The Faculty of Social Sciences

The Internationalization Process of Estonian Software Companies

3/6/2014

This Master thesis is submitted in part requirement for the MSc in International Marketing, Department of Social Sciences, Aalborg University.

Heiki Koppelmann

2014 TALLINN

TITLE SHEET

Place of study:	Aalborg University
Level:	Master
Field of study:	Economics and Business Administration (International Marketing)
Title of the project:	The Internationalization Process of Estonian Software Companies
Topic:	What external factors drive internationalization process of Estonian software companies?
Keywords:	Internationalization, SMEs, Porters Diamond Model, Estonian ICT industry and software sector, PLC, OLI Model, Uppsala Model
Submission date:	06.03.2014
Number of words:	13694
Number of pages:	74
Supervisor:	Mohammad Bakhtiar Rana
External Examiner:	Søren Eschen
Written by:	Heiki Koppelmann

ACKNOWLEDGMENTS

During the past months I have had the opportunity to investigate an extremely interesting and fairly unexplored topic – the internationalization process of Estonian ICT companies. During the process there have been many knowledgeable people, to whom I am very grateful.

I would like to express my special gratitude to my Supervisor, Mohammad Bakhtiar Rana, who has guided me throughout the process of writing this thesis and to be able to finish my studies in Aalborg University.

I would also want to sincerely thank Senior Secretary, Birgitte Krogner, who's fast and professional administration skills have helped me during my thesis writing and while studying in Aalborg University.

I would also like to thank my family and friends, who have supported me and gave me the strength to finish my thesis.

ABSTRACT

This thesis was initiated because of the extremely interesting and fairly unexplored topic – the internationalization process of Estonian ICT companies. Applying the Porters Diamond Model to collect and interpret the secondary data from the internet, books, journals and statistical sources to find the external factors that influence the internationalization of Estonian ICT industry and identify the competitiveness of the industry.

To be able to describe the internationalization phenomena this chapter was divided into the theories related to firms regardless of the nature of the firms (Uppsala Model, The Product life-cycle theory) and into theories related to MNEs (OLI Model). Following theories were used as theoretical framework, while taking the SMEs perspective.

The main findings of the project were, that Estonia is one of the best environments to start ICT related business, because of the free and highly developed infrastructure environment and the competitiveness of the industry is one of the highest in Eastern-Europe.

We can expect, that ICT industry and software sector of Estonia will remain and become even more competitive during the near future.

LIST OF ABBREVIATIONS

APC	Adaptive Production Capability
B2C	Business to Consumer
ICT	Information and Communication Technology
IE	International Entrepreneurship
IO	Industrial Organization
FDI	Foreign Direct Investment
MNE	Multinational Enterprise
OECD	Organization for Economic Co-operation and Development
SME	Small and Medium Sized Enterprise
PLC	Product life-cycle

CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1. INTRODUCTION AND RESEARCH QUESTION

This introduction chapter explains the background of the study area followed by the Estonian ICT sector overview, where the study area, which author has chosen to investigate will be explained more detailed.

1.1 BACKGROUND OF THE STUDY

The competitive environment of companies has changed completely in the last 10-15 years. Today we live in the world of Internet, which means, that every company has a potential opportunity to internationalize and go global. More and more companies are getting involved in international activities. The ability to engage in international activities has become very important for the survival and growth of firms. This is particularly true within the knowledge-intensive sectors where firms often have high upfront research and development costs but operate in narrow market niches scattered thinly from one country to another (Saarenketo, 2002).

The internet offers completely new ways to export and to enter into the markets. Company can improve their efficiency by receiving orders on a global basis. This is a great opportunity for small and medium sized companies because of the limited resources they have (Bennett, 1997). Because of the internet´s influence companies from every part of the world will be competing – for customers, resources, talent and intellectual capital – with each other in every corner of the world's markets. Products and services will flow from many locations to many destinations (Hollensen, 2011). E-commerce has provided a tremendous amount of benefits to Small and Medium-sized enterprise (SMEs), as e-commerce continues" (Ajmal & Mohd Yasin, 2012).

