilgi kayıtlarının toplanıp, dokümantasyonunun yapılmaya başlanması ile bilgi haritası metodolojisi önem kazanmaya başlamıştır.

Michael Zack (1999) bilgiyi dinamik bir süreç olarak tanımlamış ve sonra stratejik bilginin önemine değinmiştir. Stratejik bilgi rekabet edilebilirlik açısından firmanın piyasada ki konumunun belirlenmesinde kullanılmaktadır. Firmalar rekabetçi ve yenilikçi bir yapıya kavuşmak için bilgiyi kategorize ederek bilgi haritası yardımıyla bu yapıyı daha kullanışlı hâle getirmektedir (Zack, 1999).

Grey (1999) bilgi haritasını sadece bilginin organizasyonu açısından ele almamış aynı zamanda bilginin nerede ve nasıl kullanılması gerektiğine, değerine ve sağlıklı bir bilgi akışının sağlanması için çeşitli yollar üzerinde

durmuştur. Ayrıca sözü geçen bu çalışmada sahip olunan bir bilgi veya enformasyonun izlenmesi gerektiği ve bu doğrultuda bilginin entelektüel sermaye ile biraraya getirilerek kullanılması gerekliliği üzerinde de durulmuştur (Grey, 1999).

Wexler (2001) çalışmasında bilgi haritasını organizasyon içerisindeki karmaşık enformasyonun sevk ve idare edilmesinde kullanılan bir yöntem olarak ifade etmiştir. Başka bir deyişle, bilgi haritası her türlü bilginin sembol ve şekiller ile ifade edilerek yönetilmesidir (Wexler, 2001).

Vestal (2002) çalışmasında bilgi haritasını organizasyonu tanımlayan ve kategorize eden insan, süreç, içerik ve teknolojiyi kapsayan bir bütün olarak tanımlamıştır. Firmalar karşılaştığı engel ve kısıtları stratejik amaç ve hedefleri çerçevesinde yapılandırmalıdır. Bu nedenle bilgi haritası, firmanın amaç ve hedeflerine ulaşmak için bir yol haritası niteliğindedir (Vestal, 2002).

IBM tarafından yapılan bir çalışmada çalışmada bilginin nasıl aktarılacağına ve benzer alanlarda çoklu süreçlerden geçerek (işlenerek) nasıl kullanılacağına dikkat çekmiş ve bilgi altyapısının ne derece önemli olduğu vurgusu yapılmıştır (IBM, 2003).

Callahan (2005) ise araştırmasında çalışmada bilgi haritasına geçmeden önce amaçların tam olarak belirlenmesi gerektiğini savunulmuştur. Callahan'a göre ise, bilgi haritası tedarikçiler, rakipler ve müşteriler ile ilişkiler kurma ve bu ilişkileri sorgulama sürecini kapsayan bir eğitim şeklidir. Yani, tedarikçiler, rakipler ve müşteriler belirli bir bilgi düzeyine sahipken ancak bu durumda bilgi insanlar arasında ilişki kurmanın bir yolu olarak kullanılabilir.

Ermine vd., (2006) çalışmasında teknik eğitim, yüz yüze eğitim ve hizmet içi eğitim gibi yollar ile yapılan bilgi transferlerinin geçerli bir yol olmadığını bunun yerine organizasyonun içerisinde bilgi sermayesine yapılacak katılımın önemli olduğu görüşü üzerinde durmuştur. Aynı çalışmada Ermine vd. Bilgi transferi sürecince bilgi bileşenleri tanımlanarak bilgi yönetimi sürecinin iyi bir şekilde oluşturulması gerektiğini vurgulamıştır (Ermine vd., 2006).

Huijsen vd., (2007) çalışmasında bilgi haritasını organizasyon içerisinde yer alan bilginin şeffaf bir şekilde yansımaları olarak tanımlamıştır. Ayrıca

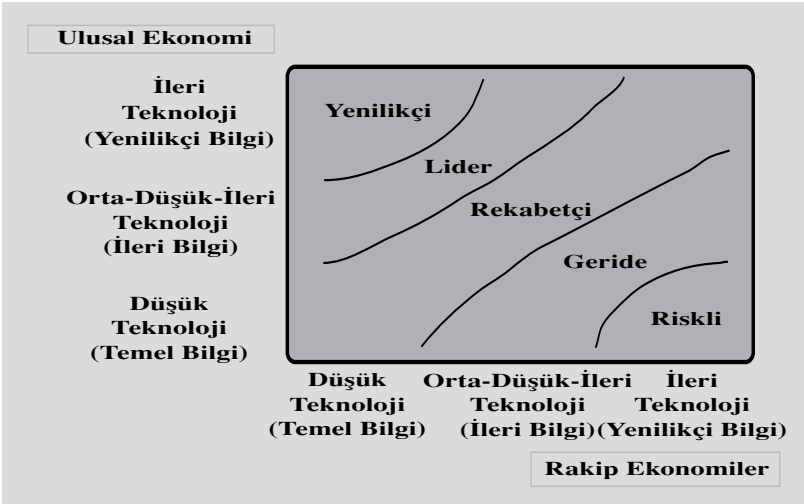
bilgi haritası, firma performansı hakkında bilgi sahibi olunmasına da yardımcı olmaktadır (Driessen vd., 2007).

