Networking for Knowledge Transfer: A concept on STPs international process for successful knowledge transfer

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Abstract

Recognizing the importance of innovation, we see that entrepreneurship and its supporting ecosystem contributes to increased prosperity in society. We also understand that the entrepreneurial phenomenon increases in efficiency through internationalization. Within the international context, knowledge transfer can be complex and requires people of multicultural background for successful interpretation. Demanding abilities to code and decode the knowledge transferred, integrate it into practices and interactions and learning for successfully creating new knowledge as a result.

Our purpose for this research was to emphasize and give clarity of the process from initiatives to internationalization to successfully transferring knowledge. Being master students in entrepreneurial programs and working with related projects in our worklife, we were accustomed to- and possessed necessary background information for the topic. This gave us abilities to contact and form interviews for various science and technology parks (STP). We were motivated to collect data through a qualitative study, interviewing STPs with practical insight measuring selected theories presented in our literature review.

Our findings correlate the selected theories, and give impressions that networking platforms provided by government, universities and international organizations contribute significantly in connecting STPs to international players. We also record that the government’s position is crucial in providing infrastructure and financial support to STPs. Further the challenge of knowledge transfer is positively related to complementary interest and trust, which is better resolved through awareness of multicultural networks.

Further research can be recommended to investigate the objectives of institutions in an entrepreneurial ecosystem, between and in relation to the tenants. For direct understanding of international activities, we would also like to propose a research measuring science and technology parks’ engagement for internationalization and the financial results of tenants within the same time period.

Keywords: Science and technology parks, STP, IASP, ibn Khaldun, Adam Smith, entrepreneurship, innovation, entrepreneurial ecosystem, economic empowerment, internationalization, knowledge transfer, multicultural
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Table of content

1. Introduction ........................................................................................................... 6
   1.1 Background ......................................................................................................... 6
   1.2 Problem Statement ............................................................................................. 8
   1.3 Research Question .............................................................................................. 9
   1.4 Purpose & Objective ........................................................................................... 9

2. Methodology .......................................................................................................... 9
   2.1 Research Type .................................................................................................... 9
   2.2 Ontological Assumption ................................................................................. 10
   2.3 Epistemological Assumption ......................................................................... 10
   2.4 Methodological Assumption .......................................................................... 10
   2.5 Ethical Considerations ................................................................................... 11
      2.5.1 Harm to Participants ............................................................................... 11
      2.5.2 Confidentiality & Respect of Privacy ...................................................... 11
      2.5.3 Lack of Informed Consent ....................................................................... 11
      2.5.4 Deception ................................................................................................. 11

3. Literature Review .................................................................................................. 11
   3.1 Economic Empowerment .............................................................................. 12
   3.2 Entrepreneurial Ecosystem ........................................................................... 13
   3.3 Internationalization ....................................................................................... 14
   3.4 Knowledge Transfer ....................................................................................... 15
   3.5 Multicultural Workforce & Network ............................................................. 16
   3.6 Summary of the Literature Review ................................................................. 19

4. Practical Method .................................................................................................... 21
   4.1 Qualitative Data Collection Method ............................................................... 21
   4.2 Qualitative Sampling Method under an Interpretivist Paradigm ................... 21
   4.3 Using Interviews under an Interpretivist Paradigm ......................................... 22
   4.4 Designing Questions for Interviews under an Interpretivist Paradigm .......... 22
   4.5 Participation Selection .................................................................................... 22
   4.6 Interview Guide ............................................................................................... 23
   4.7 Data Reduction ............................................................................................... 23
   4.8 Data Display .................................................................................................... 24
   4.9 Conclusion Drawing/Verification ................................................................. 24
   4.10 Transcribing .................................................................................................. 24

5. Findings .................................................................................................................. 25
   5.1 Qualitative Empirical Findings ....................................................................... 25
   5.2 Interviewees Description .............................................................................. 26

R1: Hong Kong .......................................................................................................... 26
R2: England .............................................................................................................. 27
R3: Pakistan ............................................................................................................. 28
R4: Sweden .............................................................................................................. 28
R5: Spain .................................................................................................................. 29
R6: Colombia .......................................................................................................... 30
R7: Argentina .......................................................................................................... 30
R8: Mexico (1st) ..................................................................................................... 31
R9: Mexico (2nd) ..................................................................................................... 32
1. Introduction

This section is to introduce the reader to the background and problem statement, its interest and relevance of topic. For this, the section will touch on previous research topics, from a macro- to micro perspective containing explanations of different terms. In general, drawing a red line between the topics and connecting them to a significant research question. The importance of the research question will be emphasized on present issues for the topic investigated.

1.1 Background

We as consumers have not been exposed to innovation to the extent of which it is created. A common knowledge is that many new technology and processes have failed to reach the market. This is by the reasons of the distinct characteristics of an innovator and an entrepreneur. As Jim Clifton, the Chairman and CEO of Gallup explains “An innovator is first and foremost a creator, a problem solver with a deep passion for improving something. Innovators are thinkers. But an entrepreneur is driven to act, to build. This includes building the businesses that make and sell the things that innovators think up, because entrepreneurs are doers” (Clifton, 2015). He further explains that the innovator is a cart, and the entrepreneur the horse dragging it. And putting entrepreneurship ahead of innovation our thinking enters a disorder of prioritization. “The car, the light bulb, flight, the transistor and the Internet created little to no economic energy until each invention was successfully commercialized -- until customers appeared” (Clifton, 2015). He states that the problem is not of lesser innovation, rather inadequate support of entrepreneurs starting new businesses.

Oviatt & McDougall (1994) emphasizes the importance of alternative governance structures for new ventures, that all organizations may find advantages in outsourcing and assisting. “The primary advantages are (1) increased concentration of limited resources on the primary internal sources of competitive advantage and (2) the cost, quality and flexibility benefits that may be derived from using outside experts to supply all peripheral resources” (Oviatt & McDougall, 1994).

This problem is being addressed in the face of entrepreneurial ecosystems. Consisting of institutions, individuals and organizations acting conductively for the probabilities of entrepreneurs’ success in launching businesses. These entrepreneurial ecosystems have been coined many terms, where we would like to lean on a specific definition for science and technology parks. “A science park is an organisation managed by specialised professionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. To enable these goals to be met, a Science Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities” (IASP, 2002). The ecosystem focuses on linking relevant subjects of entrepreneurship such as research, innovation, industries and consumer markets. In a conceptual framework this can be viewed as the Triple-Helix (Ranga & Etzkowitz, 2013). For the entrepreneur to be successful in launching and developing his business, support is given by investors, marketers, experienced managers, programmers, software engineers, etc. Such a setting
promotes collaborations between supportive individuals belonging to both private and public institutions. The Triple Helix Innovation concept is emphasizing the role of universities for the potential of innovation and economic development in a knowledge society. Three congruent elements as government, universities and industry generate in a hybrid process new institutional and social formats for the production, transfer and application of knowledge (Stanford, 2014). Encompassing concepts from “creative destruction” (Schumpeter, 1942) appearing as a natural innovation dynamic, to creative renewal arising within and from the intersection of the three institutional spheres: Government, University and Industry. The concept relies on three main idea, “(1) a more prominent role for the University in innovation, on a par with Industry and Government in the Knowledge Society; (2) a movement toward collaborative relationships among the three major institutional spheres, in which innovation policy is increasingly an outcome of interaction rather than a prescription from Government; (3) in addition to fulfilling their traditional functions, each institutional sphere also ‘takes the role of the other’ performing new roles as well as their traditional function. Institutions taking non-traditional roles are viewed as a major potential source of innovation in innovation” (Stanford, 2014).

In such concepts we see that the mission for the government would be to promote policies to strengthen the relationship between universities and industry, hence businesses. Collaboration in these sectors will provide firms’ tendency to use university research infrastructure for their R&D objectives and indirectly transferring their costs to the state (Stanford, 2014). “The case of StartX, Stanford’s student start-up accelerator, which in less than a year trained 90 founders and 27 companies. Or the Team Academy - the Entrepreneurship Centre of Excellence of the JAMK University of Applied Sciences in Jyväskylä, Finland, where students run their own cooperative businesses based on real-life projects” (Stanford, 2014).

From educating individuals, universities are extending their capabilities to educating organizations. This is carried through by venues for entrepreneurial education as incubation programs, new training modules at interdisciplinary centers, science parks, academic spin-offs and venture capital firms (Etzkowitz, 2008; Almeida, Mello and Etzkowitz, 2012).

The interest of broadening and enhancing knowledge base, increases chances of creating new knowledge. As foreign policy is one of the key elements of the government, it is however not the case for local or regional governmental institutions. The direct collaboration is not present, neither the direct motivation for scientific and economic international agendas. But through the interest for regional economic prosperity they will be indirectly interested in the international activities of the cluster actors (Rauch & Wappler, 2011). The article also emphasizes that the international activities within a cluster, residing heterogeneous actors, might not correspond to same strategies and objectives. They that companies present in these clusters should be scrutinized for their international objectives and implementing a bottom-up approach for investigating these. Moreover a focused policy would subdue the occurrence of competing objectives and preferences, somewhat simplify negotiations through the provision of an implicit hierarchy of objectives (Rauch & Wappler, 2011).

In such settings, entrepreneurs leverage on networks provided by the supporting institutions, hence universities, multinational corporation or international organizations.
“In current international competitive circumstances, innovation is too important to be left to the individual firm, or even a group of firms, the individual researcher or even a cross-national collaboration of researchers” (Stanford, 2014).

1.2 Problem Statement

Internationalization should open doors for new knowledge within clusters and entrepreneurial settings.

Any new knowledge which may not be present within the clusters, after distribution should trigger new ideas and innovation and enhance the competitiveness of the group (Rauch & Wappler, 2011). The same research implies that a single company may find it costly to establish international links and thus limited in number and accessibility. As communication channels need permanent investment to keep them open (Harrison, 1992), the need and importance of networks provided by institutions within such clusters increases. These networks will diminish the effects of a lock-in awareness. This is subject to isolation within the cluster resulting in low awareness of the international market and its development (Sautter, 2004). With effects of lesser competitive drive it diminishes the innovative capacity (Narula, 2002).

This is why networking for internationalization is emphasized and has been given its importance, as such has the purpose to aim for new knowledge. Either for market and sales or for research purposes. Therefore, it is with good intentions to merely include the subject of knowledge transfer and research mainly the precursory factors which influence the results, networking. We observe the presence of knowledge gap in framing STPs in the process to internationalize for knowledge transfer. A reason why we are motivated to understand the practical aspects of this process and find the factors which play significant roles.

Zhang et al (2010) explain that the effect of knowledge acquisition on innovative performance are mediated by knowledge creation. This was a research conducted on 127 German firms, and the effects of international alliances had strengthened effect of knowledge creation for innovative performance. They have also proposed a conceptual model where at the innovative performance of a firm may be subject to the size, number of alliances, alliance duration and alliance scope it has. They conclude with that both cooperation and competition motivated alliance’s learning process.

In another context as for internationalization, both the size, number of collaborations, duration and global scope are made easily available to pursue with institutional resources. In an infrastructure as such, it is therefore understandable to investigate the relations and knowledge transfer between operating parties in a science and technology park. The learning is perceived to be generated from increased market competition and cooperative projects globally.

