Exploring the concept of open innovation in low-tech SMEs. Evidence from Cyprus and Latvia.
Master Thesis in Business Administration

Title: Exploring the concept of open innovation in low-tech SMEs. Evidence from Cyprus and Latvia
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Abstract

Background: The concept of open innovation has surfaced for over a decade now and organizations have started to realize its importance and contribution. It has been also a topic of discussion during the last years but it still paves the way for future research. However, majority of the studies made so far were focused on its origins meaning high-tech companies situated in developed and large countries. Little, has been contributed to a context of low-tech SMEs in developing and developing countries.

Purpose: The purpose of this study is to explore the concept of open innovation in a context of low-tech SMEs in small and developing countries but as well as exploring the knowledge perspective in relation to innovation process.

Method: The methodology used for this study is qualitative with an inductive approach. The empirical data were gathered through an appropriate inductive approach by using semi-structure interviews. With the help of frame of reference, we structured our topic guide for our data collection method. The gathered empirical data are then analysed using the inductively based analytical procedure of template analysis. Lastly, as the template analysis procedures suggest, coding was carried out in order to see emerging patterns and relationships between our empirical data, which later they were interpreted as our results.

Conclusion: The empirical results show some patterns between elements of the concept of open innovation. Concluding, the low-tech companies in small and developing countries are not fully aware of the concept of open innovation. However, they are exploiting several of the elements that surround open innovation. Regarding knowledge in their innovation process, we conclude that managerial levels play a crucial role. Since they do not have a systematic innovation process and instead are more opportunistic towards innovation, all the efforts for any knowledge identification and exploitation reside usually to the hands of one individual.
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1 Introduction

This chapter introduces the reader to the topic starting from a wider perspective and later provides a comprehensive understanding about the chosen field. In this chapter the reader can find the problem discussion explaining the past studies made on the subject matter and the current issues.

1.1 Background

During the last decades, we have witnessed rapid technological improvements across various industries which consequently has resulted in the creation of new and innovative products and services. Innovation has become a more widely spread and linked term in many contexts. For instance, the term innovation has been often accompanied with other business and economic terms like innovation strategies, innovation leadership, innovation systems, and can have many different definitions (Baregheh, Rowley, & Sambrook, 2009). Prior studies have emphasized on many aspects interlinked with entrepreneurship and predominantly the field of innovation and that both aspects are crucial for firm’s competitive advantage (Sulistyo, 2016). Just like the term entrepreneurship, innovation is interpreted differently from different individuals (Landström, Åström & Harirchi, 2015). These two phenomena are characterized as closely intertwined because and share common theoretical roots, they often been viewed as necessities in economic growth creation both at a firm level and national level (Frank, 1998; Landström, Åström & Harirchi, 2015). However, these two phenomena have attracted attention also for their differences. For instance, knowledge that resides either in the hands of an entrepreneur or within a company does not always imply the creation of opportunities. Moreover, not all entrepreneurial firms are innovative (Brown & Uljin, 2004). This causes incongruity between these two phenomena. Prior work from Landström, Åström and Harirchi (2015), argue that although innovation and entrepreneurship share a common ground and that there is an overlapping literature for those phenomena, they are still two separate fields of studies. We can acknowledge the fact that there are two separate fields of studies but that does not alter the fact that they intertwine in various ways despite the existence of partial incongruity.

Up to now, we have mentioned the importance of innovation in relation to entrepreneurship, in which it serves as a foundation for our next concept of open innovation. Since this master thesis is concerned directly with the concept of open innovation it is important to mention where it originated and what previous studies have been made upon. Many scholars have conducted studies
on this subject from different perspectives. However, in the field of open innovation one scholar stands out; Henry Chesbrough has originated, promoted and contributed to many publications on this particular field. The concept of open innovation it is relatively a new field of study and it has surfaced just over a decade ago. In a sense, this concept has derived from the traditional research and development (R&D) where firms that did not have sufficient internal resources (human or financial) to capitalize on their own innovation ideas (Chesbrough, 2003). Moreover, this concept opposes to the traditional R&D because it is a two-sided concept. Firstly, there is the outside-in orientation where it allows external ideas and resources to flow inside the company as the name implies (Chesbrough, 2003). The second orientation is the inside-out were ideas and resources that are side-lined are outsourced for development (Chesbrough, 2003). Also, technology advancements and highly paced marketplaces impacted the decision to seek ideas outside the organization initially discovered by other individuals, that consequently organizations could commercialize and introduce to markets (Hossain, Sayeed & Kauranen, 2016). According to Chesbrough (2003), open innovation can reduce costs, minimize the time needed to reach a market and differentiate better. All these advantages supported by Chesbrough make open innovation a preferable and more profitable way to innovate that contributes to the overall performance of firms. Companies understand increasingly the importance of external knowledge and ideas that lies outside the boundaries of organizations and started to embrace it, therefore, those companies tend to develop more outward-looking strategic approaches in order to acquire some value that is available in the environment that company operates in (Mina, Bascavusoglu-Moreau & Hughes, 2014; Chesbrough, 2003). Since vertical disintegration pressures, modularisation and outsourcing, the growth of specialized technology markets, and difficulties in appropriating internal investments in intangibles have strengthened firms incentives to increase their reliance on external knowledge (Mina, Bascavusoglu-Moreau & Hughes, 2014). This shows that companies have prioritized innovation as an important factor for their growth and sustainability and, therefore, are actively using all the resources possible, internal and external, to come up with new innovations.

Deriving from the literature so far, as a first light, previous studies were made in the field of large high-tech firms, large economies, and developed countries. From those studies made, limitations were surfaced and new paths are created for future consideration and research. This is where we identified our research gap. For instance, studies on open innovation in small economies, developing countries and in small-medium firms are scarce.
Therefore, since this thesis is concerned with gathering of empirical data from two countries, namely Cyprus and Latvia, which are small scale economies, we found the topic of open innovation in that context to be limited. Therefore, we aim to contribute to that field with this research. Moreover, we are planning to examine the concept open innovation in relation to SMEs but predominantly small and micro firms that fall into the category of SME. Another topic that is related to the concept of open innovation is the absorptive capacity of a firm. Since both concepts are inter-related and concern the inbound and outbound flow of knowledge and ideas, it is important to take both into consideration for this research.

Taking all things into consideration, our research is concerned with the concept of open innovation in SMEs in a context of small scale and developing countries. This will be done by identifying if the chosen firms are aware of the concept and how they search for external knowledge in order to implement it to their innovation process. This will eventually result in new insights to a field that has merely touched upon.

**1.2 Problem discussion**

Fast changing marketplaces, new disruptive technologies, the increase of competition and newly surfaced innovations; it is not surprisingly that organizations decide to change their business models in order to adapt to the business environment they operate in and seek for a competitive advantage. A business model allows an organization to commercialize their internal capabilities and resources in order to gain economic value through competitive strategies (Chesbrough, 2010). Moreover, organizations have started to realize the imperative of innovation in order to meet the new standards of new markets, to gain a competitive edge and to increase their viability (Gunday et.al., 2011). Indeed, innovation can contribute to the overall performance of a firm, but as well recently organizations have also realized the importance of external knowledge that can be found and utilized (Chesbrough, 2003). This is where open innovation interplays and allows organizations to search and find external knowledge, new technologies and resources in order to innovate. In order to define open innovation we follow Chesbrough’s (2003, pp. 46) that defines it as: “Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well” (Chesbrough, 2003, pp. 46). However, one critical judgment is that open innovation can be considered more in favour of large high-tech firms, high-tech manufacturing and in more in general in larger firms (Mina, Moreau & Hughes, 2014).
Therefore, less attention has been given to other perspectives and predominantly past the high-tech firms. Previous studies have been made in the fields of SMEs (Crema, Verbako & Venturini, 2014) and the field past high-tech firms (Chesbrough & Kardon Crowther, 2006). Interestingly, regarding SMEs the lack of resources and competencies hinder their possibilities to innovate. This might be a turning point for them in order to start experimenting with open innovation (Crema, Verbako & Venturini, 2014). Also, regarding non-high-tech firms Chesbrough & Kardon Crowther, (2006) in their study they have concluded that non-high-tech firms have the capability to innovate using open innovation, however, they often left confused and in the end, they end up outsourcing the whole R&D department. This raises the importance of the factors that are able to adopt the concept of innovation in SMEs beyond the two already known factors in the previous studies made.

What is more, it seems that there is a correlation between the strategy a firm currently utilizes and what do they want to achieve by implementing open innovation. Consequently, strategy is also a determinant for adopting open innovation (Crema, Verbako & Venturini, 2014). Mainly, there are two orientations that are determinants, identified by Chesbrough (2003), that are previously mentioned as the outside-in and inside-out. From the moment, a firm starts thinking to adopt open innovation they need to start re-structuring their strategy in order to support it. Having the proper strategy and the proper innovation management techniques to facilitate and support the adoption of open innovation, and can consequently lead to the overall firm performance (Crema, Verbako & Venturini, 2014; Igartua, Garrigos & Oliver, 2010).

We assert that there is potential to study more in the field of open innovation in contexts that have not yet been addressed and/or have been merely touched upon. We also point out what are the current gaps in the literature that can path the way for future research. For that reason, this Master’s thesis purpose is to examine the concept of open innovation, and predominantly on SMEs in small and developing countries. The fields of SME and past the high-tech firms are merely touched upon. We see this as an opportunity to examine more in this field of open innovation and contribute to gaps that did not attract much attention so far.

Therefore, this allows us to examine firms in our chosen countries (Cyprus and Latvia) and focus on small-micro enterprises that are not specified as high-tech firms. More specifically, we aim to examine small and micro enterprises that are part of SMEs. Thus, examining such firms will provide us with new data that are country specific. According to Cornell University, INSEAD, and WIPO (2016) Global Innovation Index it has been identified that Cyprus and Latvia are ranked relatively similar having 31st and 34th place in global ranking, which indicates that these countries
are indeed innovative and relatively hold ranks that are satisfying considering their sizes. This research can help the companies from the previously mentioned countries to improve by implementing open innovation in their innovation strategy. Moreover, the rationale for choosing these countries is that they are similar in terms of population. According to Eurostat (2016), as of January 1, 2016, Cyprus has a population of 848,000 and Latvia 1,969,000 accordingly. Taking both aspects into consideration, meaning the innovation index and population of each country and the context we are exploring in, both countries fit the purpose of this research.

1.3 Research Questions

From the literature, we have derived to some research questions that were previously not addressed in the specific context we want to examine. Therefore, with the help of existing literature and gathering our own empirical data we intended to answer the following research questions:

RQ1: Are low-tech SMEs familiar with the concept of open innovation in small developing countries?

Sub RQ1: How do open innovation affect low-tech SMEs in small scale developing countries?

RQ2: How do low-tech SMEs utilize and adopt external knowledge in their innovation process?

1.4 Purpose

Surfaced from the problem discussion, we can identify a need to examine the concept of open innovation applied in a context of low-tech SMEs in small, developing countries. More specifically, how companies that fit in that context are familiar with open innovation and how are they adopting it. Moreover, since knowledge is an integral part of open innovation, we aim to explore the knowledge perspective view in those firms and how it relates to their innovation process. We aim to achieve our purpose by conducting a qualitative study and gathering data with semi-structured interviews from both countries.

Therefore, the purpose of this master thesis will serve as a contribution to academia by thoroughly discussing the concept of open innovation in the context we are exploring in by providing empirical data. Lastly, this master thesis will also serve as a foundation for future research in the context we will examine and to provide theoretical and practical implications.

1.5 Delimitations

For the particular field of study we have several delimitations. Firstly, since we are conducting a qualitative study with the chosen countries of Cyprus and Latvia, we then excluded any other
countries. Secondly, since most of the previous studies made are in the field of high-tech companies, we then exclude high-tech companies and, therefore, include a broad range of companies operating in the low-medium and low industries except the aforementioned. According to the definitions of Eurostat, medium-low and low industries are divisions 10-19; 22-25; 30-33 (see the appendix 1) in NACE Rev. 2 industry classification (Eurostat, n.d.). Lastly, considering the size of our countries and the companies that operate in those countries we have decided to choose micro and small enterprises, because there is a big deviation between allocation of resources that medium-sized companies have against small and micro enterprises. Small and micro enterprises according to Eurostat (2017) have less than 50 employees, less than 10 million euros of turnover, and less than 10 million assets.
2 Frame of Reference

This chapter aims to cover all of the contexts that concern this master thesis from a theoretical perspective. Firstly, a subchapter on entrepreneurship, innovation and knowledge is introduced in order to provide an understanding on the core foundations. Later, more specific subchapters follow regarding open innovation and its characteristics in order to provide a deeper understanding to our context. Lastly, there are the more specific subchapters that concern this research. Reading through the frame of reference, the reader can identify commonalities of open innovation and factors that we consider homogeneous.

2.1 Entrepreneurship, Innovation and Knowledge

Entrepreneurship is a vague field that is interpreted differently and definitions can vary. Many theories have been developed in order to understand the concept and its impact in various contexts. Of all the many theories of entrepreneurship that exist out there, one of them is still considered the most influential and is still used for studies; the Schumpeterian theory originating from 1934. His theory on entrepreneurship in an essence suggested that entrepreneurship and any creative innovations can determine changes in economy and create economic growth due to their “creative destruction”. (Frank, 1998; Harvey, Kiessling & Moeller, 2010; Sledzik, 2013). However, looking beyond Schumpeter, we can find different perspectives of what exactly constitutes the term entrepreneurship and how it is associated with innovation. According to Kuratko, Morris & Covin (2011), entrepreneurship can be defined as the creation of a new business, the pursuit of opportunities, the pursuit of growth, an innovation, amongst other definitions. Also, the term entrepreneurship can be found in different contexts such as the corporate world (corporate entrepreneurship), social entrepreneurship, even in academia (academic entrepreneurship). Each of these forms of entrepreneurship has its own distinct characteristics that define it and differentiate it. Despite the fact that the literature reflects the term entrepreneurship in different ways, we have decided to have in mind the definition of Brown and Ulijn (2004: 5) that define it as,

“Entrepreneurship is a process of exploiting opportunities that exist in the environment or that are created through innovation in an attempt to create value. It often includes the creation and management of new business ventures by an individual or a team”.
We found appropriate this definition of entrepreneurship because it encompasses and highlights several keywords such as value, opportunities and innovation; and it is not associated with any of the “old fashion” terms such as small business and new venture creation.

On the other hand, the term innovation can take several definitions in many disciplines and it can be viewed from different standpoints (Baregheh, Rowley & Sambrook, 2009). According to Landström, Åström & Harirchi (2015), they mention that innovation and entrepreneurship are two separate fields of studies but at the same time they are closely related and one overlaps each other. For instance, earlier study made by van Praag & Versloot (2007), concluded that entrepreneurship makes several contributions including innovation amongst employment, productivity and growth. Also, Baregheh, Rowley & Sambrook (2009), created a model of understanding innovation from different perspectives but as well provides a more detailed definition of it. For instance, one can view innovation from the standpoint of the stage that it is, the context that it concerns (e.g. the organization, the customers) and the aim of the innovation (e.g. to differentiate). We can argue that there are different definitions and interpretations of innovation and it depends from what perspective each of us chooses to view it.

Although, that there are many definitions and many perspectives to view entrepreneurship and innovation from, we can argue that entrepreneurship is an essential part of innovation in certain contexts and vice versa. For instance, Brown & Ulijn (2004), in their book they raise the importance of entrepreneurship in order for innovations to be created and to be sustained. However, they raise this issue in the context of larger firms. In the field that concerns our study, SMEs, they are concerned with two aspects related to innovation, these are primarily knowledge (Zaridis & Mousioli, 2014) and entrepreneurial activities (Hashi & Krasniqi, 2011). Here, we can also identify the importance of knowledge in SMEs. What is more, based on the knowledge aspect within SMEs, is that they are struggling with the acquisition and assimilation of knowledge that in the end can disrupt any innovation activities (Brown & Ulijn, 2004). This is highlighted by Thornhill (2006), that mentions, knowledge that resides in the firm is considered a competitive resource and that it is a crucial input to innovation. He also highlights that knowledge and the way it interacts with innovation can shape a firm’s performance (Thornhill, 2006).