3. Bilgi Haritası ve Bilgi Matrisi

Zack'in ortaya koyduğu bilgi yaklaşımı kapsamında bilgi haritası üzerinde yer alan bilgi seviyeleri; temel, ileri (teknik) ve yenilikçi bilgi olmak üzere, başlıca üç grupta toplanmaktadır. Bunlar (Zack, 1999);

- Temel bilgi; ekonominin ihtiyaç duyduğu en alt düzeydeki bilgiyi ifade etmektedir.
- İleri bilgi; ekonominin uluslararası alanda rekabetçi olarak varlığını sürdürmeye yarayan bilgidir.
- Yenilikçi bilgi; ekonomilerin rakiplerine nazaran lider konumda olmasına yardımcı olan bilgidir.

Ulusal ve rakip ekonomileri gösterir bilgi haritası ve buna ait değişkenler Şekil 1'de gösterilmiştir.



Şekil 1: Bilgi Haritası

Kaynak: Michael H. Zack, Developing a Knowledge Strategy, *California Management Review*, 41(3), 1999, p.134.

Michael Zack (2000) çalışmasına göre bilgi haritası değişkenlerini şu şekilde sıralamak mümkündür.

- Yenilikçi ekonomi: rakipler temel bir bilgi düzeyindeyken ekonominin yenilikçi bilgiyle piyasada öncü konumunda olmasıdır.
- Lider ekonomi: mevcut durum içerisinde diğer ekonomilere öncülük edebilecek durumda yenilikçi bilgiye sahipken, rakiplerin de ileri bir bilgiye sahip olmasıdır.
- Rekabetçi: ekonomiyle rakip ekonomilerin aynı düzeyde bilgi seviyesine sahip olmasıdır. Bu durumda ekonomi ve rakipler ileri bilgi düzeyine sahiptir.
- Geride kalmış ekonomi: ekonominin rakiplere nazaran bilgi düzeyi olarak geride kalmasıdır. Yani ekonomi temel bilgi düzeyindeyken rakipler ileri bilgi düzeyindedir.
- Riskli ekonomi: ekonomi temel bilgi düzeyinde yer alırken, rakiplerin de yenilikçi bir bilgi düzeyine sahip olmasıdır. Bu durum aynı zamanda ekonominin kalkınma hamleleri ve gerekli yatırımları yapması gerektiği sınırı göstermektedir.

2.1. Bilgi Haritası Yararları

Bilginin saklanması ve yayılması için kullanılan yöntemlerden biri olan bilgi haritası metodu önemli bilgilerin ve bu bilgiler arasındaki ilişkilerin şematik olarak gösterilmesi sonucu ortaya çıkan yararı içermektedir. Ortaya çıkan sonuçları şu şekilde sıralamak mümkündür (O'Donell, 1994, Zack, 1999; WB, 2003;).

- Bilgiye ulaşım ve paylaşım kolaylaşır ve bu sayede var olan bilgi yeni bilgiler için bir kaynak oluşturmaktadır. Böylece zamandan ve kaynaklardan tasarruf sağlanmış olmaktadır.
- Ekonomide uzmanlaşma artmaktadır.
- Öğrenen ekonomiler (learning economy), hayat boyu öğrenme (life long learning), e-öğrenme (e-learning) gibi kavramlar ortaya çıkmaktadır. Bu metodlar ile öğrenme artar ve böylece bilgi toplumuna geçiş sürecinde büyük bir aşama kaydedilmiş olmaktadır.

- Bilginin yönetimi, değerlendirilmesi ve kontrolü kolaylaştırmaktadır.

2.2. Bilgi Haritası Yöntemi

Günümüzde rekabetin yoğun olarak yaşandığı ekonomilerin karşılaştırmalı analizleri yapılırken bilgi varlıklarının yerini belirlemek ve bilgi envanteri oluşturabilmek için bilgi haritası yöntemi sıkça kullanılmaktadır. Bilgi haritası; bir ülkenin teknoloji düzeyi ile bilgi seviyesinin grafik ve semboller yardımıyla bilgi yapısı ve yerinin tespit edilmesidir (Zack, 1999). Böylece, Michael Zack'ın literatüre kazandırdığı bu yöntem ile bir ülkenin bilgi düzeyi belirlenebilmektedir.