We see the increasing need for STPs to internationalize with the incentive of optimizing their services for the tenants and acquiring new knowledge through collaborations. Thus we are looking into networking and how STPs manage the challenges for successfully transferring knowledge.
1.3 Research Question

Recognizing the incentives of STPs to internationalize for entrepreneurial optimization. With this research we aim to develop an understanding of the key challenges for STP’s process of internationalizing to successfully transferring knowledge. We propose the following research question.

*How do science and technology parks manage key challenges in networking for knowledge transfer?*

1.4 Purpose & Objective

To conduct a research worthwhile and of significance, we have with best effort come to find a link to measure the process of knowledge transfer by internationalization. With the intention of touching on valuable topics concerning the support of entrepreneurship in the face of science and technology parks. We also see that this research is for a general understanding of the STP’s process for networking in the transfer of knowledge through internationalization. In the literature review we will introduce theories from topics as internationalization, multicultural workforce and network, and knowledge acquisition and transfer. The purpose of this research will be to understand the significant challenges for STPs in their incentives to internationalize. And the objective will be to collect and present information from STP managers on the selected topics.

We hope at present or in the future, that our research will with the least emphasize, for STPs, on topics for international orientation, knowledge acquisition and its effective transfer.

2. Methodology

*In this chapter, we will discuss how we conducted our research, designed our study and qualitative data collection. By reviewing different research approach, we will motivate our choice on our research techniques.*

2.1 Research Type

Research is being classified under three main types: it can be exploratory when conducted into a research issue where very few previous studies exist, descriptive if the phenomena under study is to be described only as it is, or analytical/explanatory, when the research goes beyond describing the characteristics to analyzing and explaining how the phenomenon under study happens (Collis & Hussey, 2014, p. 4-5). In the light of these definitions, it appears that our research is explanatory. Indeed, we aimed at discovering phenomena through our literature review and then measuring the interactions between them. Our research focuses on exploring openness for the impact it has on knowledge transfer for internationalization in science and technology parks. Therefore, a phenomenon, here the openness, is linked to its impact through its interaction with another phenomenon, knowledge transfers for internationalization.
In research, we discern two main paradigms. A paradigm is defined as being “the philosophical framework that guides how scientific research should be conducted”. There are two main paradigms: positivism and interpretivism (Collis & Hussey, 2014, p. 47). Before designing our research, we have had to determine our orientation: would it be more positivist or more interpretivist? Their characteristics differ in different ways.

2.2 Ontological Assumption

Ontology relates to the nature of reality (Saunders et al, 2009, p. 110). This assumption has two positions: objectivism and constructivism. In objectivism, social reality is independent of social actors and only one reality exists. This reality is objective and measurable (Collis & Hussey, 2014, p. 47). On the other hand, for constructivism, social reality is not static and can be altered by social interactions between social actors; in this position, many senses of reality exist. When coming to our research, we believe the constructivism approach corresponds best to our study. Indeed, each person interviewed has his/her own perceptions of internationalization, knowledge transfer and openness within the firms; then it exists many senses of reality.

2.3 Epistemological Assumption

Epistemology relates to what is considered as being valid knowledge (Collis & Hussey, 2014, p. 47). Within epistemological assumption, positivism considers the measurable phenomena and data to be the only knowledge acceptable; whereas the interpretivists will make an interpretation of the data they get from the participants. We believe interpretivism is the most suitable approach for us in order to conduct this study. Interpretivism states that social reality is highly subjective, because it is shaped by our perceptions and that valid knowledge comes from subjective evidence which must be interpreted. As researchers, we must act in an empathic way towards the respondents so as to understand the differences among humans as social factors (Saunders et al, 2009, p. 110). To that extent, we aimed at creating a relationship based on mutual trust with our respondents. Conducting oral interviews, our goal has been to interpret and understand our participant’s opinions and answers.

2.4 Methodological Assumption

The methodological assumption is concerned with the process of the research (Collis & Hussey, 2014, p. 48). As interpretivists, we will examine a small sample, over a certain period of time. In our analysis, we will try to understand a situation and seeking for patterns that may be repeated in other similar situations. The methodology used by researchers can be quantitative, qualitative or mixed method. In a quantitative research, researchers will collect quantitative data and analyze them through statistics. In a qualitative study, the researcher will collect qualitative data and analyze them through interpretative methods (Collis & Hussey, 2014, p. 6). In our research, we opted for a qualitative research. Indeed, we have chosen to conduct a small amount of interviews with open questions. The methodology is described above.
2.5 Ethical Considerations

2.5.1 Harm to Participants

Scientific research should be conducted avoiding the creation of tensions towards participants, as well as the creation of harm concerning interviewees’ views and opinions. Sensitive topics should not be promoted - topics that would harm the integrity of respondents must be avoided. Participants must be taken into consideration in relation to their availability and preferences when it comes to conduct the interviews. To that extent, we have double checked our questionnaires with our supervisor and asked her information on how to send the interview request efficiently. We have decided to send them on a weekday so as for the respondents to see them during their office hours.

2.5.2 Confidentiality & Respect of Privacy

Confidentiality and anonymity of respondents must be respected. Indeed, they must be assured that their participation and answers will not be linked to their name and personal information (Saunders et al., 2009, p. 194). The interviews have been recorded, and we, of course, stated to the interviewees that their answers would remain anonymous in the transcript and interpretation of results.

2.5.3 Lack of Informed Consent

When coming to collected data, one must not forget that if respondents agree to participate with providing the researcher with data, it doesn’t mean that they consent about the way data is going to be used next (Saunders et al., 2009, p. 190). Therefore, our process has been exposed to the interviewees at the beginning of our exchanges.

2.5.4 Deception

Researchers must be honest and must not lie to participants. The object of the research that has been exposed to the interviewees should stay the same, and must not evolve so it changes focus. (Saunders et al., 2009) To that extent, we kept, all along our process, the same object of research.

3. Literature Review

In this chapter, we will display the theories we found while conducting our research. First we review entrepreneurial phenomenon and its economical effect, then entrepreneurial ecosystems; triple helix concept, and finally internationalization and knowledge transfer. In our summary we display a process model for our literature framework.
3.1 Economic Empowerment

Business is the only mechanism on the planet today powerful enough to produce the changes necessary to reverse global environmental and social degradation (Hawken, 1993).

The topic of innovation and entrepreneurship and its effects on a sustainable economy has been discussed throughout history. Entrepreneurship in general is the idea generation of a business plan, the process of designing, launching and running. “A person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk” (Dictionary, 2016). A general understanding of an entrepreneur is that they often look for business opportunities, their perception of risk is often less due to the privilege of information. Hence the tendency and interest in pursuing activities increase. This perception by the entrepreneur is due to the market knowledge and information he possesses which help them better evaluate risk. “The exploitation of entrepreneurial opportunities may include actions such as developing a business plan, hiring the human resources, acquiring financial and other required resources, providing leadership, and being responsible for the venture’s success or failure” (Hisrich, 2011). Joseph Schumpeter stated that the role of the entrepreneur is “creative destruction” which is the continuation of product and services replacing outdated ones, coined as an essential fact for capitalism. “Process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one” (Schumpeter, 1942). He also stated that the “dynamic disequilibrium brought on by the innovating entrepreneur ... is the ‘norm’ of a healthy economy” (Drucker, 1985).

A healthy economy and economic empowerment in the sense of entrepreneurhsip was also discussed by the late fourteenth century Muslim thinker Ibn Khaldun. In his work Muqaddimah: An Introduction to History, he explains the consequences of government policies on many topics among production and trade, investment and specialization for the survival of the state. Such topics can be considered and presented as independent variables for entrepreneurship as the depended variable, a mean to prosperity of state. Emphasizing on specialization as the major source of economic surplus, centuries before Adam Smith (Karatas, 2006). Additionally, according to Young (1928), the development of machines has the largest effect on labor force. The production processes can be automated through tools and machinery, creating a demand for such equipment and in this very process create new firms, markets and industries (Michael, 2007).

Other studies on entrepreneurship and its effect on the economy has been conducted. Studies to understand whether entrepreneurial activities boost economic growth and promote welfare of state and population. It is evident that new businesses create job opportunities, the more companies engage in business activities the more job opportunities will present itself. Linking startup rates with employment- and subsequently economical growth (Thurik & Carree, 2002). Though entrepreneurs are not considered to merely create jobs as business owners do (Carland et al, 1984), there are as mentioned similarities to their effects. The entrepreneurial effect is however reflected upon the case of a dynamic economy, where entrepreneurial activities are crucial and promote new products, methods, and production processes to the market, boosting productivity and competition more broadly (Kritikos, 2014).
Studies show within the European Union, that the top innovative leaders and followers are among Scandinavian and Benelux countries (IKT, 2011). These countries are also those who rank highest for GDP PPS (purchasing power standards) in the European Union (Eurostat, 2014). Entrepreneurship is considered essential for innovation. For innovation to capitalize on the market demand and reach the population as a whole it needs a viable market plan, this is where the entrepreneur’s role come to play (Hindle, 2009). As entrepreneurial process is the exploitation of an opportunity moving from commitment to activities of pursuing them in practicality (Hindle, 2009). Hence, we understand that the entrepreneur is taking the role of creating value for an idea in practice and engaging in activities to form ideas into reality considering market drivers for compatibility. Commercializing mature research and promoting new technology to be accessible in the market is perhaps the next step in creating value. This to some extent requires different knowledge and experience as the field changes from exploration to exploitation. Organizational context i.e. mission and policies is likely to affect the outcome of an assignment in terms of the attitude of the personnel (Nelson, 2014). This was the case of a Stanford research which faced such a challenge of commercializing technology, where it was noted that a startup was better capable of commercializing the technology as it was exploiting it for market purposes (Nelson, 2014). Reflecting upon such cases emphasizes the characteristic attitudes of those managing projects for commercialization. Rising the importance of entrepreneurs.

### 3.2 Entrepreneurial Ecosystem

Realizing these advantages requires institutions that contribute to an environment that is friendly to entrepreneurs (Kritikos, 2014). These advantages are present in both developing and developed countries. It is therefore understandable to support entrepreneurial activities with competent management. Science parks have been encouraged to facilitate high tech firms as they may create clusters of economies and networks that support the development of resource-poor, high-risk ventures (Phan et al, 2005). This is where institutions and an infrastructure of supportive factors play a significant role. “The institutional framework, both on the national level and within firms, defines the incentives for individuals to turn their ambitions into actions, and determines to what extent unnecessary barriers will hamper them. The importance of institutions for the development of entrepreneurship is paramount..” (Thurik & Carree, 2002).

“A technological innovation commercialization ecosystem aims to provide an appropriate infrastructure and also stimulating environment to transfer a university technology to the market” (Heinzl et al. 2013). The role of technology transferring offices is to connect university research with potential market interest/demand for commercialization. These often have staff with skills for commercial assessment, contract drafting and negotiation, protecting and managing intellectual property (IP), etc. Business incubators also provide invaluable experience and connections but more in general to early phase businesses. Their goal is to support and develop business to survive on their own. “Two things determine whether a business can get off the ground successfully and sustainably: a validated market opportunity with customers willing to pay for a product or a service; and a product or service that addresses such an opportunity. The only incubators I consider “real” are the ones that help entrepreneurs achieve these two goals” (Mitra, 2013). The success of most business incubators is
often related to the presence or absence of coaching and access to networks (Peters et al. 2004). In a macro perspective, regional endowments benefit from additive effects generated by the presence and operation of business incubators (Liargovas, 2013).