It is interesting, how these three aspects of knowledge, entrepreneurship and innovation are interrelated. However, more interestingly is the way they affect firm performance depending the industry a firm operates in.
2.2 Open innovation

The paradigm of open innovation hasn’t had long history, it started its way up in 2003 by Henry W. Chesbrough who is considered as the “father of open innovation” (Chesbrough, 2012). Open innovation can be understood as a model that allows valuable ideas to come from inside or outside the company and can go to market from inside or outside the company as well (Chesbrough, 2003). The model by Chesbrough (2003) suggest that advantages which companies gain from their internal R&D expenditure have declined and that many firms that spend less on R&D are still able to successfully innovate because of the help of external knowledge, expertise and other wide range of sources. According to this, Laursen & Salter (2006) identified that firms who have open search strategies for innovative ideas, as well who search widely and deeply, tend to be more innovative. Therefore, open innovation is a model worth examining how it can help companies to become more innovative.

2.2.1 From closed to open

When discussing open innovation paradigm it is important to understand the closed innovation paradigm in the first place, which was the predecessor of how companies generated knowledge and innovation. The closed innovation concept historically has been understood as vertically integrated in the company’s structure and that knowledge and ideas were coming just from the inside company and reaching the market straight inside from it (Chesbrough, 2003).

Moreover Chesbrough (2012) identifies that research projects in closed innovation system are launched from the science and technology base of the firm and as they go through development process, some projects are stopped when few of the most successful projects are developed more and initially are chosen to go to the market. This particular model is called “closed” because the
projects can enter it in one way at the beginning from company’s internal base, and can only exit in one way, which is going into market (Chesbrough, 2012). It can be seen that this process being done solely by firm’s internal people and their knowledge thus limiting company’s ability to exploit higher levels of external knowledge. Even though most successful and famous closed innovation examples was present in 1980’s and 1990’s, closed innovation is still relatively popular in Japan (Chesbrough, 2012).

On the contrary to closed innovation, in past decades the paradigm of open innovation has developed its popularity amongst researchers because of the ease of knowledge exchange nowadays (Chesbrough 2003). The open innovation paradigm is about using external ideas alongside internal ideas, and as well external and internal path to markets as firms look for technological advantages which means sharing knowledge within and among organizations (Hossain, 2015).

![Open Innovation System](image)

*Figure 2: Open innovation system (Chesbrough 2012)*

From the model illustrated, it can be seen that open innovation is split into two parts. The first one is research where searching for new ideas and/or technology which is internal and external as well. The new technology can “come” into the company, get acquired by it and can go outside the company in different ways such as creating technology spin-offs and out licensing your technology so other companies can use it and pay for it. By this one firm’s innovations can reach market in many different ways. By this, companies can look for external organizations with business models that are better suited to commercialize a given technology (Chesbrough & Crowther, 2006).
Comparing closed innovation to open it can be identified that by applying open innovation model more ideas and technologies are reaching the development phase because if even a certain technology does not suit so good for one company it can be licensed or sold to other company who needs it and vice-versa (Chesbrough & Crowther, 2006). Even though, firms that apply closed innovation concept can switch to open innovation, that of course might come with a certain cost which is company-specific issue (Chesbrough, 2003). Moreover Chesbrough (2003) has identified contrasting principles of closed and open innovation, such as, in closed innovation firm it assumes that all the smart people work for it, instead open innovation company thinks that not all the smart people work for it, therefore, it must find a tap how it could find the knowledge and expertise outside itself and to capitalize it. As well open innovation considers that building a better business model is more important than getting first to market (Chesbrough, 2003). Another significant difference is between these two concepts is the management of intellectual property (IP). Closed innovation believes that we should protect our IP so that competitors would not profit from our ideas whereas in open innovation it is considered that we should profit from others use of our IP and that we should buy others’ IP whenever it advances our own business model (Chesbrough, 2003). It can be seen that applying the open innovation concept comes with a change of mindset about how knowledge and innovations is managed inside and outside the company and try to benefit from every opportunity external or internal knowledge brings.

2.2.2 Outside-in and Inside-out orientations

After understanding how innovation through the years have switched from closed to open, we want to introduce the reader about two orientations that are applied for open innovation in order to create more in-depth knowledge about how it can be applied in the real life.

It has been noted that traditional ways of innovating within an organization has reached its peak (Inauen & Schenker Wicki, 2011). This means that traditional R&D inside organizations is not sufficient in current fast changing and demanding environment and that the transition from a closed to open innovation system must be adopted. Organizations have already started to realize the importance of external knowledge and technology that exists (Inauen & Schenker Wicki, 2011). Chesbrough & Crowther (2006) have raised the issue that open innovation in general can be more beneficial if adopted by high-tech large firms, mainly because viewing it from a resource based view, there are more opportunities for those firms. Moreover, two main orientations have originated from Chesbrough (2003), the inside-out and the outside-in. The first one concerns the existence of current resources, technologies and ideas that are hidden and/or underutilized within
an organization and consequently they are exported to other actors in order to be assimilated to their innovation processes (e.g. creation of spin-offs, out-licensing). The latter, refers to the exact opposite, meaning that the allowance of ideas, knowledge and technology to flow inside the organization in order to be incorporated to an organization’s innovation process (Chesbrough, 2003). Both orientations allow an organization to explore and to exploit new resources in the form of intellectual, human, financial and intellectual in order to innovate. Consequently, this adoption of open innovation impacts the innovation output (Inauen & Schenker Wicki, 2011).

Adding to the initial study of Chesbrough & Crowther (2006), are Saeed, Yousafzai, Paladino & De Luca (2015), where in their study they concluded that indeed outside-in innovation orientation process is stronger in high-tech firms and also that the contrary process of inside-out process is much stronger in the low-tech firms. However, in their study they have used several factors to measure the impact of both inbound and outbound processes. Apart from the industries that they have used as their primary factor, they have also used country level factors, including culture and economy. The results showed that both processes affect innovation performance for firms that are predominantly in collectivist cultures and in developing economies. This, however, does not imply that low-tech firms should only adopt inside-out orientation in order to succeed. Thus, we can understand that the different factors are affecting both processes in both low-tech firms and high-tech firms. What is more, emphasis has been given that on the resources and competencies a firm has in its disposition. A firm’s resources and competencies that can be tangible, intangible or both, can contribute to the overall innovation performance by being antecedents to the outside-in and inside-out orientations (Inauen & Schenker Wicki, 2011; Saeed et al. 2015).

Figure 3: Outside-in and inside-out orientation model and their influencing factors. Created by Charalambous & Dreimanis (2017). Inspired by Chesbrough (2003); Inauen & Schenker Wicki (2011); Saeed et al. (2015)
The model above was developed based on the literature findings and illustrates the internal and external forces influencing the inbound and outbound orientations of open innovation. Consequently, any of those blocks of internal and external factors have the potential to impact innovation performance that will contribute to the overall performance of a firm.

2.2.3 Absorptive capacity and antecedents

Open innovation has its own challenges since it prioritizes the use of external knowledge (Parida, 2009). Thus, external knowledge is not only enough in order to innovate, internal capabilities of a firm such as internal R&D and absorptive capacity are also critical in order for open innovation to be successful (Parida, 2009). Moreover, since several scholars (Cohen & Levinthal, 1990; Chesbrough, 2003; Roxas, Battisti & Deakins, 2012) have raised the importance of knowledge and external knowledge and the impact it has to the innovation process, we find it appropriate to mention a firm's knowledge capabilities. This is also interprets as a firm's absorptive capacity in which the importance has been raised directly to innovation and both directly/indirectly to open innovation (Hadjimanolis, 1999; Teixeira, Santos & Brochado, 2008; Newey, 2010; Spithoven & Knockaert, 2012; Roper & Arvanitis, 2012), we consider it as a crucial input towards an open innovation orientation.

One other critical aspect to make clear here is that external knowledge can be found not only in other companies but also within the suppliers a firm interacts, universities, individuals and even in start-ups (Chesbrough, 2003; West & Bogers, 2014). Absorptive capacity (ACAP), as defined by a later conceptualization by Zahra and George (2002:186) is “a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability”. This definition refers directly to knowledge that lies outside a firm’s boundaries. However, there is more to a firm’s capability to absorb external knowledge. This means that there are two subcategories of ACAP, the potential (PACAP) and the realized (RACAP) (Zahra & George, 2002). They add that one complements the other. Meaning that either a firm will realize the knowledge and fully exploit it (RACAP) or acquire and understand (PACAP) external knowledge without exploiting it. However, both are important to ACAP, because a firm cannot exploit knowledge without first identifying it and understanding it. Therefore, PACAP is the predecessor to RACAP that in overall, fuse together to form ACAP.

What is more, Levinthan & Cohen (1990), have also studied the phenomenon of ACAP and they concluded that ACAP is used as an indicator of any innovative activities that in the end allows R&D of a firm to acquire, assimilate and exploit new external knowledge. In comparison to the
studies made by Levinthan & Cohen (1990), Zahra & George, (2002), it seems that there is a common ground in the capability of a firm to absorb external knowledge. The common ground is at the firm's core capabilities such as the flexibility of strategic change when it is needed. Also, diversity of knowledge sources is an antecedent factor to ACAP, meaning that a firm that has external partners, suppliers and key stakeholders, has more chances of identifying new knowledge and assimilating it. Besides the abovementioned antecedents, we need to identify what causes a firm to enable ACAP. Triggers of ACAP can be found both internally and externally. Internal triggers can result from a firm's bad performance or even a failure (Zahra & George, 2002). Strategy re-design can be also a trigger, a firm’s new strategy can trigger ACAP in order to achieve the new objectives and goals set. A new strategy can include merging with another firm or the joint development of a new product, service or technology. Strategy has an important role in the resource allocation of a firm, if properly designed can allocate resources efficiently and achieve the desired outcomes. Moreover, there are also external triggers. For instance, any turbulence to the external environment such as the emergence of new and destructive technologies that can be able to hinder any efforts achieving any set of objectives that consequently affect firm performance (Zahra & George, 2002).

However, having the capacity to absorb knowledge is not only enough. Roxas, Battisti & Deakins (2012), argue that knowledge absorption also depends on the owner and managerial intra-firm level as they identified. This translates as the efforts of the owner and managers in a small business context to identify, acquire and exploit any internal and external knowledge. The efforts and techniques adopted from the owner and the managers subsequently impacts the knowledge absorption and it is based on their skills and abilities to do so (Roxas, Battisti & Deakins, 2012). This makes perfect sense because if they do not possess the right skills and abilities to identify any important knowledge they might miss it. Therefore, having in mind the importance of knowledge in the innovation process, by not identifying any potential knowledge that exists will consequently result on an impact on firm performance.

In summary, derived from the literature we illustrate the triggers to ACAP and sources of external knowledge that a firm can absorb from. Also, as illustrated in the model below ACAP is divided into the two subcategories of PACAP and RACAP that are essential to formulate the overall ACAP. Without PACAP the overall ACAP cannot operate because is the initial stage that leads to RACAP end eventually formulates ACAP. We consider that the model provides a comprehensive understanding of the overall absorptive capacity and its impact on innovation activities and performance.
2.3 Open innovation, strategy and SMEs

Since the open innovation literature so far has been mainly linked with relatively large and international firms, it still lacks literature on open innovation in the context of SMEs, therefore, in the further chapter we want to examine, what has been done before in this field of research. Chesbrough & Appleyard (2007) have highlighted the encouragement of adopting a strategy that will foster openness and innovation that will result to value creation and capture. Several studies have been devoted to examine innovation in relation to small and medium enterprises (Hadjimanolis, 2000; Crema, Verbano & Venturini, 2015; Rosenbusch, Brinckmann and Bausch, 2011) but as well the relation of open innovation (Ahn, Minshall & Mortara, 2015). The results from studies, however, are controversial. SMEs have been notably compared to large scale firms in many aspects in general but as well as their relation to innovation. Predominantly, they have noted for their lack of resources, their not so strong network and their market influence (Hadjimanolis, 2000) on contrary to large scale firms. Subsequently, this can impact their innovativeness considering the factors needed to innovate. However, Rosenbusch, Brinckmann and Bausch (2011), concluded that if SMEs despite their scarce resources and other disadvantages they have in relation to large scale firms, by adopting an innovation oriented strategy that will nurture any innovative activities can consequently be beneficial. On the other hand, such activities are associated with uncertainty and risk. Adding to this, Bigliardi (2013), examined the effect of innovation on firm performance in SMEs from the financial perspective. She concluded that SMEs who offer innovative products that create new demand in niche markets are able to compete with large scale firms that they only rely on resources. While small and medium enterprises have been compared with large enterprises for their lack in resources and the contribution to innovation, it

Figure 4: Absorptive capacity model. Built upon the model of Zahra & George (2002)
can be said that SMEs with the right balance of external and internal resources in the form of physical, financial and human they can innovate and keep up with larger enterprises.

Although, little has been touched upon on the relationship between strategy of SMEs in relation to open innovation, Crema, Verbano & Venturini (2015) have studied this relationship. The results of their study, are consistent with other studies that innovative activities and innovation are positively related to firm performance. However, they showed the relationship between three different strategies of innovation, diversification and efficiency strategies in relation to both orientations of open innovation (outside-in and inside-out). The results showed that any of those three strategies and combination of the three, in the end are affected by the concept of open innovation. This is because the firms opening their boundaries can take advantage of resources (knowledge, ideas or technological) and other expertise from other actors in their environment that in overall contribute to innovativeness and their firm performance. Moreover, their study has been also based on some influencing factors of SMEs such as firm size, turbulence in the environment, managerial systems and technological influence. These factors are consistent with factors in other studies examining innovation and open innovation in relationship to innovativeness (Hadjimanolis, 2000; Ahn, Mishall & Mortara, 2011).

Moreover, according to a recent study by Saebi & Foss (2015) it seems that the adoption of an open strategy and predominantly the inbound (outside-in) depends also on the diversity of knowledge search (breadth) and on how much and how intense a firm can absorb knowledge but also the involvement of the source they get knowledge from (depth) in the innovation process. However, achieving balance between these two aspects of breadth and depth is needed in order for an open strategy to work. This because, if a spillover of external resources can lead to restructuring of the whole business model while too much involvement of the sources in the innovation process can cause inconsistencies and lose control of the process that consequently will not lead anywhere (Saebi & Foss, 2015).

Hossain (2015), has explored the concept of open innovation in relation to SMEs. He highlights the importance of innovation for SMEs, but as well the importance of open innovation and the factors that facilitate it. He also mentions the importance of networking amongst SMEs and absorptive capacities. Consequently, these are of the most importance for SMEs to adopt an open innovation approach. Also mentioned, is the collaboration efforts of SMEs. It seems that collaborating with other actors it can decrease costs and increase market performance (Hossain, 2015). However, open innovation can have its challenges. Predominantly, the challenges associated are the protection of intellectual property related to collaboration with other actors.
Another challenge as mentioned is the maintenance of networks; maintaining such networks that can assist the adoption of open innovation can be a challenge for SMEs due to their nature, meaning their resource limitations (Hossain, 2015).

2.3.1 Innovation and low-tech industries

In relation to the previous chapter where we examined the existing literature on open innovation in relation to SMEs, we want to further expand the knowledge on companies that operate in low-tech industries. As mentioned before, mainly the open innovation literature has focused on large, high-tech companies, therefore, we see that low-tech companies deserve more research as well.