Uygulama bölümünün ilk aşamasında, ülkemiz özneline, 2009-2010 dönemini kapsayan yıllık veriler bilgi haritası ile analiz edilmiştir. Bu amaçla, bilgi ekonomisine ilişkin kavramlar ele alınırken gerekli verilerin sağlanabilmesi için OECD (2010), Dünya Ekonomik Forumu (2010), Economist Intelligence Unit (2009), TÜSİAD (1991) ve Saygılı (2003) gibi kişi, kurum ve kuruluşların yayınlamış olduğu çalışmalara başvurulacaktır (Saygılı, 2003; EIU, 2009; TÜSİAD, 19991; WEF, 2010, OECD, 1996). Bu kapsamda, bilgi ekonomilerinde rekabet üstünlüğü oluşturulmasına etki eden faktörler ışığında gelişmiş ülkeler (ABD, Almanya, Fransa, İngiltere, İspanya, İtalya ve Japonya), Yunanistan ve Türkiye de dâhil olmak üzere diğer OECD ülkeleri (Avusturya, Belçika, Kanada, Danimarka, Yunanistan, İzlanda, İrlanda, Lüksemburg, Hollanda, Norveç, Portekiz, İsveç, İsviçre) ve komşularımızın (Yunanistan, Azerbaycan, Bulgaristan, Gürcistan, Suriye ve Ermenistan, İran, Irak) bilgi düzeyi belirlenmiştir.

Bilgi ekonomileri açısından ülkemizde bilgi düzeyinin belirlenmesi amacıyla, uygulamanın ilk aşamasındaki bilgi haritası analizlerinde kullanılacak ilk faktör Ar-Ge'dir. İçerisinde yenilik barındıran, kültür ve insan bilgisini içeren Ar-Ge; bilginin yeni uygulamaları sonucu ortaya çıkan düzenli ve yaratıcı faaliyetler bütününe temsil etmektedir. (Resmi Gazete, 2002)

Bilgi düzeyinin belirlenmesi amacıyla rekabet üstünlüğü oluşturulmasına etki eden faktörlerden inovasyon; yenileme sürecini kapsayan bir fikrin belli bir süreç içerisinde pazarlanmak suretiyle bir ürün ya da hizmete, yeni yahut geliştirilmiş bir imalat veya dağıtım yöntemine, ya da yeni bir toplum-

sal hizmet yöntemine dönüştürülmesi ile ilgili tüm çalışmaları içerisinde barındırması olarak açıklanmaktadır. (Resmi Gazete, 2002)

Bilgi ekonomileri açısından ülkemizin bilgi haritasının belirlenmesi amacıyla çalışmanın uygulama bölümünün ilk aşamasında kullanılan üçüncü faktör patenttir. Patent; buluş konusu olan bir ürünü belirli bir süre üretme, kullanma, satma veya ithal etme haklarıyla ilgili bilginin toplanmasıdır. (TPE, 2013)

Teknoloji ve teknoloji altyapısına ilişkin bilgileri, bilgi teknolojileri oluşturmaktır. Ekonominin içerisinde yer alan bilişim sektörüne ilişkin var olan bilgi düzeyi ve tüm gelişmeler bilgi teknolojileri değişkeninin doğrudan belirleyicileri arasında yer almaktadır. Hem genel, hem de bilgi teknolojileri yönetimi açısından ekonominin performansı üzerinde hızlı değişmelere yol açan kaynaklarının planlanması, geliştirilmesi ve kontrolü, bilgi teknolojilerinin beslenmesinde hayati önem taşımaktadır. Bu kapsamda, ülkemizin bilgi düzeyinin belirlenebilmesi amacıyla kullanılan son faktör bilgi ve iletişim teknolojileridir. Avustralyanın 1998 yılında Joint Middle Management Development Programı (JMMDP³) adı altında anket yöntemi ile yaptığı Avustralya milli kütüphane organizasyonunun ihtiyaçlarının belirlenme çalışmaları konuya gösterilebilecek özgün bir uygulama örneğidir (Australian Library and Information Association, 2010).

3. Yöntem ve Veri Seti

Çalışmada kullanılan Ar-Ge, Patent, İnovasyon ve Bilgi Teknoloji verileri 2009–2010 dönemini kapsayan yılları içermektedir. Bu veriler OECD ve Dünya Bankası veri tabanlarından temin edilmiştir.

Ülkelerin Rekabet Skorunun Hesaplanması (2009-2010)

$$q_{i,c}^{09-10} = W_c^{2009} \times \bar{q}_{i,c}^{2009} + W_c^{2010} \times \bar{q}_{i,c}^{2010}$$

Not: $q_{i,c}$: Anket sorusu, c : Ülkelerin skoru, $t = 2009, 2010$, N : Örnek sayısı

³ JMMDP için hazırlanan e-anket çalışmasının soruları ekler kısmında verilmiştir.