There are many institutions with different aims to support entrepreneurs and their innovative approach. These bundles are often found in technology- and science parks. The notion of a science and technology park is to promote an innovative environment both academically and socially - value creation environment. Furthermore, promoting the concept of a Triple Helix initiative, university-industry-government (Ranga & Etzkowitz, 2013). Science and technology parks generally represent a kind of public–private partnerships that are designed to foster knowledge flows, mainly among park firms, as well as between these firms and external R&D institutions, and thus improve regional economic growth (Link & Scott, 2007). “Today science parks are seen as a solution to the complex problems of economic development, under-employment, job creation, corporate downsizing, and new business development” (Clark, 2003, p. 179).

### 3.3 Internationalization

As science and technology parks provide a collocation of institutions promoting and supporting entrepreneurial and innovative activities - a network of competence and capabilities - perspectives for internationalization will emerge for present effectivity and long-term sustainability. “The dimension of a science and technology parks and the size of the management company positively affect the innovative performance of tenants, while the provision of services does not help firms in achieving better results.. Firms in less technologically developed regions benefit more from being on-park, supporting the view of science and technology parks as a local development.” (Albahari et al, 2013, abstract). The dimension often relates to the scope of networks and links a science and technology park possesses often in a broader sense as international boundaries.

There is support for a positive impact of internationalization on countries’ innovation performance. In general business have many reasons to internationalize as home markets tend to saturate, firms seek the potential to grow, fluctuations in domestic economy affecting the purchasing power of customers, increased performance by learning, etc. “From 1962 to 1989, South Korea’s GDP growth averaged over 8%, year-on-year. Exports and international trade grew enormously, along with the purchasing power of South Korean individuals, supporting the argument that international exchange creates opportunities for developing countries. This idea also supports the way South Korea's economy began specializing in order to capture comparative advantages and grow more competitive in the global marketplace” (Boundless, 2015). Findings confirm the significance of spatial spillovers, as business investment and human capital of neighboring regions have a positive impact, both direct and indirect on economic performance of a given region (Özyurt & Dees, 2015). Analysis also suggest that competing in international markets via outward FDI and exports increases the scope of learning and the need to innovate (Filippetti et al, 2013) “In the past 15 years or so, capabilities revealed in export markets have been a good way to distinguish poor countries likely to grow slowly or rapidly. In other words, the kinds of capabilities that enable a country to catch up with the global frontier are closely related to performance in global markets. Globalization offers opportunities for catch-up through knowledge
As the purpose for science and technology parks are to provide support for business development and entrepreneurial activities, we see the patterns for emerging interest in internationalization. The recent trend and challenges for most science parks in Scandinavia is to operate internationally and support these operations with adequate knowledge. For internationalization parks need to be aware of the different areas in the potential markets; political, legal, distributive, competitive, physical, labor, financial, technological, economic, socioeconomic and sociocultural forces (EuroDev, 2015). Awareness is perceived to constitute information which in terms of knowledge is seen as the know-how to execute.

3.4 Knowledge Transfer

For multinational companies, internationalizing through moving capital, technology, products, people and knowledge permits a sustained competitive advantage (Hocking et al, 2004). The internationalization process has been largely studied in literature. One famous model, the Uppsala model by Johanson & Vahlne (1977) expresses that market-specific knowledge would be the only determinant of firms’ internationalization behavior. Also, Johanson & Vahlne stated that a lack of knowledge about foreign markets is an important obstacle to the development of international operations and that the necessary knowledge can be acquired mainly through operations abroad. This “experiential knowledge” (Johanson & Vahlne, 1977, p. 28) reduces risk for companies and permits the acquisition of information and opportunities abroad. Later on, other kinds of knowledge have been studied by authors, all having an impact on the internationalization process. Eriksson et al. (2000, p. 29) and colleagues have defined three types of international knowledge: the internationalization knowledge (the firm’s capability and resources to engage in international operations), the business knowledge (the competitive situations in markets and their clients) and the institutional knowledge (the information from specific countries on their rules and regulations). In an article by Zhou (2007), the acquisition of foreign markets’ knowledge is seen as needed for firms. This knowledge can come from experiences abroad or can be incremental (Andersen, 1993).

Firm’s internationalization is made difficult when there is a lack of foreign market knowledge (Eriksson et al., 1997). Same authors described three types of foreign market knowledge: foreign institutional knowledge, foreign business knowledge, and internationalization knowledge. Zhou (2007, p. 284) also explains that the level of market knowledge is positively affected by Lumpkin & Dess’ dimensions (1996): innovativeness of a firm, risk taking and proactiveness (which are characteristics of an entrepreneurial firm). Moreover, the author builds his findings on the theories stating that knowledge is the most important resource for the internationalization process of a firm (Autio et al., 2000; Johanson & Vahlne, 2003; Obviate & McDougall, 2005). For Zhou (2007), international entrepreneurial proclivity permits to acquire foreign market knowledge and “cultural diversity positively contributes to the impact of innovative proclivity on the accumulation of foreign market knowledge” (Zhou, 2007). Brennan & Garvey (2009) come to the conclusion that knowledge plays a more complex role in the internationalization process that what had been assumed in earlier models. Also, for
them, internationalization knowledge is already in the very first steps of a company since it is brought by individual founders. It can also be gained through experience, acquired by hiring individuals having internationalization knowledge or through international alliances.

With the help of former findings and theories, Argote & Ingram (2000) come to the conclusion that “knowledge transfers more readily across organizations that are embedded in a network or relationships” (Argote & Ingram, 2000, p.162). For the knowledge transfer to be successful the knowledge reservoirs coming from one context must be compatible with the new context they are sent to. A successful knowledge transfer will create competitive advantage for firms (Argote & Ingram, 2000).

“Knowledge transfer occurs when experience in one unit of an organization affects another unit. Knowledge transfer can occur explicitly when, for example, a unit communicates with another unit about a practice that it has found to improve performance. Knowledge transfer can also occur implicitly without the recipient unit being able to articulate the knowledge it has acquired. For example, if an individual uses a tool that has been modified to improve its performance, the individual can benefit from the productivity enhancement in the tool without necessarily understanding the modifications or being able to articulate why the modifications improved the tool’s performance. Similarly, norms or routines can be transmitted to group members without the members being able to articulate the norm or being aware of the knowledge embedded in it” (Argote & Ingram, 2000).

As explicit knowledge is knowledge which is articulated, it is found in physical objects as most written forms i.e. manuals, instructions, written conversations. This can also be considered explicit knowledge. Further knowledge in the minds of people can be considered to degrees of tacitness, recognized as the most valuable source of data, information and knowledge with the possibility of further growth (Grassler & Glinnikov, 2008). It is therefore looked upon with importance of accessibility to the holder of knowledge in terms of observation and interaction, as this is the one who possesses the capabilities to execute the knowledge. Lastly knowledge is considered to be embedded in processes and methods to accomplish results. As this is neither considered explicit or tacit, it is called implicit knowledge. This is embedded and found in processes of expertise accomplishing different tasks (Frappaolo, 2008). In all context, knowledge transfer is emphasized by interactions, it is seen as a great resource for learning and gaining knowledge (Inkpen, 1998). Giving great priority to observe the process and communicate with the person involved for discovering knowledge related to a specific task (Grassler & Glinnikov, 2008).

3.5 Multicultural Workforce & Network

“We are living in a knowledge economy. Countries that fail to participate in the exchange of ideas will remain poor”, says Nick Perkins (SIDA, 2015).

If knowledge is challenging to transfer between institutions, then acquiring personnel with knowledge is perceived to be a step towards overcoming that challenge - knowledge is embedded in three basic elements of an organization: the members, the tools and the tasks (Argote & Ingram, 2000). Further it is also perceived that having an
international network does not work as efficient as having international employers. Since when knowledge in form of written information is available for everyone in the organization, an interested person could relatively easy access the information and start the knowledge gaining process through the understanding and absorption of it. A necessary prerequisite for knowledge gaining is the awareness of the availability (Grassler & Glinnikov, 2008). This can perhaps draw cross relations to (Bengtsson & Löwegren, 2001), where Finnish science parks made available a large business advice capacity “in-house” had a higher level of international activity than Swedish science parks which adopted a networking approach – supplied when needed international competence. Their research emphasizes that having an international vision and value does not alone work without a strategy or plan to implement activities for the purpose. Stating that firms see their home market as too small and that internationalization is within their business idea. They conclude with that firms, science parks and other supporting institutions need to pay more attention to the internationalization issues, and that this issue should be met with strong advice, service and leadership.

“The Icelandic and Finnish parks seem to be better at informing their firms than the Baltic, Danish, Norwegian, and Swedish parks” (Bengtsson & Löwegren, 2001). For the supply and demand for international services the firms prefer individual and tailor-made services. But group meetings including firms with similar positions are also of interest. However, written information as forms and documents does not wake interest in the science and technology park firms. The paper also describes that firm interest wakes in the service provided by international consultants, mostly in terms of “opening doors” for firms. “Market research, financing of international competence development and matchmaking with foreign partners are also important services according to the firms. Few parks, except some Finnish parks and a Swedish park, provide ‘door openers’ and international business consultants to their firms. Some parks report that they have such resources in networks linked to the park” (Bengtsson & Löwegren, 2001).

Research (Florida & Gates, 2001), investigates whether diversity in terms of population and foreignness affects growth for technology firms. As discussion of human capital take place in this era of economical development ideas and creativity is among the ingredients of a company’s success. “Research by Harvard University economist Edward Glaeser and his collaborators provides ample empirical evidence of the close association between human capital and regional economic growth” (Florida & Gates, 2001).

The research examines the relationship between diversity/ tolerance and high technology firm’s success in 50 most populated metropolitan areas in the United States. The study shows metropolitan areas with high concentrations of foreign-born residents rank high as technology centers, and a high concentrations of creative people is also an indicator of a metropolitan area’s high-technology success. The research is concluded by that a high diversity of human capital promotes and retains a high technology industry. And the results provide evidence that a combined effect of social, cultural, and ethnic diversity is of importance for high-tech location and growth. “People in technology businesses are drawn to places known for diversity of thought and open-mindedness” (Florida & Gates, 2001).
Another research (Friedman & Amoo, 2001) states that workforce diversity is positively related to economic growth. They give the example of businesses in the United States which have Chinese and Indian markets opening up to them, where employees with a multicultural background i.e. Chinese-American or Indian-American will be an advantage to the firm. And those who do not practice a diverse workforce find themselves at a big disadvantage when competing globally. However, the author refers to a study where workplace diversity causes an increase in employee turnover (Tsui et al, 1992). In homogenous environment, males were more attached to their jobs and coworkers. But this negative reaction to diversity was only found among white males, not woman or minorities. Further research advises that these negative effects can be solved by establishing an organizational culture and values towards a diversified environment (Chatman et al, 1998).

Further newer article (Okoro & Washington, 2012) also emphasize the importance of a diverse workplace and how effective management of this can lead to sustainable growth. The proper management of a diverse workforce is to embed an effective communication system within the organization, this is attained by improving communications between the supervisor-subordinate (Sadri & Tran, 2002).