Innovation nowadays is must for certain firms in order to grow and survive. This is mainly due to the fast changing technological advancements and competitive forces firms face in the industries they operate in. Not all industries, however, experience the same forces. For instance, one can expect such forces to be more dominant in high-tech industries. Nonetheless, innovation is equally relevant for non high-tech industries (Bay & Çil, 2016). Although, low-tech industries have been characterized for their scarcity in their resources that concern financial, human and of course technological they still have a wide range of options to consider when searching for innovations (Bay & Çil, 2016). Predominantly, Bay & Cil (2016) mention the importance of factors influencing the innovation process in such low-tech industries. Factors that include strategy and learning (knowledge) are consistent with previous findings earlier in the literature. Thus, one can argue that knowledge and strategy are utmost importance for innovation process in low-tech firms. Speaking in terms of knowledge in the innovation process; the importance has been previously raised by many scholars. A study made by Saenz, Aramburu & Rivera (2009) highlights the importance of knowledge and knowledge sharing in relation to innovation performance. Predominantly, they concluded that knowledge is important because it results to new idea generation that consequently adds to the innovation capability of a firm. Endorsing to this are Belso-Martinez, Molina-Morales & Mas-Verdu (2013) where they mention the importance of knowledge and specifically the external knowledge and the impact it has to the innovation process amongst other influencing factors namely, a firm’s previous experiences with innovation and a firm’s internal capabilities. This is also supported by Hirsch-Kreinsen (2008), mentioning that knowledge acts as an antecedent to innovation approach and to the overall innovation process in low and low-medium tech industries. Apart from the importance of knowledge he also underpins the importance of networking. He refers to networking as collaborations with different actors such as other firms or suppliers that are more technology oriented. In our our view, this refers to the concept of open innovation in an
indirect way. Moreover, E. Kirner et al. (2009) raised the importance of R&D spending in relation to innovation performance in High-tech and low-tech industries. The results showed that high-tech firms are more innovative because of their investment in their R&D. On the other hand, low-tech industries that do not possess such capability to invest in their R&D are more weaker in their innovation performance. This is also supported by a re-conceptualization to the original study made by Hirsch-Kreinsen (2008) by Santamaria, Nieto & Barge-Gil (2009) in which they indeed support the finding of the initial study but they also add that any activities performed beyond R&D are strongly associated with innovation process and performance in low and low-medium tech industries. Such activities are the use of technology and personnel training.

2.3.2 Open innovation in low-tech industries

To make this section more clear, little can be found regarding open innovation and low-tech industries. However, by refining our research keywords more we were able to examine more literature that in combination with previous literature and by connecting the dots we were able to craft this section of frame of reference.

When regarding open innovation and its relation to low-tech industries, there is a shortage of literature. Despite that, Chesbrough & Crowther (2006) have argued that open innovation can be adopted to low-tech firms. More specifically, the outside-in orientation of open innovation is more relevant and more prevailing to firms operating in low-tech industries, where on the contrary inside-out orientation prevails in high-tech industries (Chiaroni, Chiesa & Frattini, 2011). What is more, an article by Vanhaverbeke (2011), discusses the benefits of open innovation in low-tech SMEs. He points out that although in low-tech firms, innovation seems like a big challenge without the necessary resources in the internal R&D of the firm. However, the concept of open innovation is more feasible because of the range of options that can be found outside the firm and the potential collaborations with other companies. Moreover, in the article he also mentions that the biggest threat that low-tech companies face is the threat of commoditization due to competitive forces. Nonetheless, firms that are implementing a more open approach towards innovation are more likely to overcome that threat. Predominantly, by adopting open innovation and more specifically the inbound orientation, low-tech firms can adopt a diversification strategy that subsequently will assist them to enter new markets (Vanhaverbeke, 2011). The concluding remarks by Vanhaverbeke are consistent with the findings of the study made by Crema, Verbano & Venturini (2015), that a diversification strategy adoption that works in parallel with open innovation can and will be beneficial for firms.
Furthermore, studies made on collaboration and the relation to low-tech industries showed that low-tech firms can take advantage of technology intermediaries that can integrate in their R&D and as well help them build the necessary absorptive capacity in order to integrate external knowledge (Spithoven & Knockaert, 2012). Collaborations can also assist to the successful R&D projects that have the potential to be technologically advanced by allowing the inflow of knowledge and consequently result to innovations (Teixeira, Santos & Brochado, 2008). Adding to this is Maietta (2015), concluding that inbound knowledge, predominantly from universities can result to product innovation. We acknowledge the fact that collaborations can be feasible with multiple actors such as universities other firms even competitor firms, and this is already been shown in previous literature.

2.4 Open innovation in developing countries

As in previous chapters we examined the existing literature about companies with characteristics related to their size and types of products (low-tech), furthermore, we want to examine the context those companies operate in. In this chapter we intend to review and argue on the literature that has been done on open innovation in developing countries. By this chapter we want to raise awareness on how the geographical location of companies can influence the adoption of open innovation whether the country is less developed and/or small sized.

For economically developing countries it is highly important to sustain growth and innovation has been considered as one of the most important factors that help companies and more broadly - countries, to achieve it (Vrgovic, et al., 2012). Since most of the previous studies about knowledge sharing and exploitation regarding the concept of open innovation has been studied in the context of western highly developed countries in which the concept has originated, literature lacks the research about how open innovation can be applied in developing and emerging economies (Hailekiros, Renyong, & Qian, 2016). Application of open innovation in emerging economies is feasible as well and can be beneficial for them to sustain business growth (Chaston & Scott, 2012). Therefore, companies operating in developing economies should not be left out regarding business research in relation to open innovation concept which can be useful to adopt for companies that are operating in developing countries. According to Chaston & Scott (2012) they have identified that companies that engage in open innovation have higher business performance indicators compared to other companies, without taking into account whether it is emerging or advanced economy. On the contrary, Xiaobao, Wei & Yuzhen (2013) argue that in developing countries can be many underdeveloped intermediary markets that are not pressuring companies to become more
efficient and is not enabling efficiently sell-off company’s knowledge assets. On the other hand, market competition can be the factor that foster innovation in those markets. Therefore, the relationship between open innovation and performance in emerging economies, under the condition of strong product market competition and weak intermediary market infrastructure is very ambiguous (Xiaobao, Wei, & Yuzhen, 2013). Moreover this assumption shows a research gap in the literature of whether open innovation is beneficial if the product market is underdeveloped.

It has been identified that small companies tend to be less open in terms of their number of external linkages than their counterparts and since in developing countries around 99% of companies are SMEs it makes it crucial to facilitate adoption, implementation and management, and most importantly to build regional and/or national open innovation ecosystems (Sağ, Sezen, & Güzel, 2016). Additionally, there are certain problems and barriers for SMEs to implement open innovation in developing countries that are barriers of considerable time and effort, as well as limited and under-skilled human resources that tend to fail in detecting, assimilating and managing external know-how (Sağ, Sezen, & Güzel, 2016). According to Sağ, et al, (2016) adoption of open innovation approach for SMEs in developing countries nowadays is crucial since most of those companies don’t possess vast resources that would allow them to fail, and since the cost and the risk of innovation has increased in recent years, collaborations either during early stages of new product development or during commercialization holds serious importance. This assumption theoretically explains that open innovation could be an approach that could help SMEs in developing countries to increase their competitiveness and business performance, but so far there has not been much research on the issue. Since those companies mostly lack resources, open innovation can be helpful to reduce the cost of innovations failure, but it can be efficient when the labour is skilled to identify and implement innovations.

2.4.1 Innovation and small economies

Probably the hardest challenge for small countries with small economies like Latvia and Cyprus is to maintain a level of competitiveness amongst their bigger and more developed countries in Europe. As such, one important pillar in order to maintain a degree of competitiveness is to innovate (Roper & Arvanitis, 2012). But what determines innovation performance in a small country context? According to the DICE report (2010), much of the productivity in the different member states of EU are affected by innovation activities. Such innovation activities in returned are affected by a micro level factors which subsequently cause a reciprocal activity. These micro level factors according to the report of DICE (2010) are the lack of ability to use new technologies,
the expensive human resources, lack of market demand for innovation and not planning to innovate just to mention the most important.

Apart from micro level factors, there are some more firm specific factors. According to Roper & Arvanitis (2012), in their study in the context of small economies, they used as measure the innovation value chain (IVC) that in essence concerns a firm's absorptive capacity. This eventually, as it seems is one factor that determines a country's innovative factor alongside the firm's capabilities to innovate that can lead to increased productivity. Moreover, they have found a strong correlation between the inbound flow of knowledge and a firm's internal knowledge and their abilities to exploit the knowledge into innovations. This means that a firm’s internal R&D can be enhanced by allowing others to participate in the form of external knowledge. In their concluding remarks they have highlighted the importance of openness towards innovation. What is more, another factor that they have identified in their study is the innovation policies which a country encourages. More specifically they have found that a strong innovation policy encourages knowledge search. As we have seen earlier knowledge is strongly associated with innovation, therefore, making it a crucial pillar towards innovation. Juxtaposing to this argument of internal R&D in the context of small economies is Carvalho, Costa & Caiado (2013), arguing that opening up and using external way of R&D process to innovate is not significant and that it does not make much difference.

Furthermore, an earlier study made by Hadjimanolis (1999), it has been mentioned that lack in resources and technology in the business environment are hindering any innovative activities and consequently the creation of innovations. He also mentions that government policies have a crucial impact on innovation because they can either hinder or nurture the adoption of new technologies (Hadjimanolis, 1999). On a later work of his, in a small country context Hadjimanolis (2000), indicated some factors that can affect innovation performance. He concluded that less advanced countries can hinder any innovative activities. This mainly applies to the context of SMEs. One important finding in the study is that competitive forces in the small country context is not related to innovation. As he mentions this is due to the rarity of innovations in a small country. Lastly, in his study he also confirms other literature findings that R&D expenditure is also another critical factor.

In a more recent work by Hadjimanolis & Dickson (2001); Musyck & Hadjimanolis (2002), they have used a country’s National Innovation Systems (NIS) in order to examine the relation of national innovation policies (NIP) and innovation performance of a country. They raised the importance of a NIP in order to nurture and foster innovation activities. The results showed that
firms in a such a small country may suffer and find it hard to innovate. This is because of the NIS of the country implements and also the innovation policies. Also, some of the factors that hinder any technological advancements and learning that may lead to innovations, is the absorptive capacity of a firm and their networks. Although, their findings are dated back to 2002 and some situations and conditions might have changed since; we argue that their finding are also consistent with previous literature. For instance, their findings with the study of Hirsch-Kreinsen (2008) that mentions that the networking of firms is important for collaborations with external actors. Moreover, they mention a firm’s absorptive capacity is important for learning which again is related to innovation processes of a firm that we have reviewed earlier in the literature.

Jaffe (2015), mentions that in a small country context, knowledge and research spillovers are more or less like a paradox. This is because, spillovers can be vastly found and they can be a fraction of a cost. On the contrary, there are a lot of other firms that may want the same research and knowledge spillovers. He also adds that entrepreneurship and those spillovers are essential to foster innovations in a country. However, taking into consideration the abovementioned, we can argue that each country has its own policies and NIS. This implies that what works for one country might not exactly work for other countries.

2.4.2 Innovation in Island economies

Due to their nature, islands can be faced with many challenges like the limited economic activity and loss of population due to the lack of working opportunities that can also result to the loss of highly skilled human capital in firms (Interreg Europe, n.d). Islands, are predominantly depend on the export of tourism and their agriculture (hence Cyprus that the economy heavily relies on tourism). However, their nature can be also beneficial and surface new opportunities towards innovation because island communities are much stronger due to their size and thus can have the advantage of networking. This strengthens the argument of Hossain (2015), that networking is beneficial for the adoption of open innovation in SMEs. Interreg Europe (n.d), mentions that in order to capitalize on such opportunities to innovate, islands need to improve their innovation policies in order to promote entrepreneurial activities and also to become innovation hubs. Moreover, by improving the innovation policies alongside the collection and sharing of knowledge gained by networking can consequently improve and increase innovative activities that can have the potential to be exploited and convert to innovations (Interreg Europe, n.d). This is supported by Croes (2006), mentioning that in a small island economy the adoption of policies can facilitate innovation. This strengthens the findings of Musyck & Hadjimanolis (2002); Hirsch-Kreinsen
(2008); that they argue that innovation policies and networking of firms can increase innovative activities in a small economy country.

2.5 Theoretical summary

With all the above mentioned said and concurrently taking into consideration the previously examined literature and the concept of open innovation we can argue that the literature findings are consistent with each other even in different contexts. Some of them might not be directly related to it but they overlap. Thus, we can assert that by adopting an open orientation towards innovation, low to medium-low tech firms have the potential to innovate. Therefore, some factors that emerged from the earlier literature shows a common ground between the innovation in low-tech industries with the adoption of a more open approach to it. It seems that there is a homogeneity regarding the antecedents towards innovation processes within firms and in different industries. Such antecedents can be said that it is knowledge in particular, absorptive capacity and strategy adoption to foster a more open approach and a more innovative process. Moreover, in regards to innovation in small countries and developing economies, again we can identify commonalities with the openness concept. For instance, we examined the literature on absorptive capacity and knowledge and it seems that it is an important pillar in the overall innovation process. In relation to SMEs, there is a commonality of factors that help to adopt open innovation. These factors, are similar if not identical to other factors that apply beyond the context of SMEs. Therefore, since we critically reviewed the existing literature, we continue from here with some key take aways to put forward in our research. For instance, we can identify key themes that we can integrate for the development of our interview structure and the comparison with our empirical findings. Those key themes that emerged are primarily, knowledge, strategy, technology, innovation, collaboration and networking.
3 Methodology and Method

This chapter discusses our research philosophy, research purpose and the approach to it. Also we discuss the firm selection criteria and the strategies used to reach the selected firms. Lastly, this chapter illustrates the data collection methods, methods used to analyse the data and our ethical perspective towards this research.

3.1 Research Philosophy

For this thesis we aim to study and to extend the knowledge on the concept of open innovation in relation to low-tech SMEs in small scale developing countries, therefore, in order to do a proper research, topics of ontology and epistemology has to be discussed. According to Easterby-Smith, Thorpe, & Jackson (2015) ontology is about the nature of reality and existence, whereas epistemology is about the theory of knowledge and helps to better understand the best ways of enquiring into the nature of the world. Regarding ontology we approach our thesis from a relativistic point of view. Relativism is suggesting that scientific laws are not simply out there to be discovered, but that they are created by people, therefore, different views can lead to various truths, because facts partly depend on the viewpoint of observer (Easterby-Smith, Thorpe, & Jackson, 2015). Relativism ontology helps us to get a better understanding of researched issues related to open innovation in different companies, which means that there are many perspectives and there cannot be one single truth or solution for everything because the viewpoint of the observer is what matters the most, and can change when it is observed by other observer.

Regarding epistemology, we view this research from social constructionism perspective. From constructionist position, the assumption is that there may be many different realities, therefore, a researcher can gather multiple perspectives and as well to collect views and experiences of diverse individuals and observers (Easterby-Smith, Thorpe, & Jackson, 2015). With the constructionism approach we can better understand people’s meanings, adjust to new issues and ideas as they emerge (Easterby-Smith, Thorpe, & Jackson, 2015).

A combination of relativism ontology and constructionism epistemology is complementary combination because it allows to do a deeper research and since it is possible to look from different standing points what people see and how they perceive things, letting us to come up with conclusions how open innovation can benefit different companies that share certain signs.
3.2 Research Design

The purpose of this research can be addressed as exploratory, since we are aiming to seek new insights and shed light to new phenomena (Saunder, Lewis & Thornhill, 2009). Exploration, can be also addressed as the process of examining or investigating (Stebbins, 2001). Moreover, an exploratory research relates to a qualitative research that aims to the development of a theory from gathered data and the methods of which those data were gathered (Stebbins, 2001). An exploratory study is also advantageous to the researchers because it is flexible and it can adapt to any changes that might happen (Saunder, Lewis & Thornhill, 2009).

3.3 Research Approach

According to Saunder, Lewis & Thornhill (2009), a researcher can choose from two approaches to a research or even combine the two approaches together. These are namely deductive and inductive approaches. The first approach is concerned with testing one or more hypothesis and illustrates “the relationship between theory and research” (Bryman & Bell, 2011:11). The latter approach is concerned with the collection of data and the analysis of data that consequently assist the researcher to the development of a theory. Moreover, an inductive approach allows the researcher to examine in the context where events are taking place, thus allowing a smaller sample to the study (Saunder, Lewis & Thornhill, 2009). Inductive strategy is associated with a qualitative approach and its methods like semi-structured interviews; but also enables for a comprehensive understanding of the nature of the purpose by the making sense of the data gathered (Saunder, Lewis & Thornhill, 2009). However, there is another approach called the abductive (Bryman & Bell, 2011), which allows researchers to overcome the limitations faced when conducting the other two approaches of inductive and deductive. Also, abductive approach besides overcoming the limitations of other approaches it is also more complex for researchers to use, this is because a researcher needs to go back and forth between theory and empirical data in order to understand the theory and on a later stage, contribute to it (Given & Saumure, 2008).