$$w_c^{2009} = \frac{(1-\alpha) + \frac{N_c^{2009}}{N_c^{2009} + N_c^{2010}}}{2}$$

$$w_c^{2010} = \frac{\alpha + \frac{N_c^{2010}}{N_c^{2009} + N_c^{2010}}}{2}$$

$$q_{ic}^{09-10} = \frac{1}{2} \times \left[(1-\alpha) \times \bar{q}_{ic}^{2009} + \alpha \times \bar{q}_{ic}^{2010} \right] + \frac{1}{2} \times \left[\frac{N_c^{2009}}{N_c^{2009} + N_c^{2010}} \times \bar{q}_{ic}^{2009} + \frac{N_c^{2010}}{N_c^{2009} + N_c^{2010}} \times \bar{q}_{ic}^{2010} \right]$$

genelleştirilmiş haliyle

$$q_{ic}^{h-h} = \frac{1}{2} \times \left[(1-\alpha) \times \bar{q}_{ic}^h + \alpha \times \bar{q}_{ic}^h \right] + \frac{1}{2} \times \left[\frac{N_c^h}{N_c^h + N_c^h} \times \bar{q}_{ic}^h + \frac{N_c^h}{N_c^h + N_c^h} \times \bar{q}_{ic}^h \right]$$

Tablo 1’de ülkelere göre bilgi alanları sunulmuştur.

Tablo 1: Türkiye ve Komşularının Bilgi Alanı (2010)

Ülkeler	Ülke Sembolleri	İnovasyon Skoru	Ar-Ge, Patent ve Bilgi Tek. Skoru ⁴	Ortalama Teknoloji Düzeyi (M) ⁵
Azerbaycan	AZ	3.16	4.29	3.72
TÜRKİYE	TR	3.10	4.25	3.67
İran	IR	3.11	4.14	3.62
Bulgaristan	BG	2.91	4.13	3.52
Yunanistan	GR	3.00	3.99	3.49
Ermenistan	ER	2.63	3.76	3.19
Gürcistan	GEO	2.51	3.86	3.18
Suriye	SYR	2.49	3.78	3.13
Irak	IRQ	---	---	---

Kaynak: World Economic Forum, 2010, Research and Development Expenditure, Erişim: 04.10.2012 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf.

Not: Ar-Ge, İnovasyon, Patent ve Bilgi Teknolojileri (BT) açısından Dünya Bankası'na göre dünya ortalaması 2.21 olarak belirtilmiştir.

Tablo 1'den de görüldüğü üzere, bilgi alanları olan Ar-Ge, İnovasyon, Patent ve Bilgi Teknolojileri açısından ülkeler sırasıyla Azerbaycan, Türkiye, İran, Bulgaristan, Yunanistan, Ermenistan, Gürcistan ve Suriye olarak sıralanmıştır.

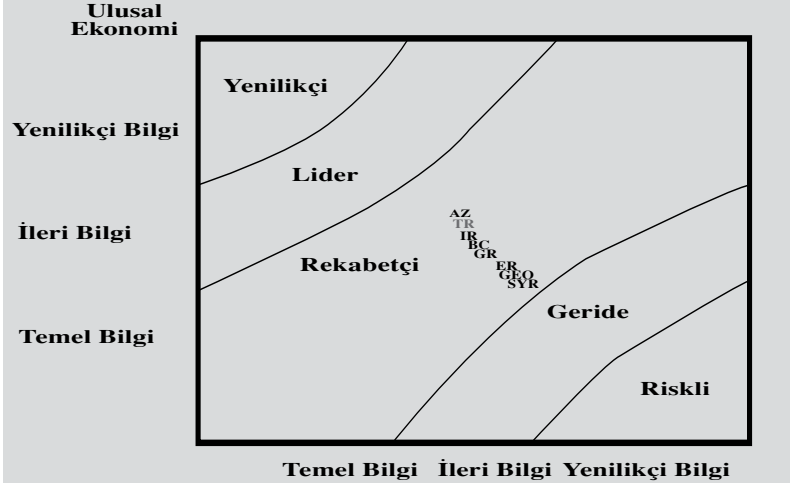
$$M = \frac{\sum_{n=1}^k m_n}{k}$$

Ortalama teknoloji düzeyleri hesaplanırken İnovasyon ile Ar-Ge, Patent ve Bilgi Teknoloji değişkenleri kullanılmıştır. Burada m_n OECD veri tabanından alınmış ülkelerin Ar-Ge, İnovasyon, Patent ve Bilgi Teknoloji indeks verileridir. k değişken sayısını ve m inovasyon skoru ile ülkelerin Ar-Ge, Patent ve Bilgi Teknolojileri skoru toplamını ifade etmektedir. M ise ortalama teknoloji düzeyini vermektedir (Ermine vd., 2006).

⁴ Ülkelerin teknoloji düzeyi Dünya Bankası verilerine göre Ar-Ge, Patent ve Bilgi Teknoloji değişkenlerinin Milli Gelir içerisindeki yüzde olarak ortalamasıdır.

⁵ Ortalama Teknoloji Düzeyi: Dünya Bankası verilerine göre Ar-Ge, İnovasyon, Patent ve Bilgi Teknoloji değişkenlerinin Milli Gelir içerisindeki yüzde olarak toplamalarının ortalamasına göre hesaplanmıştır.

Türkiye'nin komşuları içerisinde bilgi haritasındaki yeri Şekil 2'de gösterilmiştir.