“Beaner (2007) stressed that effective human performance in group or team-oriented environments depends largely on the understanding of messages, the sharing of meanings, interpersonal adjustments, and adaptations. Clearly, the productivity of a diverse workforce would be almost impossible to increase without effective communication and other forms of human interactions” (Okoro & Washington, 2012).

They constantly promote education and communication to transform employees towards embracing and accepting diversity, this will eliminate communication barriers and develop employees to their fullest potential (DeVeale & Manea, 2007). “Therefore, the development and management of human activities, whether in higher education or in industries associated with the transformation of resources into finished goods and services, or of transferring knowledge from faculty to students, is of critical importance for the sustainable growth and profitability of business enterprises around the world” (Okoro & Washington, 2012).

The role of operation management in acquiring resources necessary for goods and services, is to learn the importance of a diverse workforce and effective communication for accomplishing organizational and academic institutional objectives. The authors conclude by stating, “strategic and well-focused diversity initiatives and intercultural communication workshops are recommended as an essential part of organizational orientations and retreats” (Okoro & Washington, 2012).

Cultures are important factors to have a look at when internationalizing. Every country deals differently in business and it needs to be into account when dealing with another culture. Several authors have been researching on this phenomenon. Indeed, Hofstede’s cultural dimensions express the differences of several countries in business. His main dimensions are as following. The power distance index represents “the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally” (Hofstede, 1984). A country with a high power distance will tend to respect all kind of hierarchies within markets and businesses when hierarchy will be less structured in a country where the power distance index is lower.
Second comes the individualism versus collectivism. This index describes the degree of integration of people into groups. A country more individualist will tend to be more composed of individualistic people, relating to themselves and no group in particular, when a country promoting collectivism in its culture will tend to have its individuals into groups. The uncertainty avoidance index relates to “a society's tolerance for uncertainty and ambiguity” (Hofstede, 1984). When a society gets a high index on uncertainty avoidance, they tend to favor rules, laws, guidelines and try to avoid unexpected events; having a low uncertainty avoidance index, on the contrary shows that the country has more acceptance towards ambiguity. Hofstede also divides culture in two categories called “masculinity” and “femininity”. Masculinity represents “a preference in society for achievement, heroism, assertiveness and material rewards for success” (Hofstede, 1984) when femininity stands for a tendency to cooperate, to be modest and caring. A culture can be qualified as masculine if its individuals are eager for conflicts in problem solving for example.

Ghemawat (2001), on the other hand, developed a model called the CAGE method. The “CAGE” word is an acronym for cultural distance, administrative and political distance, geographical distance and economic. This framework measures the importance of distance in the above sections. The cultural distance in Ghemawat model (2001) relates to the differences in language, ethnicity, social norms and religion. All these factors affect managerial behaviors within businesses. The distance between countries regarding administrative and politics refers to the incompatibilities in political, administrative and legal traditions. The geographical distance between countries depends on the differences in size of the country, communication infrastructures and sea-access while the economic part of Ghemawat’s study (2001) relates to disparities in wealth between countries. These models, along with others, show that a good understanding of these factors and indexes, for every country, are necessary in order to succeed internationalization processes. Indeed, every culture approaches business differently.

3.6 Summary of the Literature Review

Our literature review starts with the aim of understanding the economic growth and its link to prosperity for individuals. Hence, provision of the effects of prosperity through entrepreneurship, with aims on the supportive infrastructure - science and technology parks. Thereupon factors which affect the optimization of activities conducted by science and technology parks through an international approach and process.

For our literature review we ground a framework where we draw cross relations to multiple theories to understand the network and links of variables which affect STPs and their successful international collaborations. From a macro perspective of prosperity down the ladder of micro functions by individuals - entrepreneurs. Recognizing the support of science and technology parks for entrepreneurial growth, we have understood that existing theories suggest an international approach to boost such activities. “The division of labor is limited by the extent of the market” (Smith, 1919). Internationalization can create demands and larger market areas which creates the need for a supportive amount of labor, subsequently more wealth. By this, understanding prerequisite of market knowledge for successfully capitalizing on the markets abroad.
We also understand that in acquiring specific market knowledge, barriers may occur due to cultural and environmental differences (Liu, 2007). Therefore finding the importance in emphasizing a diverse workplace and its effective management may indeed lead to sustainable growth (Okoro & Washington, 2012). However, for knowledge transfer to be successfully processed, trust needs to be embedded in the relationship. Trust is positively related to knowledge transfer and increases the reliability of knowledge gained and created (Tsai and Ghoshal, 1998). Trust first emerges through active engagement between the parties. Hence, before an active engagement, openness works as the base of forming the relationship. In our research context of internationalization, the more a science park is open to multiculturality in aspects of networks and workforce, the more it is engaging in activities of knowledge transfers (Grassler & Glinnikov, 2008).

For our literature review we present a process model for STPs with regard to the theories in the literature review. It displays the order of elements which affects the process from initiatives to internationalize to the possibilities for knowledge transfer. The arrows display activities in the process, while the smaller arrows with a bold end represents a mediator role.

(Networking for Knowledge Transfer, Process Model 1.)

Having conducted a literature research we come across many theories for the chosen topics. Taking these existing theories and framing them within a process model for STPs across the globe, we propose the following propositions to be measured for in practice. Also with the intention on capturing any patterns of difference occurring between developed or developing economies. The framework which we want to test is further explained. The first step for internationalizing and successfully transferring knowledge includes an initiative of being open towards the knowledge holder. In our context this implies the first proposition (a) openness for multicultural workforce or network. Which involves effective international activity and engagement. Hence our second proposition (b) knowledge transfer occurs after the parts engage in collaborative projects for research or market purposes. Here, trust acts as a mediator for knowledge transfer significance. Thereupon the third proposition (c) knowledge transfer significance depends on the degree of trust between the institutions/corporations.
4. Practical Method

As mentioned in the Methodology section, our research is interpretivist. In this “Practical Method” part, we will focus on the qualitative data collection method, the qualitative sampling method and the selection of participants.

4.1 Qualitative Data Collection Method

“Qualitative data are normally transient, understood only within context and are associated with an interpretivist methodology that usually results in findings with a high degree of validity” (Collis & Hussey, 2014, p. 130). Examples of qualitative data can be recordings of interviews which is the process we used. We, as interpretivist researchers, had the challenge to apply methods that will permit the integrity of the data (Collis & Hussey, 2014, p. 130).

Basically, the qualitative data collection in an interpretivist study is organized as follow: the researchers have to identify a sample, then the data collection method needs to be selected. The data that will be collected has to be determined and researchers conduct a pilot study, modifying the method if needed. Then, the researchers are able to collect the data properly. We also chose qualitative method in order to develop in-depth understanding of the choice of subject through “experts” and “practical” opinions.

In our study, we selected as a sample science parks’ managers from all around the world, dividing countries by categories. Our data collection would then consist in interviewing the managers calling them at the date and hour they have chosen. The interviews have been recorded, with the allowance of the interviewee. A questionnaire has been built in order to have clear questions and it has been sent to the participants that asked for it in advance. After conducting a pilot study and making some adjustments, the final method has been kept since it fitted our expectation on the answers to get.

4.2 Qualitative Sampling Method under an Interpretivist Paradigm

Qualitative data collection needs to be operated within a context (Collis & Hussey, 2014, p. 130). Therefore, we conducted first research and went to the IASP website where numerous science parks from all around the world are registered. In scientific research, the identification of a sample is the first step of the data collection process. A sampling frame is “a record of the population from which a sample can be drawn” (Collis & Hussey, 2014, p. 131). A population is “a body of people or collection of items under consideration” and a sample is “a subset of the population” (Collis & Hussey, 2014, p. 131). In our study, our sampling frame appeared to be science parks worldwide, our population is the managers within them and our sample have been selected taking several contacts from the IASP website list choosing to send interview request to 22 science parks in developed countries and 22 in developing countries. To that extent, we can consider our sampling process as a judgmental or purposive sampling (Collis & Hussey, 2014, p. 132). Indeed, we selected the participants on the strength of their experience of the phenomenon. Also, we did not pursue other contact arising during the study.
4.3 Using Interviews under an Interpretivist Paradigm

When coming to the interview, a variety of methods exists. The interview can be conducted through a face-to-face, meeting the participants at their office, that can be useful when complex questions have to be asked. It can also be conducted by phone; this method reducing the cost of travel and still offering a personal contact. The last method consists of online interviews, such as conferences in Skype. The main drawback of such a method is the fact that the participants may not be willing or able to use this kind of software. (Collis & Hussey, 2014, p. 133).

Since our interviewees were spread all around the world, we selected the online interview method. Using Skype permitted us to have a contact with the participants, almost as a face-to-face meeting. This software being free from one computer device to another, it allowed us to be more comfortable during the interview since it is free of charge for both the respondent and the interviewer.

4.4 Designing Questions for Interviews under an Interpretivist Paradigm

In our study, we decided to interview the participants through a mix of open and closed questions. This mix permitted to get factual information such as for how many years they operate, as well as broader information through the open questions, letting the respondent share with us his/her feelings and opinion.

4.5 Participation Selection

For our selection, we chose participants which were members of the International Association of Science Parks (IASP). This association is an NGO being “the worldwide network of science parks and areas of innovation”. Their aim is to connect professionals of science, technology and research parks. Alongside contributing to connections, they provide “services that drive growth and effectiveness for their members” (IASP).

This was for selecting participants with similarities and interlinks to each other. The science and technology parks were not seen to be similar in the sense of size, stage of growth, knowledge, network, but rather sharing commonalities on a collective platform. We would also like to find the relations and characteristics if any, between the participating science parks. The selected participants were international science parks, from developing to developed countries. As mentioned earlier in the article, we wanted to understand whether developing and developed economies varied in their factors for successfully transferring knowledge through internationalization.

Together we have sent around 45 emails for the request of interviews, where we proposed a Skype meeting. All the respondents have been included in the research paper. For our interviews we have conducted an open conversation style in order to catch present subjects and thoughts of each science park.
All the interview participants were CEO’s of science and technology parks, these were chosen for their competence and expertise over any subordinate. As all spoke English, filtering for language criteria was not an issue. However, we as researchers have a multicultural background and could hence manage the interviews in other languages preferred over English, i.e. Spanish, French, Urdu, Norwegian/Swedish. The interviews had a duration roughly around 15-25 minutes, yet some interviews exceeded this timeframe. Under a common agreement we were able to record most of the interviews.

4.6 Interview Guide

As researchers, our goal was to gain a “holistic” (systematic, encompassing, integrated) overview of the context under study; internationalization. Its logic, its arrangements, its explicit and implicit rules (Miles & Huberman, 1994, p. 6). Many interpretations of this material are possible, but some are more compelling for theoretical reasons or on grounds of internal consistency (Miles & Huberman, 1994, p. 7).

Our interviews were formed to discover regularities: identification and categorization of elements, and exploration of their connections. In our research, the elements which play its role for successfully transferring knowledge in the international context are displayed in our process model. This process model also represented our theoretical perception of the literature review. The data was collected, and on most occasions with the consent of our interviewees recorded into audio files.