In Europe the small and medium size companies constitute 90% of the firms, which contributes tremendous part of European economy. More and more small and medium companies have international businesses, which are growing fast (Asc, 2002). New paradigms will have to be developed to take account of small and medium sized company's internationalization process in the emerging electronic age (Liu & Li, 2004).

Estonia is a small country with the population of 1.3 million (Estonia, 2013), which means, that there is limited amount of customers and market volume. Estonia has been relatively competitive in attracting foreign direct investments (Varblane, 2011). These have been instrumental in accelerating the transition process and building up competitive advantages of the local enterprises. On the other hand, because of the limited local market, for the sake of further growth, internationalization is inevitable for Estonian companies. (Reiljan, 2002). There have been numerous scholars suggesting, that the world of internationalization is changing because of the digital era of internet and companies can now "leapfrog" over stages of internationalization and become global players overnight. Is internet the new and powerful tool for Estonian small and medium sized companies to survive and become strong players without the resources and economies of scale? This topic has been explored more than 10 years ago by Varblane, (2011), Roolaht (2002) and Reiljan (2002), who have provided some insight into this specific field.

There have been several articles and books about the area, that because of the internet, it is possible for a company to go global over night by establishing a website. The purpose of this project us to investigate how Estonian software companies are acting and behaving in relation to internationalizing their businesses. Is that true, that company can internationalize overnight, especially for a technologically-leadenness companies with the special niche in the market. Estonia has one of the best soils for creation and internationalization of software businesses because of the high growth of the information technology, liberal conditions and closeness of Western Europe. The project would be unique because as far as author knows, there have not been any studies made concerning the attempt of describing the internationalization processes of the Estonian software companies through internationalization theories and therefore it would be appropriate to raise the question of: *What external factors drive internationalization process of Estonian software companies?*

Since technology has affected the internationalization processes of companies, especially within knowledge-intensive sectors of Information and communication technology sector of Estonia (ICT), this topic is important, as ICT sector is one of the most the developed industries in Estonia, which has been effected most by the new advanced technologies. Porters Diamond Model theory, has been used in this paper to describe the external factors, that influences the internationalization

decisions of Estonian software companies. To gather information about the most important external internationalization factors the secondary data from internet and various studies and reports are being reviewed to gather the necessary data.

In the following chapter the overview of Estonian ICT sector is presented with the deeper focus on the software companies and the recent studies done among them to familiarize reader with the essence of the study area.

1.2 THE OVERVIEW OF ESTONIAN ICT INDUSTRY

The purpose of this section is to give a reader an overview of the study sector of Estonian ICT industry, of Estonia focusing on the software sector.

Software industries currently represent less than 10% of the total ICT market in the OECD area but they are growing rapidly. They also face many challenges as compared to ICT manufacturing industries, where efficiencies of scale and sales are on global level the local clustering of the software industries with other local sectors is more evident. (Week, 2003). Following let us take a closer look at the Estonian software sector.

The existence and development of ICT manufacturing and software industries is of great importance in the long run for any country as these industries directly or indirectly contribute to the production and export of internationally competitive products and services. (Kalvet, 2004) Estonia is one of the smallest EU acceding countries and the smallest Baltic country with a population of only 1.3 million. It is often introduced as one of the most positive and successful examples of the transition process and an emerging innovation-based economy (*ibid*). This is the reason, why Estonia has so many software start-up companies emerged in the last decade.

Estonian software sector compared with ICT (Information and Communication Technology) manufacturing industry, which is mainly consolidated export-intensive and largely based on FDI, is very different. The number of companies in Estonian software sector is high but the production

volume and the amount of export is low (Kalvet, 2004). The evolvement of Estonian software sector was largely influenced by governmental structures, where legislation creation favors the environment. Estonian government has been active with procuring advanced solutions from local successful software companies, so the returns have been two-sided (Krull, 2003). This means, that large part of software companies have emerged as successful they have because of the government support and public procurement programs offering long-term cooperation. However for new start-ups, with niche software solutions have to think about entering into foreign market.