For the purpose of this study we are using an inductive approach. This approach will allow us to be more flexible, meaning that we can go back and forth in the data and do small changes (Saunder, Lewis & Thornhill, 2009). What is more, an inductive approach as characterized by Sauner, Lewis & Thornhill (2009), is strongly associated with the context of the researchers they want to examine. This is important for this thesis because a large sample will not be needed and instead a smaller sample is more fitting. We also argue that due to our limitations and some difficulties we were hindered in obtaining a larger sample.
For this master thesis, we systematically examined the literature and we put together a framework regarding the context we want to explore. Moreover, the framework provides a path for us to deduct the most important aspects we want to examine in order to guide us through the data collection. For instance, from the literature we deduct the most important factors that concern open innovation such as knowledge amongst others. Adding to this, Given & Saumure (2008) mention that categories (as the ones we will examine) surface from previous studies and relevant literature. We derived some variables and categories from the literature, that we will use to examine their relation to our context. Although, all of the abovementioned can be considered a deductive approach for a research. However, in our research we argue that it was an option to follow a deductive approach but after careful consideration and extensive reading and planning on what do we want to achieve we considered an inductive approach is more appropriate for this thesis. To justify this, we argue that although the literature is rich in some contexts (i.e the origins of the concept), it is scarce in the context we want to examine. Therefore, we want to fill in the gap that we identified with new theory derived from our data; in which this is the purpose of an inductive approach. We assert, there is a theory to build rather than testing those factors derived in relation to our context and due to the fact that researchers that adopt an inductive approach are likely to include a deductive approach as well (Saunder, Lewis & Thornhill, 2009).

3.4 Selection of firms

For the purpose of this study, the firm selection were based on some certain criteria and on a mixed sampling strategies. First, since we are travelling to the countries that are involved in this study and due to the time constraint we will first start by choosing known companies to us. Meaning that the first companies we are selecting are the ones in our personal networks. Utilizing existing contacts is a great way to gain access not only to known but also unknown contacts that can assist us for the purpose of this research (Saunder, Lewis & Thornhill, 2009). After that, a sampling strategy that will be used is the snowball sampling. This allows us to find participants suggested by other participants that are difficult to access (Easterby-Smith, Thorpe, & Jackson, 2015).

Furthermore, apart from the sampling strategies we have set some criteria for the firms to be met in order to proceed. Firstly, since we focused our research on SMEs notably micro and small enterprises, we, therefore, based our SME criteria to be met with the European Union criteria. Meaning that, selected firms can range from 1 to 50 in employee force and from less than 10 mil
Euros in turnover (Eurostat, 2017). Also, one more criteria was that the chosen firms to operate in low, low-medium tech industries according to NACE Rev. 2 classification (see the list of low and low-medium tech industries in Appendix 1).

Table 1: Interviewed companies

<table>
<thead>
<tr>
<th>Companies</th>
<th>Duration</th>
<th>Respondent’s position</th>
<th>Employees</th>
<th>Turnover (million EUR)</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>35:20</td>
<td>Senior manager</td>
<td>27</td>
<td>4,6</td>
<td>Food</td>
</tr>
<tr>
<td>Company 2</td>
<td>35:23</td>
<td>Director</td>
<td>18</td>
<td>N/A</td>
<td>Wood</td>
</tr>
<tr>
<td>Company 3</td>
<td>33:27</td>
<td>Director</td>
<td>7</td>
<td>N/A</td>
<td>Plastic</td>
</tr>
<tr>
<td>Company 4</td>
<td>28:12</td>
<td>Director</td>
<td>32</td>
<td>3,5</td>
<td>Wood</td>
</tr>
<tr>
<td>Company 5</td>
<td>38:56</td>
<td>Accountant/ owner’s daughter</td>
<td>17</td>
<td>0,7</td>
<td>Food</td>
</tr>
</tbody>
</table>

3.5 Data collection

Taking into consideration the research design adopted to this research, our primary objective for the collection of data was to explore the concept of open innovation in relation to SMEs in Cyprus and Latvia, but as well the adoption of external knowledge on their innovation process. In order to gather the data an approach of face to face in-depth, semi structured interviews was used. The interviews were conducted in Latvia and Cyprus that are countries of origin of the authors, therefore, interviews were conducted separately in order to get more in-depth information by avoiding any language barriers. Consequently the interviews were conducted in the mother language of the respondents and later transcribed and translated to English.

3.5.1 Semi-structured interviews

According to Saunder, Lewis & Thornhill (2009), interviews can assist researchers to obtain data that are considered valid and reliable. The data gathered can be relevant to our research questions and what do we want to achieve. That it is when the interview is precise with our research, meaning the purpose and our chosen strategy (Saunder, Lewis & Thornhill, 2009). Interviews are classified into two categories; standardized and non-standardized. For the purpose of this research we are using the latter term that refers to the use of semi-structured in depth interviews. In order to conduct non-standardized interviews, researchers prior to the interviews with the respondents
need to have a list of all the topics they want to cover. Moreover, this type of interview allows the researcher to ask follow-up questions for more elaborated answers.

Since our research is exploratory in the nature, in-depth, semi-structured interviews can assist us to get ‘find out what is happening [and] to seek new insights’ (Robson 2002:59 as cited in Saunder, Lewis & Thornhill, 2009:139) and to explore the answers and specify which answers we want for the respondent to elaborate on. This has also been referred as Laddering (Easterby-Smith, Thorpe, & Jackson, 2015). On the contrary, according to Saunder, Lewis & Thornhill (2009), the researchers behavior, approach and interaction with the respondents have the potential to impact the data. Therefore, the researchers need to endure they do it in a manner that will not alter any data and minimize any respondent bias. Since this research is qualitative, Easterby-Smith, Thorpe, & Jackson (2015), raise the issue of reliability related to this type of interviews. Saunder, Lewis & Thornhill (2009), also raise the concerns of bias in non-standardized interviews. They mention the way of the interviewers interact with the respondent, meaning the tone or the body language can lead to respondent bias. Understanding the respondent and the way we respond to some of the answers is equally important because researchers do not want to force their beliefs and the frame of reference throughout the process (Saunder, Lewis & Thornhill, 2009).

A table describing the topic guide and discussion points was developed for guidance through the interview process.

*Table 2: Interview topic guide*

<table>
<thead>
<tr>
<th>Topic guide</th>
<th>Discussion points</th>
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<tbody>
<tr>
<td>Company information</td>
<td>Years of operation</td>
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<tr>
<td></td>
<td>Size (number of employees)</td>
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<tr>
<td></td>
<td>Core Industry</td>
</tr>
<tr>
<td>Services/products information</td>
<td>What products/services the company offers</td>
</tr>
<tr>
<td></td>
<td>Recent new products</td>
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<td></td>
<td>Planned future products/services</td>
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Moreover, in order to capture all the information that we need from the interviews, we will record them. The recording of the interviews will be done with the approval of the research participants. This will allow us not only to retain the data but as well transcribe them on a later stage so we can go back and review them in case we might not be able to take notes that will be useful in our analysis.

3.6 Analysis of empirical data

As we have previously disclosed our research is qualitative with an inductive approach, therefore, we have decided to apply a respective and appropriate technique to analyze the gathered data from qualitative interviews. In order to better analyze the qualitative data we have chosen to use Saunders et al. (2009) technique. According to Saunders et al. (2009), an inductive approach is mainly linked with non-standardized interviews, therefore, our choice of semi-structure interviews justify our approach to gather data but as well to get more in-depth information from the interviewed people, whereas highly structured interviews would possibly limit their answers and our potential findings. Furthermore, to analyze qualitative data Saunders et al. (2009) have identified three categories of data analysis that are universal for both deductive and inductive approaches when undertaking a qualitative approach. These are namely summarizing of meanings, categorization of meanings, structuring of meanings using narrative. However, when it comes to the specific approach a researcher is using, there are specific analysis procedures. For instance, if a researcher is implementing an inductive approach, he can choose from grounded theory analysis, narrative analysis and discourse analysis amongst others. For a deductive approach a researcher can choose from either explanation building and pattern matching.

Since our approach is inductive, we are following the general analytic procedures for a qualitative study. However, beforehand we are using Saunders et al. (2009) universal approach of analyzing data of summarizing and categorizing. Additionally, as mentioned earlier, besides the general stages
of analyzing qualitative data, we will also use inductively analytical procedures. Therefore, we decided to follow King’s (2004 as cited in Saunders et al. 2009) template analysis. Template analysis is a way of analyzing data that are embedded in interview transcriptions (King, 2017). What is more, template analysis is situated between a content analysis and grounded theory (Easterby-Smith, Thorpe, & Jackson, 2015). It is located in between those two methods of analysis because the researchers can have predetermined codes but as well derive their own codes after the analysis. The researchers have the responsibility of summarizing the data in themes that make sense (King, 2017). Template analysis also combines both inductive and deductive approaches to it. This is justified by the predetermined categories and codes that resulted from the existing literature, that also helped us to structure our interview questions. However, the researchers have the opportunity to add or change codes and categories as they collect data or concurrently after they gathered data. This differentiates template analysis from grounded theory because in grounded theory researchers cannot pre-determine codes and categories. Moreover, template analysis allows the researchers to be more flexible in the analysis of their gathered data and allows them to adapt the data to the needs of their research (Saunders et al. 2009).

In order for us to analyze our qualitative data we imply to use summarizing and categorizing. Afterwards we will follow King (2017) steps of conducting a template analysis. First of all after conducting interviews and writing transcripts we are going to summarize the data which will help us to see emerging themes. The summaries can compress broad and vague statements into brief statements which would still hold the same sense of what has been explained in the first place (Saunders, et al., 2009). This is also referred as our initial template. At a later stage a final template will be produced that and then be used in order to present our findings and answer our research questions.

By doing that we will be able to see relationship of these themes and later go back to the text to establish their validity. Furthermore, after summarizing data, the next step is to categorize it. Categorizing in itself involves two activities which are developing categories, and attaching these categories to meaningful chunks of data (Saunders, et al., 2009). Certain codes or labels are going to be derived from categorizing that are going to be grouped. What regards on how to derive names for categories, Saunde et al. (2009) suggest three main sources that are (1) utilising terms that emerge from data; (2) they are based on the actual terms used by participants (in vivo codes); or (3) they are derived from terms used in existing theory and literature. In this thesis, coding was carried out that eventually assisted us to see emerging patterns and relationships between categories.
from our empirical data. Those emerging patterns and relationships are going to be presented in relation to the literature in chapter 5 of this thesis.

3.7 Research Quality

Quality and trustworthiness are essential elements of a qualitative research. Therefore, Given & Saumure (2008), mention some terms that are integrated parts of trustworthiness. These terms are transferability, credibility, dependability, and confirmability. Researchers, as they mention they need to be able to showcase these terms in their research to ensure quality and trustworthiness.

3.7.1 Credibility

Given & Saumure (2008), mention credibility as one of the requirements of a qualitative research to be trustworthy. It concerns with the coherence build throughout the research and illustrate the relationship between the research and the participants. This is done so that the reader comprehends and make sense of all the topics discussed but as well as be able to answer questions regarding the research design and methodology (Given & Saumure, 2008).

3.7.2 Transferability

Transferability, refers to the application of findings of a qualitative research in both broad and narrow contexts. This does not imply that a research is unworthy if can not be applied in broad or narrow contexts. It depends on how others can apply the findings in those contexts (Given & Saumure, 2008). Transferability, takes into consideration the relationship of the participants in the study and the context the research is being studied (Given & Saumure, 2008). Consequently, in order to strengthen transferability, researchers need to select participants that are highly relevant and represent the whole research design, methodology and delimitations (Given & Saumure, 2008). Thus, it is utmost importance to select participants that reflect the context we explored.

3.7.3 Confirmability

Confirmability is used in order to understand what we explore from a participant perspective and what meaning participants give to a phenomenon; which these are two basic goals of a qualitative research (Given & Saumur, 2008). Moreover, confirmability refers to matching of the data or the quality of the results with the findings of the research and that no claims or alterations should be done if they cannot be supported by the data gathered and analyzed (Given & Saumur, 2008). It is equally important that the findings should not be altered by any means due to the researcher bias.
3.7.4 Dependability

According to Given & Saumur (2008), dependability concerns whether or not the findings are reproducible in the context they have been produced. Therefore, the researchers need to ensure that the procedure of the research, meaning that data collection methods and analysis methods are clearly stated for others to consider when doing research in the same context. Results from the research need to be consistent with the data and the findings should not be altered in any way, so that the research should be able to be repeated (Given & Saumur, 2008).

3.7.5 Ethics

When conducting this research we followed the key principles in research ethics by Easterby-Smith, Thorpe, & Jackson (2015). In the process of conducting a research, protection of research participants is crucially important by ensuring that no harm comes to participants and that their dignity has been respected (Easterby-Smith, Thorpe, & Jackson, 2015). As well protection of integrity of research community has been respected. According to Sauder, Lewis & Thornhill (2009) recruitment, sampling, and data collection require careful attention to ensuring voluntary informed consent and to protect the confidentiality and privacy of all parties involved. Since we are conducting qualitative research, the gathered data might carry a risk because they tend to include descriptive details that individuals may view as too exposing even when their identities are kept in secret (Sauder, Lewis & Thornhill, 2009). Therefore, we put a focus on privacy of our research participants and proliferation of any sensitive data that concerns our research participants.
4 Empirical findings

This chapter represents the empirical findings. Firstly, a brief description of the selected companies will be presented followed by data collected from the interviews. The empirical findings will be presented in a structured way, taking the most important topics from our topic guide illustrated in the previous chapter. All the selected companies will be presented in general with no distinction if they have or not practiced the concept of open innovation. However, they will be presented in a structured way according to the country.

Since we are using King’s template analysis, we have followed the steps required in order to develop our initial template. The table above illustrates the priori themes according to King (2017), that are translated into identified themes in advance that are related to the topic we are researching based on the literature. As illustrated above, the themes on the left are the ones identified in advance that also guided us through the interviews. The sub-themes on the right hand of the table illustrate the emerging themes that resulted through the answers of the respondents. The next step for us was to develop our initial template and observe the relationship between the themes of emerging
patterns. After the initial template was developed we used it in order to present our empirical data. Lastly, after presenting the empirical data as seen later in this chapter, our final step was to code our data (see appendix for code process) in order to produce our final template as we will illustrate in chapter 5.

4.1 Company-specific context

Taking into consideration the context the interviewed companies operate in are both – small and developing countries and fall in the category of SMEs, however, interviewed companies are micro and small-sized. Moreover all the companies are B2B oriented and sell their products locally and abroad. Companies numbered from 1 to 3 are from Cyprus, whereas companies numbered from 4 to 5 are from Latvia.

4.2 Company 1

Company 1 operates in the food industry with the NACE code of 10 which is characterized low tech company according to the EU. The interview was conducted on the 5th of April 2017 and the interviewee was the senior manager of the company which happens to be the son of the owner of the company. The firm operates since 1990, almost 27 years now. The main aspect of this company is that although they are mainly importing and distributing raw materials all across Cyprus, they also have a dedicated R&D department for their customers which is something unique in this sample of companies we interviewed.

Products the company offers

Company 1 aims to constantly present new products in their market and specifically for their customers. Sometimes, their products might not be improved but they are new. “We have constantly new products. It is our philosophy to have new products that the customers are interested”. This philosophy is driven by their market needs but predominantly the most important factor that urges them to present new products is their suppliers. When they asked about the importance of their suppliers they answered that “Yes, mainly the supplier because they know the market. They come and do a recognition of the market, they speak with customers and then they guide us as well.”

Innovation and strategy

Specific questions were asked during the interview in order to get an insight about the relationship between the company and any innovation activities and processes.
Company 1, considers innovation to be very important in the process of developing a new product, but at the same time they say it can either make you or break you.