We framed the discussions around internationalization, knowledge creation and multiculturality in networks and workforce. The questions were constructed around a framework of theoretical concepts, research questions and objectives. As most qualitative interviews and open discussions include questions in a broad scope. We encouraged and did not want to direct the interviewee towards certain answers. This would help collecting information of which the interviewees found significant to share regarding topics in our framework. However, we faced difficulties in measuring trust and knowledge acquisition and transfer for STPs. With a perception that this topic could better be measured through a quantitative data analysis rather than our chosen method of qualitative studies. We were able to collect statements on this topic which we later display in our section of qualitative empirical findings. Therefore, our questions were also molded and formed after having conducted several interviews. We started off with thematising’s the questions for their theoretical connections, also adapting the questions from articles in our literature review (see Appendix 1). After having conducted several interviews we developed a set of questions which we used more remote and recognized that these proposed to better discussions with the STP managers (see Appendix 2). Again, we layer emphasis on collecting statements from STP managers to measure our theories for their practical significance. Thus the data collected and the insight gained was subject to one-time interviews with STP managers.

4.7 Data Reduction

Data reduction was also seen as a part of the analysis. This section refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions (Miles & Huberman, 1994, p. 10). The reduction is a form of analysis that sharpens, sorts, focuses, discards, and organizes data in such a
way that “final” conclusions can be drawn and verified (Miles & Huberman, 1994, p. 11).

We have proceeded after collecting the data to frame it in summaries presented in the research paper. Selecting the data into larger patterns to sort for which to code and which to pull out. This was conducted with respect to our theoretical framework, being direct about the elements of research and orienting the questions for the objectives, provided us with information directly linked to the interviewee’s thoughts and dilemmas. Additionally, understanding the relevance of research for our participants, the probability of influenced or agenda driven answers was minimized. Even looking at the minimum probability of ambiguity, the agendas promoted would still be significant for our research as the participants were focal and their thought was best value to our research. We also saw the importance of not stripping the data at hand from the context in which they occurred (Miles & Huberman, 1994, p. 11).

4.8 Data Display

Extended text can overload humans’ information-processing capabilities (Faust, 1982) and preys on their tendencies of simplifying patterns (Miles & Huberman, 1994, p. 11). This was designed for accessibility to analyze, drawing either justified conclusions or further investigation (Miles & Huberman, 1994, p. 11). With a base from the literature review and our framework, we were able to display the data of relevance to our topic. As mentioned in the above section, we were able to collect information directly related to our research objectives. Creating possibilities for subduing the effect of only displaying data reserved to our knowledge - considering the dictum, “you know what you display” (Miles & Huberman, 1994, p. 11).

4.9 Conclusion Drawing/Verification

In our conclusions we present our implications drawn directly from patterns displayed. Considering the statement, “ ‘Final’ conclusions may not appear until data collection is over, depending on the size of the corpus of field notes; the coding, storage, and retrieval methods used; the sophistication of the researcher: and demands of the funding agency, but they often have been prefigured from the beginning, even when a researcher claims to have been proceeding ‘inductively’ ” (Miles & Huberman, 1994, p. 11). We replicated the findings in other data sets, as the answers collected were asked to later participants for verification of emerging patterns. These patterns were also subject to lengthy discussions and argumentations. With our best intention for unbiased thoughts, we tested the implications between us as researchers and our participants.

4.10 Transcribing

When conducting an interview in qualitative research, interviews have to be recorded (Bryman & Bell, 2011, p. 482). This way, the interviewers can easily stay focus on their questions and can give more attention to the participants. It is also easier, then, for the researchers to select appropriate questions in relationship with the respondents’ answers. It helps the spontaneity of the exchange of information between the interviewer and the interviewee. Once the interview has been recorded, the interviewer
has to revise the record and transcribe the interview. The transcription must include non-verbal characteristics of the exchange such as pauses and times of reflection. Indeed, all these elements must enter in the analysis of the participants’ answers (Saunders et al., 2009, p. 340). As a prerequisite for recording, the interviewer will ensure that the respondent agrees with these terms by noticing him/her that the interview is being recorded and asking the interviewee’s permission. In our case, after having proceeded to the interviews, we transcribed them directly so as to have it clearer in our minds and make sure we were not lacking parts and elements.

5. Findings

In this section, we present the summaries of the interviews we conducted. We then bridge respondents’ answers together so as to analyze them and conclude on our findings.

5.1 Qualitative Empirical Findings

Respondent’s introduction and Characteristics (Table) (referring to respondents as R)

<table>
<thead>
<tr>
<th>Country</th>
<th>Sector</th>
<th>Date of interview</th>
<th>Length of the interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1: Hong Kong</td>
<td>Science park/University</td>
<td>April 29th</td>
<td>35 minutes</td>
</tr>
<tr>
<td>R2: England</td>
<td>Science park/University</td>
<td>April 29th</td>
<td>30 minutes</td>
</tr>
<tr>
<td>R3: Pakistan</td>
<td>Science park/University</td>
<td>April 29th</td>
<td>25 minutes</td>
</tr>
<tr>
<td>R4: Sweden</td>
<td>Science park/University</td>
<td>May 2nd</td>
<td>22 minutes</td>
</tr>
<tr>
<td>R5: Spain</td>
<td>Science park/University</td>
<td>May 3rd</td>
<td>15 minutes</td>
</tr>
<tr>
<td>R6: Colombia</td>
<td>Science park for innovation in the city</td>
<td>May 3rd</td>
<td>20 minutes</td>
</tr>
<tr>
<td>R7: Argentina</td>
<td>Science park/University</td>
<td>May 4th</td>
<td>40 minutes</td>
</tr>
<tr>
<td>R8: Mexico</td>
<td>Science park/University</td>
<td>May 5th</td>
<td>1 hour 15 minutes</td>
</tr>
<tr>
<td>R9: Mexico</td>
<td>Science park</td>
<td>May 6th</td>
<td>50 minutes</td>
</tr>
<tr>
<td>R10: Panama</td>
<td>Science park</td>
<td>May 11th</td>
<td>Email</td>
</tr>
</tbody>
</table>
5.2 Interviewees Description

**R1: Hong Kong**

For the science park’s international orientation, it emphasizes an increased trend for specialization for incubator services. The trends for specializations seen to emerge among sectors like fin-tech, robotics, life sciences. Another trend they mentioned was an increased corporate involvement for R&D purposes, with an increase in private incubator programs run by the corporates. In addition, they see a global trend of investors moving to early stage companies, chasing new ideas and start up – seeing that competition for investment are rising. The emerging markets are also starting to focus on tech development, building science parks, where examples given were Middle East, Mauritius and small cities in southern China which moved focus from manufacturing to high tech start-ups.

Also seeing a global trend of entrepreneurial international mobility, an example from Hong Kong – tremendous increase in people coming from abroad to find opportunities. A platform for international markets are international soft-landing program – MIT, Oxford such are reliable – stating that these have high integrity which is very important.

The competition for talent is there – business and technical people.

Hong Kong is however lacking behind Israel, London, Barcelona etc. but things are ramping up as investors are coming in and momentum is building. We are bringing companies and technology abroad, we start to get these to enter into global and regional competitions – regularly participating and achieving awards. Technology is there but people rather see Hong Kong as a financial center. The science park is working to elevate the image of Hong Kong, moving technology and research to global markets. They also approach overseas investors. Encouraging companies to regionalization and globalization. Out of 400, 15% are more than ready to go overseas.

They have established account managers, working with chambers of commerce and overseas incubator partners. The companies have now a trend to establish abroad but they come with heavy technology which is rather difficult to sell to overseas markets. The companies however lack social technology innovation for international purposes, like Facebook, Twitter etc. Domestic government funding is helping create exhibitions for inbound investment where they present domestic technology, this is also the case for international organizations in overseas exhibitions.

Stating a close collaboration with the Hong Kong government who’s maintaining over 30 international offices and collaborating with technology segment offices internationally. Hong Kong also works as an international hub: Entering big players in Hong Kong will open doors and represent a vertical market globally. It is a cultural market – an outbound market – serving different industries. Emphasizing Hong Kong’s position as a gateway for many markets, giving edge in dealing with the reliabilities of legal systems, inconsistency and uncertainty of developing countries. In dealing with different business cultures they are lesser affected as they have already established local representatives. Emerging markets are also adaptable as the science park is familiar in
dealing with Chinese markets. Also stating that markets in China are emerging and large companies are learning.

**R2: England**

This science park has been built 32 years ago, in 1984. Margaret Thatcher opened this science park which is a symbol of the significant importance of the building of science parks in the UK during the 1980’s. Science parks have been built in the UK because of the lack of space for start-up companies.

This science park is part of the European Business incubation network, where science parks from Europe or others out of Europe but having an interest in Europe, are gathered. This SP is also a member of the International Association of Science Parks. They are also part of the “UK Trade and Investment” where small business gets help in export related activities. This science park has 150 tenants, ranging from start-up companies to bigger companies and very large international ones (ex: Dassault Systems). R2 expressed that “smaller firms are more focused, and less open to internationalization”.

Concerning the international workforce, the science park is composed of 25 administrative employees, 10% of them are from a multicultural background. As a native German, R2 expresses that this multicultural background helps him in having a good understanding on how different cultures behave. In terms of having international contacts, R2 answers: “Contacts are really important. Without contacts, you cannot develop business. It is necessary to develop networks in order to attract funding”. The interaction tendency with international networks are not on a daily basis for this science park; sometimes it is monthly, other times every three months. This is due to the lack of resources they may face.

Concerning knowledge transfer, it is done every time. A lot of science parks approach them, from all around the world (China, Brazil, India, Pakistan, Poland, Canada, Russia). “UK science parks are seen as role models for the rest of the world”. Mostly, the UK shares knowledge with other science parks, not the other way round. Ethnic diversity helps the UK technical base. The tenants of this science park are from a lot of different nationalities and bring new technologies into the UK’s start ups (ex: Italian and Hungarian).

Knowledge transfer is not really documented even if this science park is aiming at doing so. R2 expressed that they are more in a profit-driven model, “documenting knowledge is less tangible than earning money”. R2 takes the example of another larger institution that “has success in developing knowledge”. Their problem in transcribing the knowledge into tangible form is that they do not have the resources to do so. R2 takes the example of a very successful business angel network they have. The person ruling it is very competent but is to be retired next year, R2 considers that they cannot document his expertise.
R3: Pakistan

The science park emphasizes that links to universities create more successful entrepreneurial ecosystems, this is due to three reasons: the professor, the student and the industry coming to the university. As universities have huge network of academic collaborations and are extremely well connected, they provide a network for internationalization for the science parks. The science park has leveraged on the university’s network, connecting them with other university related science parks, it is also linking them up with many big corporations. University areas also provide land as acquiring it is always difficult, especially in developing countries. “The university hub attracts the best minds for a science park”.

For developing countries “Evolution of thought is taking place” – this is happening in universities. IASP has introduced them to over 400 science parks globally. Through this they also got to know which science park are related to universities and what specialization they have – “we filter the partners for the sector of preferences”.

“Internationalization provides the linkage of student outside his country via science parks ecosystem, evolves his thinking and entrepreneurship to move faster with more exposure”. “For example, in our country innovation is emerging in the ICT sector but lesser in manufacturing, the cross collaboration will bring knowledge and enhance sectors which are not developed domestically”. Some tenants have successfully established internationally and the trend is growing. But they have not reached a billion-dollar revenue and not yet recognized globally.

The science park sees an increase in entrepreneurial activities – but that is if the government understands the importance of highly supporting settings of entrepreneurial ecosystems. Stating that the private sector and educational institutions are on board. Government however should understand the significance and act accordingly in optimizing the processes. Saying that this should be recognized for the importance of education and human development resulting to socioeconomic growth.