Estonian modern banking structure was developed by 1993 but the suitable software system, that could service in large-scale was missing. Since the re-establishment of the modern banking system, it has been the "leading" software sector in Estonia (Swedbank, SEB Bank) are employing the largest amounts of IT specialists. (Äripäev, 2003). Since the independence of Estonia the banking and telecommunication sectors have been the key drivers of the ICT cluster. The reestablishment of governmental structures, the emergence of a private sector banking system and rapid development in wholesale and retail trade have all contributed to the emergence of the Estonian software sector (Kalvet, 2004). In 2008 research made by Kaubandus-Tööstuskoda found, that there was 1103 ICT companies in Estonia and approximately 25% of them were exporting. The turnover growth compared with 2007 was +43, 7%, which constituted 3, 7% of the whole Estonian export market. Following figure shows the export turnover of Estonian ICT in the period of 2005-2008.

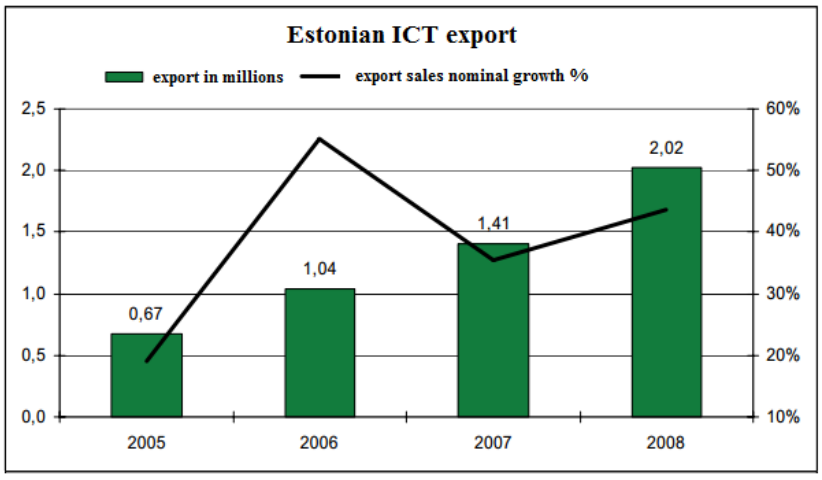

Figure 1: Estonian ICT export

Source: (Kaubandus-Tööstuskoda, 2010)

The research showed, that most common Estonian ICT enterprises exporting activities are software, hardware and consultations. In relation with software exporting the most common activities are user licenses and IT related personalizing services. Most common hardware exporting services are bank card, id-card and IP-phones sales into foreign markets. Consultation includes remote maintenance, training and technical support (*ibid*).

Research distinguished five different Estonian ICT internationalization models:

1. International involvement in the company, who buys outsourcing services (so-called "western uncle").
2. Sales to international capital company that buys outsourcing services (so-called "three drops of blood ")
3. Estonian company embarked on its own product, which has moved into foreign markets (so-called "Piddle")
4. Going global with its own product immediately (so-called "knee-deep sea")
5. A well-known product or brand representation and exports (so-called "Supplier")

(*ibid*)

Survey was based on 37 Estonian ICT exporting companies, from which micro and small companies formed 81% of the respondents (number of employees 1-49). 62% of the ICT were experience exporters with the experience of 5 and more years and the number of exporting countries were 2-5. The most popular exporting destinations were: Finland, Latvia, Germany, Denmark, Norwegian, Luxemburg, United Kingdom, USA, Malaysia, Arabia and United Emirates. 65% of the Estonian ICT´s exported only services and 91% of the export was the end product.

Three main competitive advantages in the international market, which were mentioned the most by the Estonian ICT´s were: the high quality of the service/product, quality of the workforce and quality of the skills. The most common answer for the question of "what are the most important activities to increase the competitiveness of the company" were: Product Development, Investing in manufacturing equipment and technology and Certificates and standards high compliance. (*ibid*).