“Innovation is important because without it I believe the quality would be non-existent and every product would be the same quality wise. To be innovative is to be a blessing and a cursing at the same time because you can take advantage of it or it can take advantage of you.”

When we asked for elaboration on the above statement they answered that:
“What I mean is that if you are presented with an opportunity to innovate it can be taken advantage and benefit from it or you can waste a lot of money for it and in the end will not pay off”. This illustrates in sort of speaking the worries or doubts of the company 1 regarding innovation.

Moreover Company 1 does not have an innovation budget, but nonetheless this does not hinders them from innovating. “We do not have a budget for that, but the fact we don’t have it doesn’t restrict us from doing activities for innovation.”

The impact of innovation for Company 1 where not immediate but rather helped them in the long run.
“Innovation I reckon helped the company to build a strong brand name and recognition towards the public... I wouldn’t say that it contributed directly with immediate results but in the long run it brings recognition and profitability..... at least to us. Thats what has been shown so far.”

Furthermore, it seems that the company does not have any particular issues that prevents them from innovating. However, one of their concern was the lack of knowledge in other areas they are not yet specialized in.
“I wouldn’t say that we are facing any obstacles. We have the facilities, the raw materials to innovate and the know-how. The only problem I can think about it is the lack of knowledge that do not concern our part”

On the other hand of the question, their motives are mainly the profit for the company but as well the recognition the company will get and their customer satisfaction.
“For sure the main motive is the profit, beyond that is the marketing our company will get, our image as a company.... Always to provide something new to your customers, meaning the satisfaction that you get from you customers; these are the main motives.”
Lastly, company 1 considers that a strategy to innovate comes from the environment that the firm is operating in, but they also mentioned that if an opportunity to innovate arise, they will consider it but it doesn't mean they will follow it.

“\textit{I consider, that you follow a strategy and the strategy comes from the environment you operate in. When the environment is changing you are forced to reconsider your strategy. If there is an opportunity for innovation which is not in our strategy, we will consider it and we will not ignore it. But it doesn't mean that we will adopt it.}”

\textbf{Open innovation:}

The company was not aware of the concept of openness or open innovation. Instead they have found out about it when we were explaining the purpose of our study before the interview: “\textit{Yes, we have done that before, let me tell you an example that we do it but we do not know the definition of the open innovation.}” However a finding for this company is that in an indirect way they are implementing the concept of open innovation. When they were asked if the they have ever collaborate with other actors before or they have ever open the boundaries of the firm they replied:

“\textit{...We have a dedicated room in our facilities that it is more or less like a kitchen/ lab, where we test our products[...] Also, we are closely collaborating with our partners where we exchange chefs from abroad where they do some seminars for our customers for our products and bow to get the best results from our products}”.

\textbf{Collaboration- involvement of other actors}

Company 1 is collaborating and involving many other actors in their new product development. For instance, they mainly collaborate with their suppliers due to their knowledge in the industry but as well as their customers in order to provide them with the products they need and with quality. “\textit{Also the suppliers are important to shape the ground for future products because they know the market needs and they act as guides.}”

“\textit{With our customers I would say we have pretty good communication and cooperation. They help us with their needs to develop new products for each of them and sometimes we take the initiative to present to them some ideas for them.}”

“\textit{We have some products that are secret to only us, that resulted through collaboration from our suppliers and we are the exclusive company for them}”

\textbf{Knowledge}

It seems that company 1 is active company in seeking for knowledge and their primary source once again is their suppliers. Not only them, but they also try to gather ideas from all over the inside of the company. “\textit{Yes. Our main source for us is our suppliers. We get many insights from them for our clients}”. 
When they have an idea that is either originated from the inside or the outside they are really trying to evaluate it at least two times before proceeding with it. This is done to see if it is worth it or not. “I think our company is pretty good at it, because we are open minded company. We do not decline something after we have not evaluate it at least two times to see if it fits us”

4.3 Company 2

Company 2, operates in the industry of furniture manufacturing with a classification of NACE code 31 by the EU. It is in operation for 22 years, since 1995, where their primary focus is on quality products for their customers. It has a personnel of 18 employees. The interview was conducted on 6th of April 2017 with one of the three owners. This company does not only manufactures products but also, it recently started importing and selling furniture.

Products the company offers:

Company 2 offers a variety of products. Due to their nature of their industry they are offering custom products to their customers. This means that they do not mass produce products for sale. Each product is unique and adopted to the customer standards. One of the advantage of the company 2 is their ability to manufacture fireproof doors mainly for hotels that few manufacturers in Cyprus are able to do. “where our advantage here is that we are one of the few in Cyprus that can manufacture fire-proof doors. We are one of the few that we have the required ISO license to do so”.

Moreover, the company outsources some of its manufacturing if the demand is high for a market or a project. This as they refer to it is a co-operation with some of their competitors in the industry. “...Now if there is a large demand and we have to co-operate with someone, then yes we maybe outsource to our competitors so we can fill in the demand.”

Innovation and strategy

For company 2 innovation is important when developing a new product. This because as said in the interview can provide a competitive advantage “[...]it is really important factor because it is the most competitive advantage an company can have[...]”.

Moreover, currently the company does have a dedicated innovation budget, but they have not actually capitalized on it yet. This is because currently are working towards the creation of a R&D department where they will dedicate a budget for it in order to innovate. “’[...now we are doing a
research and we have a budget for it so that we can create the R&D department where a budget will be devoted to that direction so yes we devote some resources for it.”

Company 2 it seems to facing some problems with innovation activities that may hinders them from innovating. Primarily, they assume it is costly and currently with out any R&D department they can’t really do so.

“There are some factors, the main factor is the cost for the reason that innovation it’s costly, just like I said there needs to be a R&D department and the right machinery. This is the main reason but I believe that with the right planning this can bring some good results.”

On the contrary, some factors that are motivating them to innovate are the competitive advantage the company will get.

“Our main motive is the competitive advantage, because as I said competitive advantage is the innovation for SME that later with correct planning and strategy will result in profitability in which that is the main goal. Also the most important is the customer satisfaction.”

An important key word that appears in their statement is the strategy. Company 2 also strengthens the statement that strategy alignment in order to innovate is important with the following statement.

“Look, I believe that for one SME like us it is important to follow a strategy that allows them to innovate, because in relation to large companies, we are more flexible and we can switch our strategy more easily with less time and costs involved. So I believe that is a strategy that follows innovation is an advantage for SME in relation to large companies, so I believe it is very important”

Moreover, an innovative strategy is in their future strategy after they establish a R&D department.

“[...] so we are focused on that and we are aiming to develop a department for research so that we can innovate and find ideas and products for new markets[...]”

**Open innovation**

When company 2 asked about the concept of open innovation, they seemed familiar with it. This is also as it seems that it is in their foreseeable plans to experiment with it. “[...] Also as I mentioned it is really important that is why in our future plans are based on that concept [...]”
Moreover, they believe the best way to achieve open innovation the best way is through codevelopment and cooperation. “[...] with co-development and cooperation you can achieve that because it is something especially in Cyprus and for one SME it is not easy to achieve. Therefore, there needs to be a co-development[...]”

Collaboration- involvement of other actors

Company 2 has previously cooperated with other actors in their network that resulted in some new products. For instance as said earlier due to the nature of their industry they are mainly producing custom products. However, many ideas result from their cooperation with architects “[...] As for now, those who are responsible for developing new projects and products are mainly the architects because they can provide us with new ideas that we can keep later[...]”.

Moreover, competitors are not left out in the case of company 2, as they have cooperated before. “[...] many times we have cooperated with other competitors. I can say we have good relationships with each other and we help each other[...]”.

Knowledge

Knowledge is important for company 2 and they are trying their best to increase their knowledge capacity, although they admitted they are far behind on that matter “I believe we are far behind in seeking knowledge, although we are constantly trying to educate our personnel with some seminars from us or from the association”. Also, knowledge outside the company has been used before regarding the development of products due to their lack of knowledge. “[...] sometimes we didn't had the knowledge to manufacture a certain product that was asked for us and a competitor help us on how to do it.[...]”

Moreover, they are primarily looking for outside ideas and knowledge instead on the inside of the firm “Yes, as I said it is difficult to look for ideas inside the company, therefore, we have to look outside to find new ideas and ways. This helps by looking especially abroad [...]”

4.4 Company 3

Company 3, operates in the industry of Manufacture of rubber and plastic products with a classification of NACE code 22 by the EU and it is characterized medium-low industry. It is in operation for 26 years, since 1991. It has a personnel of 7 employees. The interview was conducted on 4th of April 2017 with the director of the company. This company manufactures it is own products but as well outsources to their partners. Currently they do not have a R&D department.
**Products the company offers**

Company 3 is offering a variety of products for their market with over 300 different products that are manufactured in house or outsourced to partners. They are always trying to respond and meet the demands of their market by innovating. “[...]We always try to innovate so to be able to respond as quickly as possible to market’s demands.[...]”

Moreover, again due to the demand of their market they are always trying to find new ideas for products that are acceptable, which is something in their foreseeable plans to do “[...]there is always the possibility of creating new products if the market requires it.”

**Innovation and strategy**

As mentioned earlier, company 3 is always trying to innovate in order to introduce new products in the market. Although, the current strategy of the firm is to differentiate with future considerations of growing the firm. “To differentiate your business for the better so that you stand out and have an advantage against competition is always a good thing. [...]”. But nonetheless they consider innovation to be a really important factor for their strategy.

When asked about the adoption of a strategy in order to innovate, company 3 mentioned that they might adopt one in the following years in order to maintain or gain a competitive advantage. “[...] and be ready to maintain them or to gain advantage accordingly. So yes, I would say that the strategy might need to change.”.

When asked about any hurdles that may prevent the company from innovating, company 3 responded that it is predominantly the decision lies in the resources of the company and mainly the time needed and money and if the end result will worth it.

“[...] Therefore, if you want to innovate you can do it depending on the resources of the company. What I mean is that, we will evaluate if we can afford spending the time and money on something that will be beneficial for us.”

On the other hand, their motives to innovate is mainly the profitability of the company. However, as mentioned they say in the long run it may not last for long due to the environment of the country. Also, they mention that making something better is a never ending process.
"[...] The process of making something better never ends and there is always a margin to improve. Also, the needs for the company and the market are motives alongside with the environment of the country. Meaning the economy. Mainly, the environment we operate guides the evolvement of the company. When you want to make something new that it can be acceptable from the majority of the market, then innovation is important for the profitability of the firm. However, this is not a stable factor, it will not last for long."

Lastly concerning innovation, company 3 has an innovation budget where they focus on innovation activities. “We can really say that we devote resources to innovative activities [...]”. This, however, depends on what their competitors are doing and the market. “[...] depending on the movements in the market and the competition of the products, we are adapting so that we can stay at the best market position.”

Open innovation
When asked about the familiarity with the concept of open innovation, company 3 responded in a way that it was hard for us to interpret. “Globalization has introduced this term and all companies must be familiarized with over the years, taking advantage of their experiences and opportunities to learn new things globally.”. This statement was sort of difficult to understand but in the end we understand that the company is familiar with the concept.

When we asked the company if they have ever experimented with it along with their partners they seem to have some sort of collaborations with their partners abroad. “Right now, there are collaborations with big factories in Europe and Asia, from which both parties can give and receive influences on the improvement of this specific market.”

Collaboration- involvement of other actors
Company 3 mainly involves their suppliers in because they always have something to offer. “[...] we cooperate more with our suppliers because they always have something new and exciting to bring into the company.”

Knowledge
Company 3 mentions that outside knowledge in forms of ideas, informations and know-how, it helps at any moment and in their case it has helped them. “It definitely helps at any given moment [...], [...] Therefore, these are actions that brought good outcomes and mainly it is positive.”

The person in charge of knowledge related aspects of the company is mainly the director of the company. He is in charge of all the inflows of ideas, knowledge and informations and he is the one
that decides what to decline or what he chooses to put forward into action. “After it has been discussed and evaluated from the director of the company, he takes the major decisions and he will take further action.”

4.5 Company 4

Company 4 operates in wood production industry which in NACE Rev. 2 classification is under code 16, which is considered as low technology manufacturing industry. The company has been founded in 2000 in Latvia and it employs 32 people. It is a family business with the father as an owner, but his both sons running the business. The interview took place on 10th of April 2017 with the CEO of the company. Company does not have an R&D department. They produce playgrounds mostly for public use, to many municipalities in Latvia and abroad as well.

Products the company offers

Company manufactures playgrounds that are mostly made for public use, but they have playgrounds for privates as well. Therefore, mainly their clients ar local municipalities and that sometimes makes thing more complicated, since the purchaser is not the end user, so the purchasers value their product differently as their actual users. “It is bought by municipalities who don't use them themselves, therefore, they buy our products under different considerations as user. That is why we need to connect both sides, so that for client it would be appropriate, but useful for a user.”

Company is the only certified actor in Latvian market that produce safe playgrounds according to standarts. They follow the market trends from the big global players and adjust it to their products based economic justification. “...there are many competitors in Latvia, but the difference between us and others, is in the performance and documentation”.

Innovation and strategy

Company constantly is looking for new improvements that are linked with new product creation or improvement of existing ones, but as they consider, since they follow the global trends, it is not something new or innovative worldwide, but could be in Latvia. “It is hard to tell if these are innovations, maybe in Latvia it is an innovation, but worldwide it is nothing new, but in local market we try to step in with new and trendy products”.

They are as well looking for innovations and new technologies to improve their manufacturing processes, and they express the importance the efficiency and expenses of those kind of
innovations. “Efficiency is the key point, and efficiency compatibility with expenses. Maybe we don’t need such high efficiency, because it costs more, but we don’t need to produce that much”.

When they were asked, what motivates them to innovate they answered that because of market competition they can gain certain benefits, if they are the first-movers with some product. “That is market competition. For example, with the penthouse we are the first ones in the market. That motivates us to be first ones in the market with certain products.”.

When talking about innovation budget and strategic approach for innovation, the respondent implies the benefit of being small sized company, that they can make fast decisions about starting and terminating innovation projects, which means they don’t have special budget and strategy. “We mostly decide, and then we work, thereby if we were a big company and had a management team, then we had to make a special budget for innovation, but since we are the management ourselves, in the process of looking for innovations we decide ourselves if we give more money to a certain project or we terminate it”.

When discussing innovations firm’s representative reveals that one of the main issues that hinders them from innovating is lack of financial resources, since they are a smaller company, and in order to develop a new product they need to attract new people and the process itself is very time consuming. “Other thing is financial resources, because in order to develop something new we need to attract new people, such as engineers and designers and these are big expenses, because all of that doesn't happen in one day time.” “Since we don't have such resources, we focus more on producing existing products and to improve working conditions at our company”.

**Open innovation**

When the dialogue started about open innovation, the CEO of the firm admitted that he before hadn’t heard about open innovation concept before and said that they are not using in their business. “(...)I tried to find what this concept means, and I understood, that we are quite far from open innovation”.

Company representative revealed as well the cultural issue that is influencing, lack of open innovation activities in Latvia. “Latvians itself are homesteads and don't like to share much. I can say that in our country there are no businessmen in this industry to be so open”. So this concers their industry as well, that other companies are not keen on sharing information with others. “And then the ones who operate
in here, the competitors, it is hard to work together with them because they have totally different understanding about the product. Their orientation is price. They don't care much about documentation”.

The CEO implied that open innovation just would not work in their industry, because even if they wanted to share some product ideas and drawings that they don’t need, for the competitors it would still be possible to take a picture of the product and created themselves, therefore, no one would pay any money for such information. “If we imagine sharing our models to others for a certain price, it is much easier for them to take the photo of the playground and to make it themselves”.

As it was understood from the CEO of company 4, since these technologies are not so advanced, it is easy to copy them, and any patents won’t save it, because it is hard to prove anything. This is the reason why companies stick to their knowledge and don’t involve themselves in open innovation actions. “[...]patenting won’t help, because we wouldn’t be able to prove anything. There have been many precedents in market, when the main European manufacturers who are globally leading manufacturers, their product drawing have been stolen, and copies are being made in Russia, and they can’t do anything about it”.