R4: Sweden

The challenge for the science park is long-term financial support for projects. These projects last for 1-3 years, where accumulated structure, process and knowledge face risk of being lost if not sustained through new projects. This is also the case for building international networks requiring a bigger timeframe. It is always need for more support i.e. soft money contribution to science parks. This can contribute in helping the companies establish in the market more efficient.

The interviewee state that in general internationalization is an important component of a science park, as it attracts the right type of competence. The companies need to find a niche in order to compete globally. As for high technology, the national market is too small and they need to go international. And if the technology comes from research, the network is already established in terms of the researcher’s links to various universities abroad. Even the companies which are growing have a global network through their social media. This creates the need for science parks to develop an international flow within their ecosystem.
The goal is to make all the international students coming in through the university to stay in this ecosystem. It is thus important that science parks and incubators reside companies who have the potential to go global, creating interest in students to stay and grow these companies.

Another important component for internationalization is to provide soft-landing services, if the science park expertise is attractive to other international players, and supporting services like offices, mentors, consultants are given, it will entitle efficient market establishment in our region for international players. Most inquiries come from European collaborative programs, as these help create dynamics within regions, linking businesses.

Countries with similar business cultures are often those they have initiatives towards. They recognize that growth also lies in other countries with dissimilar business culture – this is however a big step to take for many companies. But multicultural students who come to the science parks are often those who take the initiative to establish in such markets – they possess foreign market knowledge.

**R5: Spain**

This science park has been running for 15 years now. They are part of IASP (International Association of Science Parks) and have 12-13 networks within this association. They also have more local networks, such as European ones. As they belong to a university, Respondent 5 states that they both combine networks from the university and business networks. In terms of internationalization, their local networks have more power than the business networks.

The firms within the incubator already have their proper international networks but benefit a lot from the networks of the science parks. Growing and developing themselves, they get to use more their own networks, but still, after the science park provided them with new contacts, R5 declares that they keep in contact with the networks offered. This science park does not benefit from a multicultural workforce. R5 does not see importance in having employees with multicultural backgrounds. The science park engages in activities with its international networks to a very high extent.

They always share information because it is the best way to get knowledge in exchange. In knowledge transfer, R5 does not observe legal barriers but various cultural barriers. The whole team is in charge of dealing with this transfers and cultural difficulties. A way of transferring knowledge for R5, is to develop firms with technological backgrounds. This science park also tries to collaborate with firms in order to set cooperating projects. The transferred knowledge is not put into documents or tangible forms as often as they would like to. The information provided cannot always add to the institutional capital as it is a complex process and not easily codified.
**R6: Colombia**

The science park started operating for 7 years, in 2009. They mainly work in the field of health and technology. They benefit from a lot of international networks of all kinds. They developed a particular strategy called “la red de acceso al mercado” (the network for market access).

For knowledge exchange, the science park is collaborating with 30 countries, among them are USA, United Kingdom, Spain, Germany, Peru, Ecuador and Chile. R6 states: “The one belonging to a network, has the power” - networks provide information and knowledge. Four pillars express the science park’s philosophy: talent, culture, capital, networks. R6 also states that having a good connection with their networks creates possibilities to leverage on 3rd parties. R6 states that knowledge transfer has to be done in the respect of common relationships and interests. Complementarity is the key factor for the success of knowledge transfer. Agreements and contracts are settle between parties.

R6 sees multiculturalism as very important and the science park benefits from a lot of employees from all around the world (China, Canada, USA) and even Colombian employees with experiences from abroad.

**R7: Argentina**

This science park operated from 1997 to 2008. It is now more of an interface, bridging between research and the market. They do not properly have international networks and act more locally. They have not internationalized many companies/tenants, but joined networks for information and technology exchange. Their aim is to increase global activities for the science park, where the IASP have brought them a lot of useful contacts. These contacts have been actively used as well as their national network. The science park was also a part of the InfoDev program (Information for Development) by the World Bank from 2005 to 2013. This is a multi-donor program to support entrepreneurial activities in developing economies.

R7 explains the fact that firms did not go global with the fact that they were not at a global level. The tenants were national companies created for the domestic market. The crisis in 2002 has forced the country to act more for national purposes. The tenants had products and services suitable for the global markets, despite the crises they were not in any condition to be distributed globally. For R7, travelling, speaking languages and having the will to export are key components of a successful internationalization.

R7 expresses that “nobody does business with people they do not know”, it is necessary to be open, aware of the markets and cultural disparities. Also, for a science park to act globally and to internationalize, R7 states that it must have an international vocation at first. He adds that the projects that internationalize often are long term projects and that actors and parties need to be coordinated. Moreover, R7 considers that some regions and countries understand the importance of internationalization, even countries with big national markets. Even some regions are positioned strategically for internationalization, as they are a gateway for trade.
R8: Mexico (1st)

Before the science park was created, the university in its ecosystem received in November 2008 an invitation from a Spanish university to a seminar called “Parque de innovación de servicios para las personas” (Services for people innovation park) including many other universities. The aim of this meeting was to create a network between the participants. The program categorized the participants into three groups: group A for universities that would develop a science park, group B for those which would later have this opportunity, and group C composed of universities that were only observing the processes. For R8, the fact that all the participants were from Latin America, created easier means for developing a network - as R8 stated, “we all faced the same problems, for example, the political and economical issues”. Some of the barriers for exchanging knowledge is due to physical distance between countries and their resources and budgets. Business cultures may be different and create “a shock at the beginning of relationships”.

The university has been encouraged by the ministry of economics started supporting the development of science and technological parks. The university had to change its orientation into generating growth and prosperity in its region. The relationships with the government has always been really strong. The university first needed to consolidate the science park model, later the governmental support to provide them with infrastructure. R8 states that the neutrality of the science park helped them in their relationships with all layers of the government. In their process to build a science park they had been in contact with different levels of governmental departments. They also met with entrepreneurs and with state council of science and technology. The city benefited from different universities, giving it a solid base for the implementation of a science park.

When starting their activities in 2010, they constituted themselves as an associate independent from the university. The science park had as a goal to connect, canalize and materialize the knowledge created within the universities. Their belonging to the IASP permitted a lot of interactions with different networks. In 2013, they joined a meeting in Brazil where they networked with Mexican and other international universities. Their next meeting in Moscow will permit “to exchange ideas and innovations from different parts of the world with potentials for many other countries”. R8 states that “innovation is for sharing and science parks benefit from collaborating”.

The science park has endorsed a multicultural workforce. As several Spanish people came to work with the science park in the beginning of the project and currently an engineer from Venezuela is helping them within the energy sector. Some of their start-ups have international background i.e. a Mexican studied at MIT and Harvard who brought knowledge from US science parks. They are now aiming at finding people from all around the world that could help them in their activities and goals.

With the tacitness of knowledge R8 states, “for projects, we document and digitize knowledge and information into physical forms”. However, the processes are more complex and it takes time.

The challenges today are to aim at increased collaboration with other science parks, creating more value for ideas and generating successful projects, with entrepreneurs
creating an important international impact. They also aim at adding international talents to their teams and generating alliances.

**R9: Mexico (2nd)**

This science park is relatively young. Its construction started in 2011 and the park was inaugurated in 2013. This park is a federal science park, therefore it depends on one precise federal district of Mexico and its governance. It is part of a federal research center that had published a lot of innovative ideas without converting it into practical methods, which the science park has taken responsibility of.

Many international firms integrated to the science park with backgrounds mainly from France, Germany, Canada and the USA. These international flows created exposure and awareness for the competence the science park possessed. Some of the companies working with the science park came from countries where demand was quite low compared to markets in Mexico. While others already having a global market reach, came to this science parks to develop their technologies in collaboration with its engineers.

The science park operates within three main types of networks: the IASP, the AURP (Association of University Research Parks) and the APEC (Asia Pacific Economic Cooperation). APEC has given the science park benefits from co-incubated projects with Asian science parks. Furthermore, networks which R9 calls “Sectorial network”, consisting companies and science parks operating in the same fields who they make contact with in events and conferences. Third group of networks was named “business network”, operating for financial funds. Here the council of export and banks help finance the firms for export purposes.

R9: “In Mexico, innovation is a national priority”. Government increasingly supports science parks with financial and infrastructure. For R9, having employees with multicultural background creates ease for internationalization. It helps the science park having a broader vision and knowledge from different cultures. R9 already experienced cultural barriers in collaborations: the rhythm of work can be different, the culture, the language. Therefore, the science park aims at helping companies and researchers in communicating and level the differences by hiring a more multicultural workforce.

In terms of knowledge transfer, this science park has an increased tendency to share their findings and innovations for growth purposes. However, confidentiality agreements are set with companies which limit the information sharing. Having a multicultural workforce, the science park finds sharing information and communicating is rather easy. R9 states that they more often exchange knowledge with countries facing similar difficulties in terms of political, economical and business culture. Also, R9 states that the science park learned a lot from older science parks from the USA and Europe, but that they had to adapt this knowledge specifically to their country and culture. In their relationships with foreign companies and science park, R9 states: “we are very flexible, we also try to find a good solution that would suit everyone”. This flexibility is seen as a key component for openness towards foreign companies.
When the science park transfers the knowledge of a technology to a company, a document is always created. In the knowledge transfer with other science parks, R9 says that some documents are exchanged during conferences and that they are then adapted and used for their own purposes within the science parks. IASP also provide interesting reports each year, that benefits the science park’s knowledge.

From now on, the challenges for the science park is to acquire more land and attract new firms to collaborate with. The goal is also to create self-sustaining tenants which are financially independent from the science parks.

**R 10: Panama**

This science park has become a humanitarian and academic hub. The operations began in 2000. Most of their academic programs are foreign and around 60% of the companies affiliated originate from Venezuela, Colombia, USA, Spain, Singapore. They also have personnel with foreign background.

Affiliated companies are allowed to hire foreign personnel beyond the common maximum quota of 10%. On this matter, R10 declares: “Employees with international background and competencies provide insight into other markets, can be more culturally aware and understand cross border collaboration”. R10 adds that international contacts are “a basic need for any organization that wishes to succeed in a globalized economy”.

This science park benefits from an internal network (the campus), a local network (institutions in the Republic of Panama) and the international network. There are daily interactions, and some larger collaborations, such as trainings, conferences, projects, joint ventures, which occur occasionally. Concerning their collaboration with partners and networks, R10 states: “We respect confidentiality agreements with all our partners and customers”. And insists on the fact that “Laws and agreements serve the purpose of protecting interests and are common business practice worldwide”.

Regarding the tangibility of knowledge R10 states: “We create a news item on activities occurring on campus, and post it on the web/social networks. There is no institutional paperback publication, aside from the annual report”.

**6. Analysis**

Throughout the following sections, we will refer to the interviewees by the respondent number given. We will then present an analysis of our empirical findings in categorized sections. The sections will include *Internationalization Trends & Challenges, Openness for Multicultural Network, Patterns & Complimentary Interest* and *Knowledge Transfer*. Following the analysis, we will include a section concluding the research with regards to the literature review.

In our model (*Figure 1.*) we presented a theoretical framework on how different theories connect and create a sequential path for value creation. Our intention was to
test the conceptual framework for its practical processes and activities. To some degree we were provided this, as we asked simple questions related to different topics to capture them in their trivial nature of value creation.