The most well-known Estonian related software company success story is Skype. The name of Skype was derived from “sky” and “peer” (Tänavsuu, 2013). Skype was first released in 2003 of August with the crew of five developers behind it; Ahti Heinla, Priit Kasesalu, Jaan Tallinn (Estonia), Janus Frees (Denmark) and Niklas Zennström from Sweden. Skype was warmly received by its customers and by the end of 2010, Skype had 663 million registered users (News, 2011).

Skype was bought by Microsoft in 2011 for $8, 5 billion. Headquarter is located in Luxemburg, while most of the development (44% of overall employees) are situated in Tallinn and Tartu (Estonia) (Sormunen, 2011). Skype allows users to interact with peers using a microphone and webcam addition to instant messaging. Phone calls can be made to traditional phone networks and all calls in Skype network are free of charge. Users have to pay, when calling into landline telephones or mobile phones through Skype using debit-based user account system to pay for the service (Linton, 2011).

In this chapter we looked at the Estonian ICT industry as whole, which can be divided into three types of companies, whose main exporting activities are software, hardware and consultation service/product exporting. We also had a brief overview of the software sector inside of ICT industry.

In this project the external factors of Estonian ICT industry’s internationalization are analyzed. Most of the Estonian ICT companies are SMEs, therefore it would be interesting to analyze the Estonian ICT industry by using Porters Diamond model to identify the industries competitiveness.

Like stated before the main question of this project is: *What external factors drive internationalization process of Estonian software companies?* To shed some light into external factors the Porters Diamond Model has been used to gather secondary data, using books, reports, websites and other researches made in this topic to be able to answer to the question.

In the following chapter the main questions of this paper is presented.

1.3 RESEARCH QUESTION

The main question of this research paper is:

What external factors drive internationalization process of Estonian software companies?

1.3.1 LIMITATIONS

In this project only the Estonian ICT industry will be analysed because it is the home country for the author making the collection of the secondary data more more accessible. Estonian ICT industry has been taken under scrunity also because Estonia has the most developed and one of the most competitive ICT industry in Eastern-Europe.

Due to the time restrictions and the the unsuccesfull attempt of primary data collection, the author used only secondary data of books, reports, researches and websites to collect the nessassary data about the external factors of the Estonian ICT industry.

Here are some authors attempts to require primary data directly from Estonian ICT companies without any positive result:

- Author contacted 60 Estonian ICT companies via e-mail questionnaire
- NPA Estonian Business Software Alliance was contacted (only domestic oriented)
- Estonian ICT export cluster was contacted (unable to give detailed data about the topic)

Following we will look at the methodology of this project followed by the literature review to give the nessasary theoretical backround, after that we will look at Porters Diamond Model, which is used to identify the external internationalization factors of Estonian ICT companies.

2. METHODOLOGY

The purpose of this chapter is to give the explanation of methods and methodology used in this project and to justify the choices made. The data collection and importance used in this paper and the thinking process of the author will be also described.

2.1 RESEARCH OBJECTIVES

According to Wallmann (2006) the research objectives can be defined as "*project delineate the intentions of the researchers and the nature and purpose of the investigation*." The main purpose of this paper is to analyze the competitiveness of Estonian ICT industry and to find the main internationalization factors, why Estonian companies are internationalizing. To be able to identify the factors the Estonian ICT industries background is described and Porters Diamond Model is applied to measure different competitiveness factors of the ICT industry.

2.2 RESEARCH DESIGN

In this paper the main sources of data are books, websites, articles, journals to get the theoretical perspective to the research. There are also some reports, statistics and other studies used to collect the necessary secondary data. "Research design introduces and frames the chosen methodology for collecting and analyzing data. When the researcher is thinking of the research design, one should already have an idea what the analyses will be (Bryman, 2004).