Collaboration- involvement of other actors

The CEO revealed that they have tried collaborating with others but all the attempts failed, because counterparties underestimate the product and think that it is too basic. “Yes we have tried it all and we failed miserably, if we talk about collaborating with suppliers and technical universities, because the product is quite specific, no one goes into detail because it is assumed that playgrounds are a simple thing, and there is no business”.

When he was asked about the collaboration in their represented industry, he admitted that there is no collaboration, and everybody is on their own, because they could be pushed out of business due to strong competition. “For everyone it is easier to create everything themselves than collaborate with others”.

Knowledge

As it can be understood, all the knowledge that companies get in their industry, stays within the companies and is not being shared to others, and it is highly appreciated resource, because competitors with a certain knowledge could get some advantages. “We have no one to give the knowledge and no one to take from. Let’s say if we would give our knowledge to our competitors we would stab ourselves in the back”.

It was identified by the firm’s CEO that the main resource where they gather outside knowledge are trade fairs, because at trade fairs they can see what big, global companies have done and to see what are the trends in their business, so afterwards it could be applied to their business. “[...]from trade fairs, where we see what the leading European producers offer. By that we can follow the trends, but not "stealing" some look-a-like products, but following the guidelines that they work on and the things that we can introduce ourselves[...]”

4.6 Company 5

By NACE Rev. 2 classification, Company 5 operates in division 10, which is food industry and is considered as low-tech industry. Company 5 has been founded in 1994 in Latvia, and now it has 17 employees. The interview took place on 12th of April 2017 with the accountant of the company, who is as well the CEO’s and founder’s daughter that participates in helping her father to run the business. Company does not have an R&D department. Firms main industry is processing and preserving of fish.

Products the company offers
Company 5 operates in fish processing business and mainly provides different kinds of smoked fish. Mostly these are larger-sized fish. “We have recipes for cold smoked fish, hot smoked fish, dried fish, processing of fresh fish”.

They admit that they would want and have thought about introducing new products, but it comes back to the current situation in the market which at this moment is very hard, and they are lacking funds to invest in new production lines. “Over the time the number of our products can increase, but it is linked to our economical situation at this point of time when people can't afford salmon as much as they could some time ago”. “At this moment we have had some thoughts about processing meat as well, but looking at the current situation when the price of salmon is high we process less fish as we used to”.

Innovation and strategy
According to Company 5 representative, they consider technology as a very important factor in production process, therefore, innovations are necessary in their industry. “I consider that technology is very important in our industry, because it is impossible to carry the work out bare handed, therefore, in those processes you need to use technology”.
But even though they consider technologies and innovations important for their production, they are behind other actors in the industry, regarding technology development. “In my opinion our company is not that technologically advanced compared to other companies. Comparing to competitors we are less advanced than other industry actors. Because our technology has got older”.

Since they at some point are a bit behind their competitors they even consider that they don’t innovate when they introduce something new, because it might be already present in the market. “When we introduce something new, we don’t consider that so much as an innovation, because maybe in our company it could be an innovation, for example a new recipe, but when looking to the industry it might not be anything new, maybe even old”.

When talking about innovations and improvements she identified that mainly they improve their production processes, and sometimes make some product improvements. “I would say, mainly these are production process improvements, but as well some product improvements. Sometimes we change our recipes a bit, but mostly what is improved, that is technology of our production, in order to increase our production power and to decrease handwork.”.

She admits that the size of the company influence their abilities to innovate, thus since they are small, they lack the financial resources to innovate as much as they would like to. “First of all the largest barrier is financial resources, since we are a small firm. If we were larger it would be easier to create new innovations, such as improving our technologies”.

As they don’t have large financial resources they don’t have a special budget for innovation. As it was revealed in the interview they invest in innovations just when they see that they are profitable, and then they spare some money for innovation from their profits. “We plan our budget, but it is hard to calculate exact numbers, because we don’t know what are we will be able to afford from our financial situation. When we see, how profitable we have worked, we devote some money for innovation”.

As well she discloses that competition is the factor that motivates them to innovate, so they would not lose to their competitors. “Mainly it is competition and at this point the demand, because since the prices has gone up, people can’t afford to buy large fish that are more expensive than small fish”.

When the respondent was asked about strategy of innovations it seemed that they don’t have a special innovation strategy, but the main cornerstone for them to implement something is to
understand if that is going to be profitable for them. “Yes, we think about how we are going to introduce a certain innovation, how we can make an innovation profitable for us”.

Open innovation
It can be seen that in this industry firm’s keep their knowledge and ideas about products to themselves and they don’t share anything to others, in order not to lose market position. “[...] by selling our recipe, we would get a new, strong competitor, that could push us out of business”.

Main intellectual property that are recipes are held in secret very strongly in the industry. “Yes, these are recipes and the way the product is produced is the main intellectual property, no one in the industry are sharing the recipes and how they have been produced”.

Even when a Russian company was interested in buying their recipe of processing fish, they decided not to sell it, because they were afraid that they might come into Latvian market, if the production costs would be lower in Russia, and push them out of the market by providing cheaper products. “...owner of our company was afraid that these fish would be cheaper to buy in Russia for them, [...] so that the Russian company could eventually start selling their production in Latvia...”.

Collaboration- involvement of other actors
For the industry actors there is no collaboration between the competitors, in order to come up with new products or other innovations, everyone is trying to develop themselves. “when it comes to competitors there is no information sharing at all. The knowledge sharing about fish processing in this industry is basically not existing between competitors”.

The only collaboration that is evident in the fish production market is when someone can’t produce larger quantities of orders, Company 5 process their competitor’s fish for a certain price. But no details are disclosed to competitors how they are doing it. It is just a service and no innovations are achieved through this process. “...we outsource for some other companies”. “...we give a service to our competitors”.

As the company representative told, there sometimes can be seen a collaboration with clients, who suggest what they could change in their production, and since the company is small they can make special offers for certain clients. “Sometimes our clients share the knowledge of what spices, for example, we should use more or less. They help us to improve the recipes”.
When talking about future they see that collaboration with other institutions would be beneficial for them. Such as universities could be a resource that could help them to develop new innovations, but so far nothing like that has not been done. “In future we see that collaboration would be helpful, for example collaboration with universities or other organizations, that could help us to improve our technology, so we could operate more efficiently”.

Knowledge
During the interview it was disclosed that the production workers in the company over the time has gained a lot of knowledge about the technologies used for processing fish, therefore, often they inform the CEO about what technologies should be applied in the production process. “Yes, our workers are engaged in informing the owner about what technologies could be applied, adjusted or improved in our production.” “In the past when company was founded, the owner himself improved the technology, but now it’s the workers who gives ideas about improvements and innovations for our technology”.

4.7 Empirical summary

Table 3: Empirical summary

<table>
<thead>
<tr>
<th>Themes</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products</td>
<td>“constantly new products” - Co1</td>
</tr>
<tr>
<td></td>
<td>“we have constantly new products” - Co2</td>
</tr>
<tr>
<td></td>
<td>“We always try to innovate” - Co3</td>
</tr>
<tr>
<td></td>
<td>“Based on economic justification we introduce mostly new products and their improvements” – Co4</td>
</tr>
<tr>
<td></td>
<td>“In local market we try to step in with new and trendy products” – Co4</td>
</tr>
<tr>
<td></td>
<td>“when we decide if we need new series of products, we create meetings with our sales people to brainstorm how the product should be” – Co4</td>
</tr>
<tr>
<td></td>
<td>“Over the time the number of our products can increase, but it is linked to our economic situation” – Co5</td>
</tr>
<tr>
<td></td>
<td>“…we have had some thoughts about processing meat as well…” – Co5</td>
</tr>
<tr>
<td>Innovation</td>
<td>“Innovation is important” […] “blessing and cursing” - Co1</td>
</tr>
<tr>
<td></td>
<td>“we don’t have innovation budget […] but doesn’t restricts us” - Co1</td>
</tr>
<tr>
<td></td>
<td>“Innovation helped the company” - Co1</td>
</tr>
<tr>
<td></td>
<td>“it is really important factor” - Co2</td>
</tr>
<tr>
<td></td>
<td>“if you want to innovate you can do it depending on the resources” - Co3</td>
</tr>
<tr>
<td></td>
<td>“motives alongside with the environment of the country” - Co3</td>
</tr>
<tr>
<td></td>
<td>“innovation is important for the profitability of the firm” - Co3</td>
</tr>
<tr>
<td></td>
<td>“maybe in Latvia it is an innovation, but worldwide it is nothing new” – Co4</td>
</tr>
<tr>
<td></td>
<td>“It is not like we are coming up with something completely new, it just something similar to what is already provided in the market, but we can give some modifications or different design” – Co4</td>
</tr>
<tr>
<td></td>
<td>“Efficiency is the key point, and efficiency compatibility with expenses” – Co4</td>
</tr>
</tbody>
</table>
| Strategy | “That is market competition” (Innovation motivator) — Co4  
“Comparing to competitors we are less advanced than other industry actors.” — Co5  
“I consider that technology is very important in our industry” — Co5  
“Mainly it is competition and at this point the demand” (Motivators to innovate) — Co5  
“I would say, mainly these are production process improvements, but as well some product improvements” — Co5  
“largest barrier is financial resources” — Co5 |
| Open innovation | “strategy comes from the environment” — Co1  
“one SME like us it is important to follow a strategy that allows them to innovate” — Co2  
“maintain them or to gain advantage” — Co3  
“since we are the management ourselves, in the process of looking for innovations we decide ourselves if we give more money to a certain project or we terminate it.” — Co4  
“we think about how we are going to introduce a certain innovation, how we can make an innovation profitable for us” — Co5  
“We plan our budget, but it is hard to calculate exact numbers, because we don't know what are we will be able to afford from our financial situation” — Co5 |
| Collaborations-Involvement | “dedicated R&D, […] close collaboration with partners” — Co1  
“We have done that before […] not familiar with the term” — Co1  
“our future plans are based on that concept” — Co2  
“with co-development and cooperation, you can achieve that” — Co2  
“Globalization has introduced this term and all companies must be familiarized with over the years,” — Co3  
“we are quite far from open innovation” — Co4  
“We have no one to give the knowledge and no one to take from.” — Co4  
“If we imagine sharing our models to others for a certain price, it is much easier for them to take the photo of the playground and to make it themselves.” — Co4  
“no one in the industry are sharing the recipes and how they have been produced” — Co5  
“by selling our recipe, we would get a new, strong competitor, that could push us out of business” — Co5 |
| Knowledge | “main source for us is our suppliers” — Co1  
“we are open minded company” — Co1  
“I believe we are far behind in seeking knowledge” — Co2  
“sometimes we didn't have the knowledge to manufacture a certain product” — Co2  
“It definitely helps at any given moment” — Co3 |
| Networking |
| "Networking is the second most important competitive advantage that a company can have" — Co2 |
| "Networking helps to obtain a social capital that helps in situations to overcome different obstacles" — Co1 |
| "It is very important either in a small or a big country" — Co3 |
| "Lattvians itself are homesteads and don’t like to share much" — Co4 |

"We have no one to give the knowledge and no one to take from." — Co4
"The choice of materials is the main knowledge that you can watch from other manufacturers" — Co4
"If we would give our knowledge to our competitors we would stab ourselves in the back." — Co4
"The knowledge sharing about fish processing in this industry is basically not existing between competitors" — Co5
"Sometimes when a company needs an opinion on something from a competitor, it might be shared, but not enough that it would make your production easier or better" — Co5
"Our workers are engaged in informing the owner about what technologies could be applied" — Co5

"Networking is the second most important competitive advantage that a company can have." — Co2
"Networking helps to obtain a social capital that helps in situations to overcome different obstacles" — Co1
"It is very important either in a small or a big country" — Co3
"Lattvians itself are homesteads and don’t like to share much" — Co4
5 Empirical Analysis

This chapter discusses the analysis of the empirical findings in relation to the frame of reference. This chapter will be guided by our template that resulted through the process of template analysis, more specifically the coding scheme of occurring categories was translated into a final template that assisted to the creation of this chapter.

![Figure 6: Final template](image)

As we have seen at the previous chapter, we have used a set of priori themes to illustrate our empirical findings. For the analysis of the data we have coded our empirical findings in order to identify emerging patterns and relationships between categories. As illustrated above, we have developed our final template that shows the categories and the relationship with the codes emerged. We follow this template in order to analyze and interpret our findings in relationship to the template above. Therefore, the final template is interpreted as the text that is following.

5.1 Innovation

The first category that emerged after the coding and made its way in the final template was innovation. Innovation is an integral part of open innovation in order to be achieved. From the empirical data, we derived some influencing factors that relate to innovation. Each of these factors will be discussed and analyzed in relation to the literature. Moreover, some new categories that have emerged that we translate as “factors” are resources, market forces, SME nature and technology.
Resources
If we take a look back in literature and consider the context we are examining in, meaning low-tech SMEs in small developing countries we can identify some commonalities with the empirical findings. For instance, SMEs have been characterized for their scarcity in resources such as financial or human by many scholars (Hadjimanolis, 2000; Bay & Çil, 2016; Brinckmann and Bausch, 2011) and this can be recognized and characterized as a barrier for SMEs in the process of innovating. Indeed resources, have a strong impact in the process of innovating and open innovation predominantly for SMEs. From the findings, the interviewed companies take the resources into serious consideration. For instance, Co2, Co3 and Co5 mentioned that resources are crucial when it comes to innovation. Co2 adds that “the cost for the reason that innovation it’s costly”, and Co3 stated that “if you want to innovate you can do it depending on the resources” where Co5 stated that “largest barrier is financial resources”. These statements represent basically that resources are indeed crucial for innovation and that the firms are highly depended on them in order to innovate. Moreover, the importance of resources is also mentioned throughout the literature directly concerning the concept of open innovation. For instance, Chesbrough (2003) discusses that resources are important for both orientations of open innovation to take place. However, the interviewed firms are reluctant to share any resources with other actors in their network and predominantly financial resources. Human resources, however, are more likely to be shared between the actors. Co1 as stated they share personal with other actors in order to draw in new ideas on how to improve their products. The outcome of this closure lets say in resources is predominantly affected by the environment of the firms they operate in, meaning the competition levels as we will explain more in the following sector.

Market forces
Market forces is the next factor that resulted from the empirical findings that affect a firm in order to innovate. Market as it was mentioned in the frame of reference has an important role as well in the concept of open innovation because that is the outcome of the concept, to create something that will enter an existing or new market (Chesbrough, 2012). Moreover, according to Hadjimanolis (2000), SMEs can be influenced and influence their markets. One important market force that surfaced from the findings is the competition. Competition as it is mentioned in the literature can be the also the reason that companies will foster innovative activities and at the same time the reason that will prevent the adoption of an open innovation practice (Xiaobao, Wei, & Yuzhen, 2013). But how exactly competition affects the innovation process of a firm? As it seems, Co3 is
influenced by the competition levels in their industry in a way of trying to differentiate from the competition with new and innovative products that will allow them to have a competitive advantage. Moreover, Co3, Co4 and Co5 also monitors the market and the competition which allows them to have an innovation budget accordingly to the movement of the market. Consequently, we argue that the market forces and mainly the competition levels and the market demand is one of the motivating reasons that urges firms to innovate.

**SME nature**

As discussed earlier the nature of SMEs can be really problematic and be in a disadvantaged position when trying to innovate. However, in a context of small countries as the examined ones, they can have also an advantage resulting from their networking in which they can have new opportunities to capitalize on. The country factor also comes to interplay here because it makes the networking stronger if the firms are operating in some smaller countries (Hossain, 2015). From the empirical findings, Co2 highlights that innovation in an SME context is really important to gain competitive advantage "competitive advantage is the innovation for SME". Also, their nature may hinder any activities related to innovation. For instance, Co2 and Co1 mention that due to their size they are lacking capacity to do certain activities related to new products. More specifically, Co1 mentions that it lacks a R&D department due to that reason of being an SME. Nonetheless, more factors that discussed earlier like the resources directly relate to this sector and to innovation in general spectrum.