6.1 Internationalization Trends & Challenges

The increased trend for internationalization has taken place in the world, and more recently its importance is recognized in developing countries. The respondents portray different tendencies for their international visions and activities. The data collected also correlate to early theories of specialization for economic surplus by Ibn Khaldun and Adam Smith (Karatas, 2006). In our context specialization is rising in some developing sectors which we present under this section. The trends for internationalization are also increasing according to theories in section 3.3 in the literature review, and in our context for STPs in developing countries.

For the internationalization trends, R3 states “internationalization provides the linkage of student outside his country via science parks ecosystem, evolves his thinking and entrepreneurship to move faster with more exposure”. Where R4 adds that internationalization is an important component of a science park, as it attracts the right type of competence. For high technology, the national market is too small and they need to go international.

6.1.1 Specialization

Most parks mention drifts for internationalization, where R1 emphasizes an increased trend for specialization for incubator services. These trends are emerging among sectors like fin-tech, robotics, life sciences. R3 states that through IASP they have come in contact with university related science parks with different specialties – “we filter the partners for the sector of preferences”, “for example, in our country innovation is emerging in the ICT sector but lesser in manufacturing, the cross collaboration will bring knowledge and enhance sectors which are not developed domestically”.

6.1.2 Developing Economies

In developing countries, internationalization is taking place as awareness is increasing. R1 sees a global trend of entrepreneurial international mobility – example from Hong Kong – tremendous increase in people coming from abroad to find opportunities. This respondent also states that the emerging markets are starting to focus on tech development and building science parks – examples are the Middle East, Mauritius, and small cities in southern China which moved focus from manufacturing to high tech start-ups. R3 states that for developing countries “Evolution of thought is taking place”, this is perceived to take place in university related ecosystems as science parks.
6.2 Openness for Multicultural Networks

Openness for multiculturalism is recorded to be positively related to international activities. Most respondents recognize this both in their networks and workforce. This data with a long-term perspective, associates the theories on diverse workforce with sustainable growth (Okoro & Washington, 2012) and economic growth (Friedman & Amoo, 2001). In our context, this will entitle STPs and their pursuit in entrepreneurial growth and effectiveness. The familiarity, relational characteristics and business cultures play a big role. We presented in our literature review that entrepreneurial ecosystems such as a triple-helix will create entrepreneurial friendly environment (Kritikos, 2014). This was recorded in empirical findings with two significant factors, platforms for networking and financial support. We also see that openness requires both platform and financial support to successfully build multicultural networks.

All our respondents highlighted the importance of networks and talked about the IASP (International Association of Science Parks). Respondent 7 states that their science park has been an active member of the IASP and that it has offered networks with good and useful contacts. R8 states that a they have had a lot of interactions with different networks thanks to the IASP. This permits the exchange of ideas and innovations that can be adapted to different countries. R3 adds that the IASP has given them links to more than 400 international science parks. R6 also states that having a good connection with their existing networks creates possibilities to leverage on third party links. Quoting R6, “the one belonging to a network has the power”. For them, creating networks is one of the top 4 priority of the park’s philosophy.

Nevertheless, the challenges to get these networks seem to be numerous. Indeed, being open to foreign markets and having the will to collaborate is not deemed to be enough for establishing networks. For R7, establishing networks requires to speak different languages, travel and have an international vocation at first. With managers’ ability and competence to create networks.

R5 witnessed some cultural barriers in relationships within its network. R9 also explains experiencing cultural barriers, “the rhythm of work can be different, the culture and the language”. Therefore, the science park aims at helping tenants in communicating and level the differences by hiring a more multicultural workforce. In their relationships with foreign companies and science parks R9 states following, “we are very flexible, we also tried to find a good solution suiting everyone”. This flexibility is seen as a key component for openness towards foreign companies.

R4 states the importance of multiculturalism, companies which are growing already have a global network through their social media. Moreover, companies with international networks are the ones establishing in markets abroad. This creates the need for science parks to develop an international flow within their ecosystem. It is thus important that science parks and incubators reside companies who have the potential to go global, creating interest in students to stay and grow these companies.

R2 declares that having employees with a multicultural background helps the science park recognize different cultural characteristics. R2 adds that ethnic diversity helps the UK’s technical base. As a native German, R2 expresses that this multicultural background helps him with a good understanding on how different cultures behave.
Concerning the international workforce, the science park is composed of 25 administrative employees, 10% of them are from a multicultural background. This exact same science park has had tenants ranging from start-up companies to large international companies. The tenants of this science park are from a lot of different nationalities and bring new technologies into UK start-ups.

R7 explains that having international employees creates impressions of openness towards other science parks. This also permits information flows of foreign markets and helps face cultural disparities. R8 mentions that having a multicultural workforce is very helpful in being aware of other markets. For R9, having a multicultural workforce attracts and creates awareness for the international competencies they possess. The multicultural workforce also brings a broader vision of the global market and a better awareness for different cultures. R6 also highlighted these factors, stating that multicultural workforce is very important to a science park. R10 specifies, “employees with international background and competencies provide insight into other markets, we can thus be more culturally aware and understand cross border collaboration”. Adding that international contacts are “a basic need for any organization that wishes to succeed in a globalized economy”.

6.2.1 Platforms

The respondents acknowledge different platforms which have assisted in creating a global network. Here R1 informs benefiting from close collaboration with the Hong Kong government, which maintains over 30 international offices and collaborating with technology segment offices internationally.

For R3, universities also have huge network of academic collaborations and are extremely well connected, they provide a network for internationalization for the science parks – university related science parks create more successful entrepreneurial ecosystems. “The university hub attracts the best minds for a science park”. R3 also states that the science park has leveraged on the university’s networks, connecting them with other university related science parks. It is also linking them up with many big corporations. University areas also provide land, as acquiring it is always difficult especially in developing countries. Here R5 adds that they both combine networks from the university and business networks. And R4 stating that if the technology comes from research, the network is already established in terms of the researcher’s links to various universities abroad. They also get enquired for projects from different European collaborative programs, as these help create dynamics within regions, linking businesses.

6.2.2 Financial Support

Interestingly R7 informs us about their national crisis in 2002. This has forced the country to act for national purposes. The tenants had products and services suitable for the global markets, but despite the crisis they were not in any condition to be distributed globally. Hence, financial resources were scarce to support international opportunities.
For financial support R1 sees a global trend of investors moving to early stage companies, chasing new ideas and start-ups, in such an extent that competition for investment is rising. They also mention an increased corporate involvement for R&D purposes. Hong Kong is however lacking behind Israel, London and Barcelona. But things are ramping up, as investors are coming in and building momentum. More significant the domestic government funding is helping create exhibitions for inbound investment where they present domestic technology, this is also the case for international organizations in overseas exhibitions.

R8 insists on the notion of “neutrality” of the science park, being independent of the university. For them, being “neutral” gave way to collaborate with various institutions as they did not promote any political agendas. Respondent 8 and 9 accord themselves on the important role of government in networking. For them, the help and support provided by governments have been necessary for their growth and openness. Networks create possibilities for funds and financial support is used to maintain networks. R2 state, “Contacts are really important. Without contacts, you cannot develop business. It is necessary to develop networks in order to attract funding”. The interactions with international networks vary between one to three months. This is due to the lack of resources they face. The tendency of interaction also affects knowledge transfer. Here R4 informs us that the challenges for the science park is long-term financial support for projects. These projects last for 1-3 years, where accumulated structure, process and knowledge face risk of being lost if not sustained through new projects. This is also the case for building international networks requiring time. It is always need for more support i.e. soft money contribution to science parks. This can be used in helping the companies establish in the market more efficient.

6.3 Pattern & Complementary Interest

We presented theories on the importance of trust in knowledge transfer (Odigie & Li-Hua, 2008), and that trust is positively related to knowledge transfer and increases the reliability of knowledge gained and created (Tsai and Ghoshal, 1998). Further understandings show that networks tend to develop for relations and associations. As we present the data collected in sections below, we see that engagement is mediated by trust, reliability and integrity. Additionally, the image and science park name also affects the establishment of networks as. Commutual interest is perceived to be the significant base for engagement and valuable knowledge transfer.

For R6, “knowledge transfer has to be done in the respect of common relationships and interests”. The key success factor of knowledge transfer is in “complementarity”, all involved parties need to gain value from the collaboration. This also holds true for R7. R8 and R9 both declared that relationships are somehow more prevalent and easier with countries facing the same problems. R8 states that the science park maintains a good relationship within the network composed of countries with the same issues, as they understand each other better. R9 shares the same opinion, stating that it is easier to communicate with countries having the same cultural background, being at the same stage of development and having similar resources. R4 also adds that countries with similar business cultures are often those they have initiatives towards. They recognize that growth also lies in other countries with dissimilar business culture – this is however a big step to take for many tenants. However, foreign students who come to the science
park are often those who take the initiative to establish these tenants into foreign markets, as they possess foreign market knowledge.

6.3.1 Trust, Reliability, Integrity

R1 states that Hong Kong’s position as a gateway for many markets gives them an edge to deal with the reliabilities of legal systems, inconsistencies and uncertainties of developing countries. R1 states that the science park in Hong Kong is a cultural market – an outbound market serving different industries. In dealing with different business cultures they are lesser affected as they have already established local representatives.

R1 informs us about using soft-landing programs of MIT and Oxford, stating that these have high integrity which is very important. For R7, business cannot exist without contacts, he expresses: “Nobody does business with people they do not know”. Therefore, having contacts and networks is a sine qua non condition for business purposes. For it is necessary to be open, aware of the markets and cultural disparities. R6 and R9 express the fact that confidentiality agreements are designed to create trust between parties.

R4 includes that an important component for internationalization is to provide soft-landing services, if the science park expertise is attractive to other international players - supporting services like offices, mentors, consultants. This will then create opportunities for international companies establishing in their national markets.

6.4 Knowledge Transfer

With the understanding from (Nonaka & Konno, 1998) that knowledge tacitness, implicitness and explicitness should be embedded into practices, interactions and learning to create new knowledge. In our findings on the process of creating new knowledge, we see that firms require the resources and capabilities to do so. This is seen as a complex process demanding both time and space. Being aware of knowledge barriers will create possibilities to avoid them and an increased potential for knowledge transfer efficiency (Grassler & Glinnikov, 2008).

For R8 the role of their science park is to “connect, canalize and materialize knowledge creation within the universities”.

R9 highlights that knowledge needs to be adapted to different countries and cultures. R8 expresses limitations to knowledge transfer in physical distances between countries and lack of resources. A way of transferring knowledge for R5 is to develop firms with technological backgrounds.
7. Discussion

We have understood that for internationalization, science and technology parks require support. As this is an entrepreneurial ecosystem all three elements (university, government and industry) have to play their parts. The degree of collaboration and responsibility is positively related to the results which they aim to achieve. The ability to cooperate will also prevent overlapping, and maintain and promote common objectives.