Şekil 2: Türkiye ve Komşularının Bilgi Haritasındaki Yeri (2010)

Şekil 2'den de görüldüğü üzere, Türkiye'nin komşularına göre ileri bilgi düzeyindedir.

OECD'nin yapmış olduğu rekabet sıralaması ise Tablo 2'de sunulmuştur (OECD, 2010).

Tablo 2: OECD Rekabet Sıralaması I (2010)

Ülke	Sıra	Skor ⁶
Azerbaycan	57	4.29
TÜRKİYE	61	4.25
İran	69	4.14
Bulgaristan	71	4.02
Yunanistan	83	3.99
Gürcistan	93	3.86
Suriye	97	3.78
Ermenistan	98	3.76
Irak	---	---

Kaynak: World Economic Forum, 2010, Research and Development Expenditure, Erişim: 04.10.2011, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf.

Not: Dünya Bankası veri tabanında yer alan ülke skorları dikkate alınmıştır.

Tablo 2’den de görüldüğü gibi, OECD’nin her yıl yayınladığı rekabet üstünlüğü oluşturulmasına etki eden diğer faktörlerin de sıralamaya katılması sonucu Türkiye Azerbaycan’dan sonra ikinci sırada yer alırken İran ise üçüncü sıradadır.

Komşularımız açısından ülkelerin bilgi haritasındaki yerleri, OECD bilim ve teknoloji göstergeleri ile tespit edilen sonuçlarla karşılaştırıldığında (Tablo 1 ile 2) komşumuz Ermenistan; Suriye ve Gürcistan’a göre daha ileri bir bilgi düzeyine sahip olduğu belirlenmiştir.

Gelişmiş ülkeler açısından bakıldığında ise Türkiye’nin durumu Tablo 3’deki gibidir.

⁶ Ülkelere ait rekabet Skor’unun hesaplanması ekler kısmında verilmiştir.

Tablo 3: Türkiye ve Gelişmiş Ülkelerin Bilgi Alanı (2010)

Ülkeler	Ülke Sembolleri	İnovasyon Skoru	Ar-Ge, Patent ve BT Skoru ⁷	Ortalama Teknoloji Düzeyi (M) ⁸	Düzyer
ABD	USA	5.65	5.43	5.54	
Japonya	JP	5.52	5.37	5.45	
Almanya	DE	5.19	5.39	5.29	Yenilikçi
İngiltere	UK	4.65	5.25	4.95	
Fransa	FR	4.48	5.13	4.80	
OECD (13)	OECD	4.45	4.97	4.71	Lider
İspanya	ES	3.47	4.49	3.98	
İtalya	IT	3.40	4.37	3.88	
TÜRKİYE	TR	3.10	4.25	3.67	Rekabetçi

Kaynak: World Economic Forum, 2010, Research and Development Expenditure, Erişim: 04.10.2011, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf.

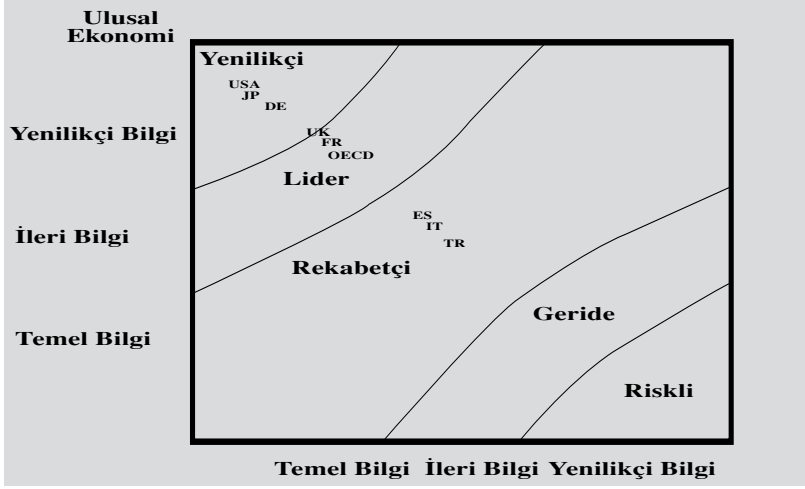
Gelişmiş ülkeler açısından Türkiye'nin durumu analiz edildiğinde ülkemiz rekabetçi bir ekonomiye sahip olduğu görülmektedir. ABD, Japonya ve Almanya gibi ülkeler ise ileri teknoloji kullanan yenilikçi ekonomiler düzeyindedir. İngiltere, Fransa ve OECD (13) ise orta seviye teknolojiyle lider ülkeler grubundadır. İspanya, İtalya ve Türkiye orta düşük düzey teknolojiyle rekabetçi bilgi seviyesindedir. Ayrıca bir önceki yıla göre ülkemiz 3.40 ortalama teknoloji düzeyinden 3.67 ortalama bilgi düzeyine çıkmıştır.

Türkiye dâhil bu ülkelerin bilgi haritası üzerindeki konumları Şekil 3'de gösterilmiştir.