The first most important thing, when starting a research, is to find interesting topic, which is often too broad to be able to carry out the research and to be able to focus on the research question. The process of leading initial ideas to the concrete research question decides the form, course and progress of the research (Neuman, 2006). The main question of this paper was first mentioned in the Research Question part: *What external factors drive internationalization process of Estonian software companies?*

2.3 METHODOLOGICAL APROACHES

In this chapter the methodological view of this paper will be presented. I will use Arbnor & Bjerke approach to understand, solve and explain the business problems in this project.

"*Different methodological approaches make different assumptions about their areas. This means, that when people apply the different approaches in practice, they have to proceed differently when trying to understand, explain and improve business, depending on the approach being used*" *(Arbnor & Bjerke, 1994).*

Theories of science have developed a "language" to be able to describe the relation between ultimate presumptions and the practical use of various methodological approaches. The most important piece of this language is the concept of *paradigm* (ibid).

In following chapter we will take a look at the definition of paradigm and how it is related to the methodology of social sciences.

2.3.1 DEFINITION OF PARADIGM

"*…bridge between the starting points of ultimate presumptions and of methodological approaches*" *(Arbnor & Bjerke, 1994).*

The concept of paradigm is intimately associated with Thomas Kuhn (1922-1996), who was an American philosopher, natural scientist and historian of science, who conducted an analysis of the development of knowledge in the natural sciences in his book "*The Structure of Scientific Revolutions*", which was published in 1962. Kuhn states, that scientific theories develop revolutionarily, that means, that new research patterns will replace the old ones and called these patterns *paradigms*.

Thomas Kuhn was originally rather unclear about what *paradigm* consisted of:

1. Symbolic generalizations
2. Metaphysical aspects
3. Values for judging research results

4. Ideal examples

The author agrees with Arbnor & Bjerke by preffering Törnebohm´s evolutionary view instead of Kuhn´s revolutionary explanation about *paradigm*, which is:

1. Conception of reality (view of the world)
2. Conception of science
3. Scientific ideas
4. Ethical/aesthetical aspects

(Arbnor & Bjerke, 1994)

In the next chapter the definition of operating paradigm will be discussed.

2.3.2 OPERATING PARADIGM

"…bridge between a methodological approach and a study area is the concept of an operating paradigm, one that is chosen considering its necessary connection to ultimate presumptions, to some paradigm" *(Arbnor & Bjerke, 1994).*

A methodological approach has a double relation in that it encompasses certain ultimate presumptions at the same time it provides the framework for a more concrete approach, that is, the framework for the development of the operating paradigm.

1. **Conception of reality** - has to do with philosophical ideas about how reality is constructed, weather reality exists in and of itself or through our mediation.
2. **Conception of science** - has to do with the knowledge gained through education, which gives us our concepts or beliefs about the objects and subject we study.
3. **Scientific ideas are related** – are related to us as researchers/consultants/investigators, and expressions of something related to our desire.
4. **Ethical and aesthetical** – aspects have to do with what we as researchers/consultants claim not be done without their knowledge.

"…operating paradigm, on the other hand, may change fairly often, depending on the shifting character of the study area and the type of operative paradigm in question" (Arbnor & Bjerke, 1994).

Following we will look at the relation between the operating paradigm and Methodology.

2.3.2.1 METHODOLOGY AND OPERATING PARADIGM

"Methodology is the understanding of how methods are constructed, that is, how an operating paradigm is developed. An operative paradigm relates a methodological approach to a specific area of study, containing of two parts: methodological procedure and methodics" (Arbnor & Bjerke, 1994).

According to Arbnor & Bjerke the most important purpose for methodology is to clarify how different methodologies, problem formulation, study plans, methods, techniques and study areas make up the parts of an integrated whole. Also, all the components cannot be described separatley, instead of refering to their relations to each other and the whole.