Governmental support is recorded to be as valuable for developed and developing economies. It is understood that without adequate governmental support, the settings of a Triple Helix concept will not provide the effective results as intended. STPs being deprived of infrastructure services and financial support will limit the possibilities for tenants, especially international players from establishing in the national market (Sweden, Argentina). In addition, unstable government in developing economies exhibits uncertainty to a bigger extent, which results to decreased inward FDI. It is accordingly that we see the significant value of international organizations such as IASP in compensating the negative effects of inadequate governmental support. In our findings we see that young science parks (Pakistan) have been able to create an international network relatively fast with IASP as a mean for great exposure. The IASP promotes and optimizes activities and exposure to a larger scope. Such international organizations are therefore seen as an advantage for institutions in developing countries, providing links and networks on a platform readily available. The results also show that optimization and effectivity lies rather in supporting national institutions for their development of socio-economic purpose.

From our findings the platform is perceived to demonstrate integrity as parks subsequently engage. The active engagement are traits of reliability between members, as all are verified before participating. Trust is further developed when the parks engage in mutual projects or activities.

We have understood that most countries have international ambitions but a regional dynamic concept is increasing, this is to promote and link cities and regions in a collaborative way such that enhances economic development. This is also perceived to be more efficient than cross-continental collaborations, as knowledge transfer barriers are leveled by similarities of geography, trade, time, culture and values (see Sweden Interview). In most cases when these factors are relational and society shares perspectives to a bigger extent, the collaboration and knowledge transfer is easier.

Universities also provide assistance for overcoming barriers for knowledge transfer. This is perceived as university staff and professors already have an established international network, where trust is already the outcome of a long-term relationship and collaboration. We also see that knowledge transfer is subject to time.

However, in most scenarios we see that a multicultural workforce or network provides international knowledge, either for market or research purposes. In any matter it is perceived as essential for international knowledge transfer. From our findings we also see that ethnic diversity contributes to technical development (see UK Interview).
8. Conclusion

The purpose of our research was with hope to emphasize on topics for international orientation to successful knowledge transfer. Presented as it is in the analysis section, linking selected theories from theoretical framework. We do not imply beyond our interview group, as this is a qualitative research to its scope and boundaries. We presented a model for our research, connecting theories from initiatives for internationalization to successfully transferring knowledge (Figure 1.). Through our findings we have understood that these theories hold true varying only in degree of significance with regards to each topic and the data collected - section 8.1 is regarded as the more significant data. Following we present an updated model (Figure 2.).

8.1 Openness for Multicultural Workforce & Network

In the first step we see that science and technology park’s openness for creating network to internationalize is not sufficient. The openness as merely an initiative does not add practical value if not met with possibilities to connect. Here we see that platforms provided by international organizations as the IASP adds significant value and preserves the parks’ initiatives. Through our findings we see that IASP is contributing and is more utilized by science and technology parks in developing countries. We record that university related parks have more success as these institutions provide established international relationships, connections with industries and university alumni, all factors which requires great amount of resources. We also record that government support for infrastructure and financial resources are significant for the park to accommodate international companies. A supportive government also acts as a platform to connect internationally, as they provide foreign sales offices in form of embassies and offices.

8.2 Complementary Interest

Our findings suggest that for engagement to take place complementary interest is essential. Before trust is tested and achieved through active engagement, complementary interest (knowledge sharing incentives) is necessary and a prerequisite. We have recorded that mutual benefit and advantage create incentives to collaborate.
Both parties must hold significant value for each other in order to create means for cooperation. In our research we see that open platforms provide opportunities to select and filter for preferred competence, i.e. specific branch, sector, industry, etc. The international activities of most park tenants are also on the base of preferred market knowledge.

8.3 Knowledge Transfer

We presented the relationship of active engagement for knowledge transfer to take place. Here, trust acts as a mediator for knowledge transfer significance. Our findings gave us opportunities to understand that this is also true. And that trust constitutes reliability for most and integrity for some. IASP, university and government were used as platforms for active engagement to take place. These institutions were also subject to the perception of the collaborating parties. Participants shared their views on well known university names which they considered to be of integrity, and that adjustments for reliability was to lesser extent. Differently for developing economies where legalities are unknown and uncertainty in business cultures occur. In such scenarios trust is exhibited to lesser extents and those familiar are more likely to collaborate. For this there are two recorded reasons, the interest of solving a common problem facing similar challenges or familiarity as being able to adapt to the uncertain settings. It is also recorded that after engagement these two cases are more likely to build trust, hence countries in the same stage of development are more likely to establish relationships.

9. Further Research

With our research, we aim to contribute on different subjects for STPs networking challenges for knowledge transfer in the international context. We hope that this research will provide practical aspects of the theories tested, and with best intentions emphasize the factors which have played significant role in successfully transferring knowledge through international networks.

Further research can be recommended to investigate the objectives of institutions in an entrepreneurial ecosystem, between and in relation to the tenants. For direct understanding of international activities, we would also like to propose a research measuring science and technology parks’ engagement for internationalization and the financial results of tenants within the same time period.

10. Limitations

We cannot measure the direct results the networking platforms or increased degree for international perspectives provide to the tenants. This required extension of resources for both time and space. We were able to understand and depict results to some extent, however this was indirect information and could not be considered as valuable as documentations such as financial statements from tenants.
We also recognize that the majority of our research sample on science and technology parks, is based of members from IASP. This may create limitations in answers, despite our perception that most international active science and technology parks are members of IASP.

Regarding trust, knowledge acquisition and transfer, there were difficulties to successfully measure them through interviews. Also recognizing the need for understanding and possessing the capabilities in successfully framing the topics. These topics were perceived to be better measured through a quantitative data analysis rather than our chosen method of qualitative studies. Also as stated in the interview guide, the data collected was subject to a one-time interview as statements from STP managers.

The time limitation highly limited the quality of our research, in framing and deepening the subject. With our best effort to give quality to our research, we recognize that the little time have still shaped our paper at points where we could have provided more value.

Limitations may also be recognized on the reliability and validity of some data collected. These are subject to one-time interviews and questions based under open discussion. However, we have with best intention tried to display the data as it is and highlighted throughout this research those answers and responses from STP managers which occurred more frequently.

11. Truth Criteria

When conducting a study, researchers have to evaluate the quality of their work. In this section, we will compare our research with the standards for quality. We will depict the characteristics of quality in a qualitative research to then evaluate the truth criteria of our study.

For qualitative data to be of quality, quality criteria have to be adapted from quantitative data. Qualitative data relates to findings with a high validity. Validity refers to “the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study” (Collis & Hussey, 2014, p. 53). A preliminary way to get to validity is that the purpose of the study correlates with the explanation given to respondents before asking questions (Collis & Hussey, 2014, p. 218).

Another criterion for quality of qualitative study have been developed by Guba & Lincoln in 1994: Trustworthiness and authenticity. Trustworthiness depends on four criteria: credibility, transferability, dependability, conformability.

11.1 Credibility

Credibility refers to whether “there is a good match between researchers’ observations and the theoretical ideas they develop” (Bryman & Bell, 2011, p. 390). For credibility to be reached, researchers should have conducted their study accordingly to the features of good practice and submitted their findings to respondents for them to confirm that the researchers have understood the answers.
In the case of our study, the credibility is reached through the fact that we conducted semi-structured interviews, permitting ourselves to discuss with the respondents, asking questions popping out of interviewees’ answers. By providing our participants the result of our research, we reached the “member validation” (Bryman & Bell, 2011, p. 390), our interviewees ensured we understood their answers well.

11.2 Transferability

This criterion refers to “the degree to which findings can be generalized across social settings” (Bryman & Bell, 2011, p. 390). The authors add that for qualitative research, the findings cannot always be generalized in other settings. Indeed, in our research, our results are not necessarily generalizable to other industry, location, market. Even within our sample, our results may serve more one firm than another since the challenges of each firm differ.

Nevertheless, we chose to use a purposive sampling, selecting participants with an experience of the study conducted. These respondents were from different countries, contexts and cultures, which enlarged the span of our research.

11.3 Dependability

Dependability refers to “ensuring that complete records are kept of all phases of the research process in an accessible manner” (Bryman & Bell, 2011, p. 392). This research process is composed of “problem formulation, selection of research participants, fieldwork notes, interview transcripts, data analysis decisions etc.” (Bryman & Bell, 2011, p. 392). In our research, we kept all the documentation of the information needed: the interview guideline, the contacts of our participants, records and summaries of the interviews as well as the analysis of the results. We acted as auditors, assessing to what extent theoretical inferences have been justified.

11.4 Conformability

This last criterion of trustworthiness refers to make sure that, even though a complete objectivity is impossible in social research, the researcher has acted in good faith (Bryman & Bell, 2011, p. 392). To that matter, we focused on avoiding any form of manipulation and prejudice of the respondents. Furthermore, we tried our best to stay the more objective possible and did not use our personal opinion.

In addition to trustworthiness, Guba and Lincoln (1994) suggest another criterion, authenticity. This criterion composed of fairness, ontological authenticity, educative authenticity, catalytic authenticity and tactical authenticity raises issues on a wider political impact of research (Bryman & Bell, 2011, p. 393). We believe the criteria have been respected and that the research represents different viewpoints among members of the social setting, that it helps members getting a better understanding of their social milieu and appreciating better the perspectives of other members. We hope our study acted as “an impetus to members to engage in action to change their circumstances” and that it has led members to take the necessary steps for engaging in action (Bryman & Bell, 2011, p. 393).
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Appendix 1 - Interview Guide 1

- How long has your science park been operating?

**International Networks**

The degree of international orientation of each science park

- How many international networks do you have? On what platforms are the international networks built?
  - To which country?
  - Which industry?

The importance of international activities for the tenants

- How many international contact do the tenants already have?
- Do they independently use these networks after the service provided?

International Workforce

- How many employees with multicultural background – born outside the country?
  - From which country?
- How important is it having an international competent employee in your science parks?
- How important do you consider having international contacts for acquiring international market knowledge?
- Throughout the years have you increased or decreased employees with foreign background?

**Knowledge Transfer**

Measuring for trust (adapted from: (Rempel, J.K. 1985))

- How often do you engage in activities with your international network?
- To what extent can you share information with your international networks?
- How often do legal barriers occur against information sharing?

Measuring for culture (adapted from: (Bochner and Hesketh, 1994))

- How important is the values of your international partners? (In which sense?)
- Does ethnic diversity contribute to new insight on innovation?
- How difficult is it to communicate with multicultural networks?
- How do you manage this?

Form of communication and management

- Who is handling the relationships?
- To what degree would you say that you understand the network of your colleagues?
- To what extent do you have a culture diverse workplace?

Tacitness of knowledge transfer

- How often is the exchanged knowledge put into documents or any tangible form? (adapted from: (Grassler, A. & Glinnikov, R. 2008).
- For how long is this stored within your institution?
- Are you able to interpret the information received?
Appendix 2 - Interview Guide 2

- What are the challenges for your science park today?
- Could you share perspectives on the growing trends for internationalization for the science park?
- Regarding the Triple Helix concept, could you name a good activity and a bad (needing improvement), for each of the three elements?

Networking & Multiculturality
- For internationalizing, what has helped and what not, in optimizing networks and establishing companies abroad?
- Through whom and how have you created most of your international networks?
- Does ethnic diversity contribute to new insight on innovation?

Knowledge Transfer & Trust
- How often is knowledge documented?
- How easy is it to convert knowledge gained from collaborative project and engagement abroad, into new knowledge?
  - Do you see any patterns of knowledge transfer ease with some countries than others? (uncertainty, risk)
  - What is it that make you engage with partners? (how is trust for knowledge exchange built)