⁷ Ülkelerin teknoloji düzeyi Dünya Bankası verilerine göre Ar-Ge, Patent ve Bilgi Teknoloji değişkenlerinin Milli Gelir içerisindeki yüzde olarak ortalamasıdır.

⁸ Ortalama Teknoloji Düzeyi: Dünya Bankası verilerine göre Ar-Ge, İnovasyon, Patent ve Bilgi Teknoloji değişkenlerinin Milli Gelir içerisindeki yüzde olarak toplamalarının ortalamasına göre hesaplanmıştır.

Şekil 3: Türkiye ve Gelişmiş Ülkelerin Bilgi Haritasında Yeri (2010)



Şekil 3'den de görüldüğü üzere, gelişmiş ülkeler açısından Türkiye'nin bilgi haritasındaki yeri rekabetçi bilgi düzeyindedir. Diğer bir ifadeyle rekabetçi bilgi düzeyi ekonomiyle rakip ekonomilerin aynı düzeyde bilgi seviyesine sahip olmasıdır. Bu durumda ekonomi ve rakipler ileri bilgi düzeyine sahiptir.

OECD'nin gelişmiş ülkeler açısından 2009 yılı rekabet sıralaması Tablo 4'de sunulmuştur.

Tablo 4: OECD Rekabet Sıralaması II (2009-2010)

Ülke	Sıra	Skor
ABD	4	5.43
Almanya	5	5.39
Japonya	6	5.37
İngiltere	12	5.25
Fransa	15	5.13
OECD (13)	-	4.97
İspanya	42	4.49
İtalya	48	4.37
TÜRKİYE	61	4.25

Kaynak: World Economic Forum, 2009, Research and Development Expenditure, Erişim: 04.10.2010, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf.

Gelişmiş ülkeler açısından ülkelerin bilgi haritasındaki yerleri, OECD bilim ve teknoloji göstergeleri ile tespit edilen sonuçlarla karşılaştırıldığında (Tablo 3 ile 4) Japonya Ar-Ge, İnovasyon, Patent ve Bilgi Teknoloji faktörleri açısından Almanya'ya göre daha ileri bir bilgi düzeyine sahip olduğu ortaya konmuştur. Ayrıca, ülkemizin bilgi haritasındaki yeri de OECD bilim ve teknoloji göstergeleri ile tespit edilen sonuçlara benzerlik göstermektedir. Teorik ve ampirik analiz sonucunda, bilgi ekonomilerinde rekabet üstünlüğü oluşmasına etki eden faktörler açısından Türkiye'nin dünyadaki konumunun gelişmekte olduğu tespit edilmiştir.

Sonuç ve Değerlendirme

Bu çalışmada, bilgi ekonomilerinde rekabet üstünlük yaratan faktörler olan Araştırma-Geliştirme (AR&GE), İnovasyon (Yenilik), Patent, Bilgi Teknolojileri ve Yatırımları ele alınarak analiz edilmiştir. Adı geçen faktörler bilgi haritalanması metodu aracılığı ile ekonominin sahip olduğu teknoloji düzeyi ve bilgi seviyesi grafik ve sembollerle beşli bir skala üzerinde ekonominin yapısı ve yeri belirlenmesinde kullanılmıştır. Çalışmada kullanılan bilgi haritası yöntemi rakip ekonomilerin bilgi düzeyine (güçlü ve zayıf yanları) ilişkin fikir vermektedir.

Uygulamada diğer ekonomiler ve Türkiye'nin yeri karşılaştırmalı olarak gösterilmiş ve rekabetçi faktörlerinin önemi bilgi düzeylerine göre ortaya çıkarılmıştır. Çalışmada yapılan analizler 2023 yılı vizyonu doğrultusunda lider(gelişmiş) bir ülke olmak isteyen ülkemizin teknoloji düzeyi ve tercih edilebilirliği eksik alanlarına takviye yaparak, güçlü yanlarını da ortaya çıkararak yenilikçi düzeyde olan ekonomiler arasına girme isteği ile doğru orantılı olduğunu göstermektedir. Bu çerçevede ülkemizin öncelikle kendisine daha yakın rakiplerinden olan İtalya, İngiltere gibi lider düzeyde olan ülkeleri, yapacağı dönüşüm eylem planı ve bilgi yatırımlarıyla zorlaması daha sonra bilgi toplumuna geçişi bir an önce tam olarak tamamlaması gerektiği kanısına varılmıştır. Böylece Türkiye geride kaldığı yüksek ve orta-ileri teknoloji alanlarını geliştirmesi mümkün olabilecektir. Bu amaçla desteklenmesi gereken bu sektörler öncelikle ileri teknolojide; Havacılık ve Uzay, Bilgisayar ve Büro Makineleri, Elektronik-Haberleşme, İlaç, orta-ileri teknoloji sınıfında; Mesleki Bilim ve Ölçüm Aletleri, Taşıt Araçları, Elektrikli Makineler, Kimyasallar(İlaç Hariç), Diğer Taşıt Araçları, Elektriksiz Makineleridir.