A methodical procedure refers to the way the creator of knowledge incorporates, develops and modifies some previously given techinques in a methodological approach. How creators of knowledge relate and incorporate these techniques-made-into-methods into a study plan and how the study is actually conducted is called *methodics* (ibid). This means, that when adapting a techinque to a methodological approach is a methodical proceedure, wheareas applying this adaptation is called methodics.

In the following chapter we will look at the different social science paradigms from Bjerke.

2.4 SIX SOCIAL SCIENCE PARADIGMS

Six groups of social paradigms, the categorization is based on Bjerke (1989).

Category 1: Reality as Concrete and Comfortable to Law, a Structure That Is Independent of the Observer. Knowledge creator perceives reality as tangible, concrete and real with deterministic relations among the constituent parts. The subjects and activities are viewed as a results of the external forces in the environment to which these subjects and activities are exposed. Creating knowledge within this paradigm usually takes the form of controlled experiments and surveys, which consider only manifest phenomena. Definitions should be made as measurable as possible.

Category 2: Reality as Concrete Determining Process. When reality is viewed as a concrete determining process, society and its parts are seen as an organically evolving process that is concrete on its nature but ever-changing in its details. Creators of knowledge within this paradigm usually take the form of interviews and analysis of documented material, to explain the patterns.

Category 3: Reality as Mutually Dependent Fields of Information. This means, that reality is seen as consisting of constantly changing forms and activities that are based on the transfer of information. Creators of knowledge using the paradigm are not interested in causality or do they make a clear differentiation between the object and its environment in their studies, instead the organization and its environment are evolving together.

Category 4: Reality as a World of Symbolic Discourse. Creators of knowledge, who use this paradigm concentrate on the patterns of symbolic relations and significances that emerge out of human actions and interactions.

Category 5: Reality as Social Construction. World is continuous process and it is created afresh every in every encounter of everyday life and it has no concrete status. Creation of knowledge requires and understanding of the process and/ or method through which reality is created.

Category 6: Reality as a Manifestation of Human Intentionality. Paradigm, which is based on the postulation of a world, where individuals create within their own consciousness. Individuals are seen as international creatures, who control their psychological energy by acts, that spring from a kind of transcended consciousness.

(Arbnor & Bjerke, 1994)

Following there is a table with all the six methodological approaches related to the paradigmatic categories, followed by a figure, which explains the pattern of how the reality is seen, when moving from left to right in the table.

1	2	3	4	5	6
Reality as concrete and conformable to law from a structure independent of the observer	Reality as a concrete determining process	Reality as mutually dependent fields of information	Reality as a world of symbolic discourse	Reality as a social construction	Reality as a manifestation of human intentionality
_____Explanatory Knowledge_____ [**Explanatics**]				__Understanding Knowledge__ [**Hermeneutics**]	
◀ The **ANALYTICAL** APPROACH ▶					
	◀ .....The **SYSTEMS** APPROACH..... ▶				
				◀ .. The **ACTORS** APPROACH... ▶	

Table 1: Three Methodological Approaches Related to the Paradigmatic Categories

Source: (Arbnor & Bjerke, 1994)

If we take a closer look, we could see a pattern, that the more we approach to the lower numbers, then the reality is considered to be objective, the relation of the philosophy are decreased and the knowledge is seen as the lodestar and empirical results are sought. When we move to the right side of the figure, reality is considered as subjective, relation to philosophy is increasing, knowledge as understanding is seen as lodestar and creators of knowledge seek for specific and concrete results.

1	2	3	4	5	6
- Reality is considered to be objective and rational - The relations to philosophy are decreased - Knowledge as explanation is seen as the lodestar - Results that are general and empirical are sought					**- Reality is considered as subjective and relative - The relations to philosophy are increased - Knowledge as understanding is seen as the lodestar - Results, that are specific and concrete, but eidetic, are looked for**

Table 2: Summary of the six Social Science Paradigms

Source: Own creation

In the next chapter the three methodological approaches of business will be presented, to be able to identify the approach, which is used in this project. According to Arbnor & Bjerke relate to the paradigmatic categories discussed in previous chapter. The three methodological approaches are called: analytical, systems and actors approach. Before there is a short chapter about the differences between explanaticists and hermeneutics view of creators of knowledge.