**Technology**

Technology is considered as one of the most important pillars for open innovation to happen (Chesbrough, 2012). The technology pillar is nourishing in the literature but it contradicts our context we examined because technology is more directly related to high-tech companies and for those companies it is easier to adopt the concept of open innovation. Moreover, even when mishaps happen in such companies that a technological advancement or product is produced, they can easily license it to other similar companies (Chesbrough & Crowther, 2006). Now, concerning our empirical results most of the companies including Co5, Co2, Co1 and Co3 consider technology important in their industries despite that they operate in low-tech industries. This is because technology assists them to increase the quality of the work and minimize the costs and time needed in their daily operations. Technology as it seems from the findings it is important for them in order to survive and stay competitive, as it was stated by Co1 "but technology is necessary to remain competitive". Despite the empirical results, we could not identify any direct correlation between technology and
open innovation in our context. On the other hand, technology indirectly relates to their efforts seeking for it through various external actors in order to improve their products that consequently will assist them with the outcomes mentioned above.

5.2 Knowledge

In relation to open innovation, knowledge has been a crucial factor for companies that engage in an open way of knowledge sharing with different parties outside its own boundaries. According to the empirical data that we gathered in relation to knowledge, certain codes or themes came up that are common for the low-tech SMEs in small, developing economies, such as managerial systems and trade fairs.

Managerial systems / Innovation management

Regarding managerial systems, when gathering empirical data it was found out that that SMEs compared to large companies that have been studied previously in open innovation context, mostly do not have any R&D departments, and all the knowledge related aspects are executed by one or two individuals from the management. This pattern can be seen in all the interviewed companies, that so far they are too small and all these important questions, related to knowledge acquisition and exploitation are left on the manager’s shoulders, who sometimes are the owners of the company, as for example it was explained by the director of Co3 “Mainly, the director is the one who does that but on a lower level employees are doing so. The thing is when someone is having let’s say a stimulus over something outside, then they bring it in and discuss it with the director”. This show how all the important factors regarding knowledge are being the director’s responsibility, nevertheless they are open to get new ideas and knowledge from their employees, as expressed by Co5 “our workers are engaged in informing the owner about what technologies could be applied, adjusted or improved in our production”. A similar situation has been acknowledge in other companies, that employees might be more advanced in a certain kind of knowledge, and are motivated to bring the ideas to the management, where the next steps are being taken by them, whether they proceed with the idea or put it on a side. This kind of situation can be understood because of lack of human resources and the knowledge of what they have. “I would say the lack of ..... how do I put it, the lack of the right personnel to handle that idea” Co3’s director explaining, the situation, therefore, all the decisions and actions regarding knowledge exploitation is director’s responsibility. This situation leads to lack of knowledge absorptivity, which has been discussed in theory of absorptive capacity. As it has been acknowledged by Parida (2009) internal capabilities of a company such as R&D are critical in order for open innovation to be successful. As it has been discussed previously, for companies in order
to be successfully absorbing outside knowledge, they need certain PACAP (potential absorptive capacity) and RACAP (realized absorptive capacity) (Zahra & George, 2002). Thus it can be seen that low-tech SMEs are lacking capacity to absorb the all the necessary and useful knowledge that could possibly be gathered outside the firm’s boundaries. Since the responsible people for new knowledge and innovations are the directors, who are most of the time one or two people, are not able to get all the possible knowledge from outside resources due to other job duties that has to be done at the same time. This means that such companies are short of PACAP, in order to acquire and understand knowledge, and RACAP as well, in order to exploit and realize the acquired knowledge due to lack of human resources and lack of knowledge of the involved persons.

All the above mentioned firm characteristics show how low-tech SMEs hinders themselves from adopting open innovation. These results show that even with good intentions to innovate more openly, these types of firms might struggle with absorbing the outside knowledge and exploiting it for their own good, because of lack of human resources and their lack of knowledge.

**Trade fairs**

For different kind of firms the source from where they gather knowledge may differ, but for low-tech SMEs one particular source has shown its importance, and these are trade fairs. As so far it has been understood, the technology advancement and knowledge are important even in the simple low-tech industries. As described by Co4 CEO “...trade fairs are the main source where you can see about what the main manufacturers are proud of”. Since low-tech SMEs in small, developing countries are not so keen on to cooperate with competitors, in sharing ideas and possibly involve themselves in joint projects, trade fairs are the alternative for them in getting some outside knowledge and to apply it for themselves. By analyzing empirical data we can see that in relation to open innovation, low-tech SMEs are not prone of outbound innovation, by giving out their knowledge, but we see that they are open for inbound innovation and are always interested in getting new knowledge. By visiting trade fairs low-tech SMEs opens up for inbound innovation, where they can get ideas and a certain kind of knowledge from other competitors. Director from Co2 says about trade fairs “...so we can get ideas from that (trade fairs) to bring inside the company so we can be more competitive”. It can be said that the outside-in orientation of such companies happen in more “hidden” way, regarding acquiring knowledge from other industry actors rather than cooperating together in order to introduce new projects. Because of this approach we believe that they miss a lot of useful knowledge on acting on their own instead of what they would be able to gain in a closer cooperation with other industry actors.
5.3 Collaboration

Another aspect that characterizes the concept of open innovation is the involvement of different actors from a firm's network. Hirsch-Kreinsen (2008); Teixeira, Santos & Brochado (2008), mention the importance and also collaborations with other actors that can take the form of suppliers or even other companies and highlights the benefit of attracting resources such as new technologies. Vanhaverbeke (2011), adds to this sector by mentioning that open innovation in SMEs is more approachable and more likely to happen if the firms are engaging in some form of collaborations. Moreover, the importance of collaborations lies in the context of low-tech SMEs. This is because low-tech SMEs can take advantage of other actors in their network that are more technologically advanced (Spithoven & Knockaert, 2012). From our empirical findings we can observe that our firms are engaging in collaborations primarily with their suppliers and secondary with their customers.

Co1- collaborates more with suppliers because they have more knowledge of the industry that assists them in future products “Also the suppliers are important to shape the ground for future products”. Also, they have products that resulted through collaborations with their suppliers.

Co2- involves more related actors in their industry such as architects and their competitors. “many times we have cooperated with other competitors”, “mainly the architects because they can provide us with new ideas that we can keep later”

Co3- Involve their suppliers. “[...] we cooperate more with our suppliers because they always have something new and exciting to bring into the company.”

Co4- Mentioned that they have tried to involve other actors but in the end they were unsuccessful due to the competition.

Co5- Involve their customers due to their knowledge in the products.”Sometimes our clients share the knowledge”. Despite this, they are considering in the future to involve other actors as the mention in order to bring in new technology.

Therefore, our empirical findings indicate that some of the firms have already collaborated with other actors in the past to produce new products but also to get new insights and information from
them either for future consideration of products or about the market they operate in. One crucial finding that we have also seen that collaborations are also influenced by the competition and the country as we have seen in the findings of Co4.

5.4 Networking

Networking has been mentioned and characterized by many scholars in the literature as one of the advantage an SME can have that consequently can result to new opportunities for them to innovate. (Hossain, 2015; Hirsch-Kreinsen, 2008; Interreg Europe, n.d). Networks, however, are also related to aspects such as the knowledge acquisition and possible collaborations with other actors, in which these are also integral parts of the open innovation concept.

From the empirical data we argue that the interviewed companies acknowledge the importance of networking. For instance Co1, Co2, Co3 generally mentioned that networking helps to overcome any problems and that “networking is the second most important competitive advantage that a company can have”. Predominantly, Co2 mentions that as an SME it is easier to innovate thanks to their networking that it is easier for them to find ideas and knowledge. These findings are consistent with the Interreg Europe (n.d) that mention that islands (where Co1, Co2, Co3 operate in) have stronger communities than other larger countries that make them more beneficial if they want to innovate. On the contrary, one finding that surfaced from the empirical findings is the case of Co4 “Latvians itself are homesteads and don’t like to share much”, we understand that the culture and country also have an important role in the networking of a firm. Of course, this has been mentioned throughout the literature but on the positive aspect of the networking. However, we do not want to generalize the findings based on one sample. Although it is interesting to compare it with the findings of Hadjimanolis (2000) that competitive forces in a context of small countries is not really related to innovation due to the lack of innovations in such a small context. Since networking is strongly related to innovation in such a context it is worth mentioning that networking can be related to competition forces as well. Moreover, as it was mentioned earlier, networking is related to collaborations and knowledge that are related to the concept of open innovation. Previously, we have examined the factor of collaboration in relation to the companies and we have seen that the majority of them have collaborated in the past or still involve other actors from their networks in their operations either to get new knowledge in form of ideas for new products or to improve their processes. Therefore, we argue that networking has an impact on SMEs in a way of strengthening the search for knowledge and collaborations, which is something proven previously by many scholars throughout the literature.
5.5 Product

When looking at the empirical data we gathered and the theory behind the open innovation concept, it can be stated that category “product” holds importance in this context. There are certain factors that influence open innovation’s presence in low-tech SMEs, and mostly these are connected with product protection which is low in before mentioned industries. Hand-in-hand with product protection in low-tech SMEs in relation to products, quality has a serious role which we are about to discuss further in this subchapter.

Product protection

Since the interviewed companies are operating in low-tech industries it can be understood that their products often are not as sophisticated as in contrast in high-tech industries. It has been acknowledged by the interviewed companies that in their industries it is much easier to copy their products. On one hand this situation would encourage such low-tech companies to register their IP and to protect their product from copying by others, but on the other hand since their products are more simple, when they are copied, it is very hard to prove that they have been stolen “...you can't really patent something because everyone can make the same furniture”. For low-tech companies this is a serious struggle, because it is relatively easier for other to copy the products or to apply the product ideas on their own products. “We don't spend time to make patents for that, because that is controversial. For a simple person from a side, all those playgrounds look the same, and if you change one board everything might change”. Co4 director revealed how complicated it is to protect their products in official way, for example, by registering patents. Because the products often are not so sophisticated it might be hard to register them, but much easier to copy, and proving that afterwards is almost impossible. As well it has been stated that this is a common issue worldwide, not just in the sample countries were interviewed companies operate “...therefore, patenting won't help, because we wouldn't be able to prove anything, There have been many precedents in market”.

According to Chesbrough (2003) in open innovation companies should profit from others use of their knowledge and ideas by using their IP, but it can be seen that in these kind of industries companies can’t get any financial benefit if others use their IP. As we can see this situation fosters low-tech SMEs to be more “closed” when it comes to outbound innovation, because by sharing their product ideas, won’t get them financial benefit, but will create even stronger competition in the market.
Quality
As we have identified the barriers of protecting products in low-tech SMEs, a common way of protection showed presence in low-tech SMEs, which is improving product quality. At first glance this kind of protection doesn’t seem to be relevant, but as companies acknowledged, in order to keep their market position, they need to produce qualitative products. As the director of Co2 explains “...we are trying to build our name through our quality, this is our strength so there is no need to patent something”. Because of high product quality companies can “fight” the other competitors in case their products were copied. Since they are not saved from copying, through high levels of product quality they can secure customer satisfaction and retention, even when competitors produce similar products. As Co4 company director states “...there are many competitors in Latvia, but the difference between us and others, is in the performance and documentation”. In low-tech industries quality of the product plays a serious role, therefore, since products are relatively easier to copy, the production process technology is important as well. The importance of production process quality can not be underestimated because that is the part that competitors don’t see and cannot copy. Nevertheless this situation makes the gap between low-tech SMEs and open innovation bigger, since the quality holds an important value and nobody wants to share their knowledge about it with others and increasing quality might be the only way of saving firm’s unique products. Therefore, outbound innovation in low-tech SMEs cannot be seen that often, because companies want to keep their knowledge about quality improvements to themselves, and not to risk their competitive advantage.

5.6 Strategy
From the literature, we have seen the importance of strategy in the process of adopting an open innovation orientation to be raised by many scholars (Chesbrough & Appleyard, 2007; Crema, Verbano & Venturini, 2015; Rosenbusch, Brinckmann and Bausch, 2011). We found ourselves to be walking on the same path with the scholars in this section, we will raise the importance of strategy in relation to open innovation from our findings. Firstly, we have identified three important factors that relate to the strategy of our examined companies. These are namely, flexibility, market forces and orientation. Flexibility, directly relates to another factor of SME nature. Market forces on the other hand as we previously discussed are forcing the companies to adjust their strategy accordingly to the market. Lastly, orientation results from the market forces that once again might urge companies to adjust their strategy accordingly.
Flexibility and Orientation

SMEs are known for their flexibility to make strategic changes in order to adapt to any situations they might face. The findings, however, reveal some insights about our sample companies. For instance, Co1 and Co3 refer to their flexibility to change their strategy if needed too in order to innovate. Co3 specifically mentions that if they decide to innovate they will probably change their strategy. Co1 on the other mentions that if there is an opportunity to innovate they will consider to adopt to it by changing their strategy but it is not a decisive factor that they will do so. Also Co4 consider adopting a strategy accordingly to innovation if they are presented with an opportunity to do so. For instance, focusing on the current strategies interviewed companies follow, Co3 follows a strategy that wants to maintain their market share but also growing at the same time. Co1 follows a differentiation strategy. Co2, currently is working on an innovation strategy by establishing a R&D department.

Now, we have mentioned their current strategies because the literature relates to this. The only study that made so far in regards to open innovation and the strategy of SMEs is the one by Crema, Verbano & Venturini (2015). Our findings are consistent with their conclusions where they mention that adoption of a strategy that either follows innovation, diversification or efficiency are more likely to innovate and adopt one of the two orientations of open innovation. Since, some of the companies are following one or they are willing to follow one of those strategies (Co1, Co2, Co3, Co4) are more motivated to adopt the concept of open innovation.

Market forces

As interviewed company representatives acknowledged, another factor that can influence firm’s strategy is market forces. In addition they revealed that because of the changing market forces and their small size they are able to adapt to the market situation and change their strategy if necessary. Companies 2,3 and 5 has mentioned that they try to adapt and follow the market demand and take the needed actions to suit the market needs. Co2 Manager even revealed that they would be ready to co-operate with competitors if the market demanded to do so “now if there is a large demand and we have to co-operate with someone, then yes we maybe outsource to our competitors so we can fill in the demand”. Although low-tech industries are not as advanced as high-tech industries, the market forces fosters companies to innovate and increase their product quality or even introduce new products “We are always trying to improve because over time the market becomes more demanding in terms of quality, so if products need improvement we will do so”. By this statement director of Co3 showed the importance of market
forces that motivates them to innovate. “...our main goal is to improve our products in order to stay competitive and satisfy the needs and demand of the markets”.

In addition companies 1; 2; 4; 5 have expressed the significance of competition as a motivator to innovate “also, the pressure we get for the process of the products because of the competition and it makes us to look for new solutions to keep the profit for the company”. As competition grows stronger even the low-tech companies are forced to innovate in order to stay competitive in the market. We can see that when the competition is stronger in certain low-tech industry companies tend to become more closed in the context of open innovation, as it has been said by director of Co1 “not all companies are open like us because with the competition is like founding a wall in the process of reaching them”.

Furthermore, as it has been stated by Crema, Verbano & Venturini (2015), turbulence in the environment is one of the factors that can influence strategy of SMEs, which has shown importance as well in our research, because the interviewed companies identified the significance to adapt to the market forces such as competition and market demand.

5.7 Competitive advantage

Lastly, resulting from the coding process of our empirical data, an important code was surfaced, the one of competitive advantage. Our examined companies have mentioned that competitive advantage is associated with other categories such as strategy, innovation and networking. However, in the literature competitive advantage in relation to some categories is not explicitly mentioned but on some others it is directly related. For instance, if we take each category separately starting with innovation in general Sulistyo (2016), mentions that indeed innovation is important for a firm to gain a competitive advantage. Moreover, innovation is shown to be a main motivating factor for firms to innovate. This is shown by the findings of Co2 that innovation is their main motivator that can provide them with competitive advantage and in parallel with the financial benefits. Another factor that relates to competitive advantage is the strategy a firm adopts in order to innovate. The findings from Co1,Co2,Co3 and Co4 consider strategy to be really important when innovating or thinking to plan for innovation. More specifically, Co1 suggests that a strategy that will foster innovation is not only important to gain a competitive advantage but as well as to sustain it for the years to come. As mentioned in the previous section the relation between SMEs and strategy that allows them to innovate has been examined by Crema, Verbano & Venturini (2015), where strategy is a determinant factor that will allow them to innovate and consequently lead to open innovation. Furthermore, networking is also related to competitive advantage.
However, networking has been discussed earlier in this chapter, therefore, we do not want to repeat ourselves for this category. Nonetheless, from the analysis of empirical data these categories of networking and strategy can provide an SME a guidance to innovation that have the possibilities to gain competitive advantage.