Ar&Ge, İnovasyon, Bilgi Teknolojileri ve Patent gibi değişkenler yenilikçi bilgi seviyelerini yakalamakta önemli bir yere sahipken aynı zamanda ileri teknoloji seviyesine geçebilmek için de etkilidirler. Bu amaçla planlama ve stratejilerdeki eksiklikler giderilerek kendi kendine yeterliliğin üstüne çıkılması önem arz etmektedir. Bu sayede bilginin Ar-Ge, inovasyon, patent ve bilgi teknolojileriyle toplumun her kesimine hızlı bir şekilde yayılması; günümüz dünyasında sosyo-ekonomik kalkınmanın belirleyicisi haline gelmiştir.

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R&D AND INNOVATION EVENTS IN TURKEY

THE 11TH GLOBELICS CONFERENCE

The 11th Globelics Conference (Global Network for Economics of Learning, Innovation, and Competence Building Systems) was held at Middle East Technical University (METU), September 11-13, 2013. It was organised by METU Science and Technology Policies Research Centre (TEKPOL), Centre for Competition Research of Yıldırım Beyazıt University (REKMER) and Ankara Development Agency.

Globelics is a global network established around the concepts of learning, innovation, regional competence building, global competitiveness, regional development and development of human capital, which are of great importance to countries in their technological transition process. Within this network, experts on innovation and economic development from diverse academic disciplines, both from developed and developing world come together, share experiences and contribute to academic knowledge creation in the fields of innovation and development.

This year's Freeman Lecture was given by world-known scholar on innovation, Luc Soete from Maastricht University around the topic "Innovation, Technological Unemployment and Shifting Wealth" under the chairmanship of Bengt-Ake Lundvall (Secretary General of Globelics) and welcomed by a crowded and enthusiastic audience.

"Entrepreneurship, Innovation Policy and Development in an Era of Increased Globalisation" was the main context of 11th Globelics Conference. In 47 parallel sessions, around 170 participants from 45 different countries presented their research papers on topics including learning, competence building, entrepreneurship, innovation policies, sustainable development strategies and inclusive innovation with reference to the science, technology and innovation policies implemented in their own countries.

The conference was enriched by special sessions and plenary lectures given by a preeminent group of academicians, consultants and policy makers, who played critical roles in the creation of a literature on economics of technology, industry and innovation and in the shaping of science and technology policies in developing

countries and provided a great opportunity for networking for researchers and policy makers who are interested in the subjects of technology and innovation policies.

OECD III. BİLGİ EKONOMİSİ KÜRESEL FORUMU

OECD ve Bilim, Sanayi ve Teknoloji Bakanlığı birlikteliğinde düzenlenen III. Bilgi Ekonomisi Küresel Formu 22-23 Ekim 2013 tarihleri arasında İstanbul'da gerçekleşti. Toplam 7 farklı oturumun gerçekleştiği Forumu çok sayıda yerli ve yabancı uzmanlar katıldı.

Forumun Küresel Ekonomik Büyümenin Bilim ve İnovasyona Katkısı oturumunda özellikle teknoloji, bilim ve inovasyon bağlamında etkileşim ve bu etkileşimin yönü ele alındı. Bilgi ve İletişim Teknolojileri ile Bilim ve İnovasyon Politikalarının İzlenmesi başlıklı oturumda ise kurumların inovasyon politikalarını izlenmesinin önemi ve bu politikaların izlenmesine kullanabilecek araçlar üzerinde değerlendirmeler yapıldı. Bilgiye erişimin ve ortak bilimsel etkinliklerin gerçekleştirilmesinin öneminin vurgulandığı Açık Bilim oturumu ise özellikle akademisyenlerin büyük ilgisini çekti.

Forumda ulusal ve uluslararası katılımcılar tarafından tartışılan önemli bir konu da üniversite-sanayi işbirliği oldu. Özellikle üniversite-sanayi işbirliğinin hem bilimin gelişmesine hem de uygulamaya yönelik yeni ürünlerin geliştirilmesi üzerine etkileri geniş çerçevede ele alındı. Etkinlikte tartışılan diğer bir önemli başlık ise Bilim ve Yenilik Politikalarının Oluşturulmasında Teknoloji Öngörüsünün Rolü oldu. Özellikle Türkiye'nin gelecek yıllarda hangi adımları atarak teknolojik gelişim sürecini hızlandırabileceği konusunun tartışıldığı bu oturumda önemli sonuçlar elde edildi. Bu oturumun tamamlayıcısı olarak düzenlenen Bilim, Teknoloji ve Yenilik Politikalarının Geleceği başlıklı oturumda ise gelişmekte olan ülkelerin teknolojik yeteneklerin geliştirilmesine yönelik stratejik adımların neler olabileceği tartışıldı.