5.8 Summary of analysis

Based from our analysis, we have concluded to some factors that are influencing in the context of SMEs related to open innovation. These factors as mentioned at the beginning of this chapter have emerged after the coding process embedded in the template analysis procedure. Below we have developed an illustration showing all the influencing factors in relation to open innovation in our context.

![Figure 7: Emerging, influencing and interrelated factors of open innovation](image)

**Networking**

Networking as it was derived from the analysis, plays an important role in a context of small and developing counties especially for low-tech firms. Networking can be considered as a competitive advantage for the small and micro firms in such context because of the country size. This is supported from the responses of our interviewed firms and by the literature, where the common advantage it can provide them is the rise of new opportunities in terms of collaborations and acquisition of knowledge that can possibly result to innovations.
Innovation

Innovation as it was shown it is undoubtedly an integral part of open innovation. However, innovation deriving from the analysis is influenced by several factors such as the resources, market forces, technology and the nature of SMEs. Resources, that can include human or financial, as it was shown from both the literature and the analysis can hinder or foster any innovative activities. Market forces on the other hand such as competition and market demand can provide an incentive for SMEs to innovate. The next sub-factor that affects innovation is the nature of SME. SMEs are notably characterized for their nature meaning, their lack of resources and capabilities to innovate. This subsequently affects their capacity to innovate due to their nature. However, they are also noted for their flexibility to adapt to different situations caused in their environment and predominantly their strategy flexibility. Lastly, technology is considered important in the different industries we have examined and the respondent raised its importance in order to stay competitive and to improve their products.

Product

Category “product” was derived from codes “quality” and “product protection”. First of all product protection has revealed its importance regarding low-tech products because, since they are relatively simple, it is easy for others to copy it, and by doing little adjustments it is very hard to officially protect the products and to prove that they have been copied. Therefore, a way how to avoid copying in low-tech industries is to increase the product quality, so if anyone would like to copy the idea or design, they would not have the same quality, thus increasing product quality can be seen as an instrument to protect one’s products. Issues with product protection and improving quality are factors that demotivates low-tech SMEs to engage more in open innovation, notably outbound innovation.

Collaboration

Analysis on collaboration allowed to understand that collaboration in low-tech SMEs mainly exist with suppliers and customers, which means that these kind of companies in our context are open for inbound innovation, but not open for outbound innovation, thus collaborating with other parties that could benefit from their ideas and knowledge. Companies avoid outbound innovation because they are afraid to lose their competitive advantage to their competitors. Taking previously mentioned finding in to consideration, it can be concluded that low-tech SMEs in our specific context are more open to inbound innovation, but closed for outbound innovation.
Knowledge
Regarding knowledge, important codes that affect it are managerial systems/innovation management and trade fairs. Managerial systems in relation to knowledge play a serious role, since innovations and knowledge are managed mostly by one or two people in firms, they lack absorptive capacity to deal with new knowledge and to realize it later on. Lacking human resources that would absorb the necessary knowledge hinders low-tech SMEs in adopting open innovation. Nevertheless, as one of the main sources where the low-tech SMEs gather knowledge are trade fairs, where they can see what are the new technologies and patterns in their particular industry.

Competitive advantage
Competitive advantage has resulted from our empirical data as a close relationship factor between other elements. Predominantly, our results indicate that strategy, networking, and innovation are closely related with competitive advantage. These elements have the potential to pave the way for small and micro enterprises and our respondents consider them important to gain competitive advantage.
6 Conclusion

This is the final chapter of this master thesis where we reflect back on our purpose and our research questions with an attempt to answer them. Moreover, in this chapter we will address our limitations for this study, any theoretical, managerial and practical implications and finally suggestions for future research will be expressed.

The aim of this research was to explore the concept of open innovation in low-tech SMEs in a small country context. Also, we aimed to contribute to the literature by addressing a research gap in on the concept of open innovation. Taking into consideration our research questions, we are confident to say that we have achieved the purpose and requirements of this study. Moreover, according to our research questions, we wanted to discover if the companies in our context are familiar with the concept of open innovation and if they do so how it affects them alongside with their ability to identify and adopt external knowledge. Therefore, we proceed to answer our research questions.

**RQ1: Are low-tech SMEs familiar with the concept of open innovation in small developing countries?**

First of all, concerning this research question, results show that the respondents are not familiar with the concept of open innovation in a context of low-tech SMEs in small, developing countries. However, they exploit several of the elements that surround open innovation. Moreover, some of the companies expressed their opinion in knowing what open innovation is in practice, but not exactly the terminology.

**Sub RQ1: How do open innovation affect low-tech SMEs in small scale developing countries?**

For this question, we argue that it is difficult to find an explicit answer due to that none of the companies in our field adopt the concept of open innovation. On the other hand, answering this question implicitly we can identify some influential elements that we concluded in chapter 5 that relate to the companies. For instance, we highlight, those emerging elements as knowledge, collaboration, networking, product, innovation and competitive advantage. As we see from our results, low-tech SMEs in our specific context don’t fully apply the concept of open innovation, but apply elements of it, that in their orientation are more outside-in orientated. In addition, these companies are using those particular elements of open innovation unintentionally. Thus it can be said that the specific context they operate in, is fostering them to be more open towards outside-
in innovation, and more reluctant to inside-out innovation. Despite, product and competitive advantage, all the rest have proven throughout the literature their ability to allow a firm and predominantly an SME to foster the concept of open innovation. Thus, in a context of low-tech SMEs, open innovation can be nurtured. Competitive advantage is one of the new element that surfaced during the analysis and the companies have mentioned it in relation to several other factors. Primarily, they are concerned on gaining a competitive advantage through an innovation focused strategy. However, at the same time there are some other factors that may also hinder the adoption of the concept. These, factors primarily are concerned with the competition levels in the environment, financial barriers the firms are facing, in which these are part of the nature of the companies being SME and the product simplicity that is influenced by their industry they operate in. Nonetheless, the adoption of the concept depends on all elements as a whole. It is difficult for the companies to focus on one element and hope for the best. Open innovation needs careful and thorough consideration on the behalf of the companies and all the elements need to be taken into consideration.

**RQ2: How do low-tech SMEs utilize and adopt external knowledge in their innovation process?**

Furthermore, in regard to the second research question, we aimed to examine how SMEs are utilizing external knowledge their innovation process. From the results we conclude that the firms do not have a systematic approach for innovation. On the contrary, this happens opportunisticly. This is mainly, influenced by their nature as small firms. Meaning that their ability to change their strategy and processes when they are presented with the opportunity to capitalize in order to innovate. That is the reason they do not have a systematic approach. In order for SMEs to efficiently deal with external knowledge, they need enough absorptive capacity, which is influenced by the managerial systems of the firm. But as we see from our empirical results, all efforts for identification and exploitation of external knowledge resides in the hands of one individual, which is the owner of the correspondent firm. Therefore, this hinders their ability in the process of searching and exploiting external knowledge.

### 6.1 Discussion

Taking into consideration the literature about innovation and open innovation in SMEs in general, we can see that it suggests the possibilities for low-tech SMEs to adopt the concept of open innovation. However, due to the scarcity of literature in the context of small and developing
countries, we could not identify explicitly that SMEs have that opportunity to do so. We proceeded with this research in order to fill in an academic gap that concerns the low-tech SMEs in small and developing countries. We identified some influencing factors that affect various elements that open innovation consists of in order to be adopted. Through those identified factors we aimed to contribute to the missing gap in the literature but as well extend it. As we have seen in previous chapters, open innovation is not so recognized in our context. However, looking beyond the traditional literature, through the identified factors we have found some important relationships between some of the elements. For instance, our findings have steered us through a recognition that SMEs are more focused and centralized towards a competitive advantage. Competitive advantage resulted several times in different parts of the empirical findings. The way companies think of competitive advantage is through innovation, strategy and networking. To strive in order to gain competitive advantage for them it is the uttermost achievement and this will distinguish themselves in the industry from the competition. This in return leads us to the other element of competition.

Furthermore, another finding that came up from our empirical data, and that has not been discussed so far in the literature is the importance of competition in the industry related to open innovation. As the interviewed companies acknowledged that one of the main reason of not collaborating and sharing ideas with competitors is the strong level of competition, therefore, we can conclude that stronger competition can direct firms further from open innovation, making them more closed in their innovation approach. Moreover, as we found out in our data, quality of the products plays an important role in low-tech industries, because the products are simple, therefore, protecting them from being copied is almost impossible. In relation to previously mentioned concerns about competition, this situation, when companies are desperately fighting for quality, fosters the competition, which eventually makes companies more reluctant towards outbound innovation.

6.2 Limitations

During the fulfilling of this Master’s thesis, we realized that we were limited in some facets. However, before we start to refer to our limitations firstly, we would like to emphasize that our research is not a comparison study of the two countries mentioned in the text; rather it is an exploratory research per definition to examine a certain concept. Having said that, the findings from this research are not be generalized for companies situated in the mentioned countries nor the industries they operate in.
Our first limitation was the time frame available to carry out this research. The time frame also influenced us on other aspects such as the sample size. This is because we traveled back to our countries individually in order to perform the face to face interviews for our data collection. Therefore, traveling back to our countries to gather the empirical data we felt under pressure from the time we had to do the interviews. Also, another limitation was influenced by the time frame which that limitation was economic constraints. Economic constraints hindered us from staying more in our countries in order to perform more interviews. The longer we were staying in our countries the more expensive the transportation expenses were. This leads us to the other limitation we had for this research which was the sample size. We tried to maximize our efforts of seeking companies to gather our empirical data but some problems related to a nature of a research obstructed us from maximizing our efforts. For instance, some agreed appointments with companies were never taken place due to their time constraints. Also, some of the companies that were in our sample did not agree to be recorded, thus were given the questions to answer but since the answers were not satisfactory nor added value to our findings, we decided to discard them. Consequently, this left us limited to only five companies for our sample size and an uneven number of respondents from the countries.

Despite our limitations, we assert that one of the strengths of our research is the industries that we collected the data. Since we were aiming beyond high-tech companies, we managed to gather data from different industries and we were not limited to one industry. Also, the respondents from the companies held higher managerial positions or sometimes they were the directors which this contributes to the validity and trustworthiness of the data.

Lastly, due to the amount of our collected data it is not possible to generalize the results. Instead, a bigger sample size would be suitable in order to increase generalizability.

6.3 Implications

Firstly, this study contributes to the theory of open innovation in the context of low-tech SMEs in small and developing countries by highlighting important factors that affect elements related to open innovation. The research gives insights about how companies in our specific context adopt elements of open innovations and what are the factors that motivates them to do so, and as well what hinders them from adopting open innovation on higher level in their organizations. Therefore, this study can give practical insights for micro and small enterprises about importance
of the concept of open innovation on how it can foster adaptation of new technologies and knowledge. As well managers of micro and small enterprises learn about the importance of absorptive capacity in the context of SMEs in order to be able to adopt and realize new knowledge for their own good, since from the research it has been cleared out that small companies tend to lack absorptive capacity in order to deal with new knowledge thus limiting their ability to adopt open innovation.

6.4 Future research

Future research in this field needs further consideration. More specifically, resulting from our limitations, a larger sample would be ideal to examine the concept in the context we have explored in. Therefore, a repetition of the purpose of the study using a larger sample would be a consideration for future studies. Moreover, although we did our best accessing a broad range of industries, in which we accessed three different ones; a future research recommendation can include more diverse sample of low-tech industries according to the criteria of the EU. Moreover, since we were aiming for SMEs, our sample companies do fit in that category, however, they are classified as small and micro that are part of the definition of SMEs. Therefore, a bigger sample of companies that fit also in the category of “medium” enterprises is recommended for future consideration for research undertaken in the same context.

Lastly, another future recommendation that is relevant to examine is the concept of open innovation in family firms. This resulted through our sample size when we realized that all of our sample companies are family owned currently in the second generation. Therefore, a recommendation is to examine the concept from a family business perspective from different aspects such as firm performance, growth challenges or even threats from open innovation, because it is about sharing and receiving valuable knowledge, resources, technologies and ideas.
7 Reference list


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Appendix

Appendix 1: Low and medium low-tech industries

According to NACE Rev 2. low-tech industries are:

- Division 10 Food
- Division 11 Beverages
- Division 12 Tobacco
- Division 13 Textiles
- Division 14 Clothing
- Division 15 Leather products
- Division 16 Wood products
- Division 17 Paper products
- Division 18.1 Printing
- Division 31 Furniture
- Division 32 X 32.5 Other manufacturing excluding medical and dental instruments

According to NACE Rev 2. Medium low-tech industries are:

- Group 18.2 Reproduction recorded media
- Division 19 Coke and petroleum products
- Division 22 Rubber and plastic products
- Division 23 Other non-metallic mineral products
- Division 24 Basic metals
- Division 25 X 25.4 Fabricated metal products excluding machinery
- Group 30.1 Ships and boats
- Division 33 Repair & installation machinery
**Appendix 2: Coding process example**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Text unit</th>
<th>Code</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co1</td>
<td>They come and do a recognition of the market, they speak with customers and then they guide us as well</td>
<td>Collaboration with suppliers</td>
<td>Collaboration with suppliers</td>
</tr>
<tr>
<td>Co1</td>
<td>We have some products that are secret to only us, that resulted through collaboration from our suppliers and we are the exclusive company for them. Meaning that, we helped them develop some products so they only give it to us</td>
<td>Collaboration with suppliers</td>
<td>Collaboration with suppliers</td>
</tr>
<tr>
<td>Co1</td>
<td>With our customers I would say we have pretty good communication and cooperation. They help us with their needs to develop new products for each of them and sometimes we take the initiative to present to them some ideas for them</td>
<td>Collaboration with clients</td>
<td>Collaboration with clients</td>
</tr>
<tr>
<td>Co2</td>
<td>Now if there is a large demand and we have to co-operate with someone, then yes we maybe outsource to our competitors so we can fill in the demand</td>
<td>Collaboration with competitors</td>
<td>Collaboration with competitors</td>
</tr>
<tr>
<td>Co2</td>
<td>I believe that especially in Cyprus with the level of competition the most important would be the co-operations and partnerships with others</td>
<td>Collaboration in small countries</td>
<td>Collaboration in small countries</td>
</tr>
<tr>
<td>Co2</td>
<td>with co-development and co-operation you can achieve that because it is something especially in Cyprus and for one SME it is not easy to achieve. Therefore, there needs to be a co-development</td>
<td>Importance of collaboration</td>
<td>Importance of collaboration</td>
</tr>
<tr>
<td>Co3</td>
<td>Also, we cooperate more with our suppliers because they always have something new and exciting to bring into the company</td>
<td>Collaboration with suppliers</td>
<td>Collaboration with suppliers</td>
</tr>
<tr>
<td>Co4</td>
<td>the competitors, it is hard to work together with them because they have totally different understanding about the product</td>
<td>Collaboration issues</td>
<td>Collaboration issues</td>
</tr>
<tr>
<td>Co4</td>
<td>Yes we have tried it all and we failed miserably, if we talk about collaborating with suppliers and technical universities, because the product is quite specific, no one goes into detail</td>
<td>Collaboration failures</td>
<td>Collaboration failures</td>
</tr>
<tr>
<td>Co5</td>
<td>Sometimes our clients share the knowledge of what spices, for example, we should use more or less. They help us to improve the recipes.</td>
<td>Collaboration with clients</td>
<td>Collaboration with clients</td>
</tr>
</tbody>
</table>
Appendix 3: Coding scheme