II. ARGE MERKEZLERİ ZİRVESİ

Bilim, Sanayi ve Teknoloji Bakanlığı tarafından düzenlenen II.Arge Merkezleri Zirvesi 15-16 Kasım 2013 tarihleri arasında İstanbul'da gerçekleşti. Bilgilendirme, ağ oluşturma ve tartışma ortamının sağlandığı bu etkinlikte inovasyon ekosistemi, kamu-sanayi ve üniversite işbirliği, ekonomik gelişme ile sosyal gelişme için Ar-Ge ve inovasyonun öneminin ağırlıkla tartışıldığı bu etkinlikte ARGE Merkezi olan kurumların mevcut sorunları ve beklentileri de tartışılan başlıklar arasında yer aldı.

YAZIM KURALLARI

- Giriřimcilik ve İnovasyon Yönetimi Dergisi**; tüketici ve tüketim davranıřlarını pazarlama, psikoloji, sosyoloji, iletiřim, ekonomi, antropoloji, kültürel çalıřmalar, tarih ve eđitim bilimleri gibi disiplinler aısından deđerlendiren özgün makaleleri yayınlamayı amaçlayan hakemli bir dergidir. Yılda iki kez yayınlanacak olan dergi, alanında kuramsal, kavramsal ve uygulamalı çalıřmalara yer verir.
- Dergiye gönderilecek makalelerde öncelik olarak Türke yazılmıř olanlara verilmele beraber, sınırlı sayıda İngilizce makalelere de yer verilecektir.
- Yayına gönderilecek makalelerin aynı anda bařka bir derginin deđerlendirme sürecinde bulunmaması, hibir yerde yayına kabul edilmemiř ve yayınlanmamıř olması gerekmektedir.
- Yayınlanmak üzere dergiye gönderilen makaleler ile birlikte yazar/ların adı-soyadı, ünvanı, kurum, ve e-posta adresleri ile aık iletiřim adreslerini ieren bilgiler, **kimlik ve iletiřim bilgileri** bařlıđı altında ayrı bir sayfa olarak gönderilmelidir.
- Makale metninde makalenin Türke ve İngilizce bařlıkları, 120 kelimeyi ařmayacak řekilde Türke ve İngilizce özetler ile en fazla beřer adet Türke ve İngilizce anahtar kelime yer almalıdır. Makale metninde yazar/ların kimlik bilgileri yer almamalıdır.
- Dergiye gönderilecek yazılar A4 ebadında kađıda, Times New Roman, 12 punto, 1,5 aralıkla, paragraf öncesi řekilde, metin, tablo ve řekiller, kaynaka ve ekler dahil 40 sayfayı ařmayacak řekilde yazılmıř olmalıdır.
- Makalenin bařlıđı sađa yalı, 14 punto, bold ve sadece ilk harfleri büyük yazılmıř olmalıdır.
- Tüm metin iki yana yalı, paragraflar arasında 12nk boşluk verilmiř, bařlıklar ve metin dahil olmak üzere soldan girinti yapılmamıř olmalıdır. Gönderilecek çalıřmaların sayfa kenar boşlukları ařađıdaki gibi belirlenmelidir:
Üstten : 5 cm
Soldan : 3,5 cm
Alttan : 5 cm
Sađdan : 3,5 cm
- Metin ii atıflarda Harvard metodu olarak adlandırılan ve yazar soyadı, tarih ve sayfa numaralarının verildiđi sistem tercih edilmelidir (Clegg, 1997: 53). İki den fazla yazarı olan kaynaklara atıflarda ilk yazarın soyadı ve "vd." ibaresi kullanılmalıdır (Morgan vd., 1994). Aynı parantez ierisinde birden fazla kaynak ";" iřareti ile ayrılmalıdır (Hassard ve Parker, 1994; Boje, 1996).
- Metin iinde yer alacak tablo, řekil, grafik, harita vb.'lerinin de bu ölçüleri ařmayacak řekilde metin iine ortalanarak yerleřtirilmiř olması ya da gerekiyorsa ekler bölümünde -metin sonunda- kaynakadan hemen önce yer almıř olması gereklidir.
- Metin iindeki tüm řekiller ve grafikler sıra numarası ile (řekil 1) kendi iinde ve řekil ya da grafiđin altında; tablolar ise yine kendi iinde numaralanmak üzere (Tablo 1) tablonun üzerinde numaralandırılmıř ve isimlendirilmiř olmalıdır. Tablo, grafik ve řekil bařlıkları sayfaya ortalanmıř, bold ve yalnızca kelimelerin bař harfleri büyük olacak řekilde yazılmalıdır.

12. Tablo, şekil ve grafiklerin varsa kaynakları; tablo, şekil ve grafiklerin hemen altında metin içi atıf kurallarına uygun olarak verilmelidir. Matematiksel ve istatistiksel simgeler Microsoft Office denklem düzenleyicisi ile hazırlanmalıdır.
13. Makalenin sonunda yazar soyadlarına göre alfabetik olarak düzenlenecek kaynakça kısmı bulunmalıdır. Kaynakçada sadece makalede kullanılan eserler yer almalıdır ve kaynakça aşağıda belirtilen örneğe uygun olarak hazırlanmalıdır.

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