2.4.1 EXPLANATORY AND UNDERSTANDING CREATION OF KNOWLEDGE

"There is a definite and decisive difference between creators of knowledge, who want to explain and those, who want to understand. The researcher, who deny the existence of a fundamental difference between the natural and the social science are traditionally called positivists" (Arbnor & Bjerke, 1994).

Today the term "positivists" is not used so much, instead, they are called *explanaticists*. Explanaticists assume, that the same methods, that have proven their value in analyzing the classic natural sciences are appblicable to the material of the social sciences also. Expalanticists maintain the explanatory logics in natural and social sciences are identical.

Creators of knowledge, who distinct between the methods of the classical natural sciences and social sciences are called hermeneuticists, who assert, that natural science methods are essential unsuitable in social science domains. They claim, that there is a decisive difference between explaining the nature and understanding culture. Criticism from hermeneuticists is that, these kinds of analyses are onyl valid in a rational world with objectively rational actors. One of the biggest differences between the explanatics and hermeneutics is their respective views of the degree of complexity of the social world.

Following there is a Boundary Between Explanatics and Hermeneutics figure above.

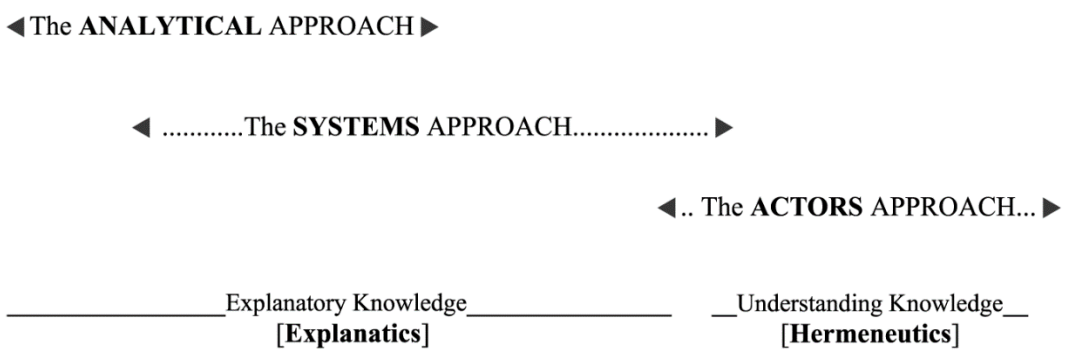

Figure 2: The Boundary Between Explanatics and Hermeneutics

Source: (Arbnor & Bjerke, 1994)

2.5 METHODOLOGICAL APPROACHES IN BUSINESS

In this chapter we will look at the three methodological business approaches according to Arbnor & Bjerke, which are:

- The Analytical approach
- The Systems approach
- The Actors approach

Following there is a more detailed introduction to these approaches to be able to determine the approach, which is used in this project.

The analytical approach

The analytical approach is the oldest of the three. Most of the books written about the methodology of the creation of business knowledge are about the analytical approach. Analytical approach represents the positivistic and objective point of view and when using it, it is assumed, that reality is independent from its observers and the sum of each part equals the summary of (2+2=4).

Creators of knowledge, who use analytical approach believe, that all the parts in the investigation can be seen as independent from each other and one is not influencing them. In the analytical approach only the measurable parts can be seen as "Truth" and the hypothesis can be used to explain the different facts, helping to conduct the survey. Only quantitative methods of data collection are used.

The Systems approach

The Systems approach came after the analytical approach and the reality here is based upon systems and their interactions between each other. Systems approach includes the examination of the components (sub-systems) and also the assessment of the connections between. Systems approach differentiates between the reality, which is objective and the reproductions of it. In the Systems approach both, the qualitative and quantitative data collection methods are used.

The Actors approach

The Actors approach is the newest approach and it comes from hermeneutic focusing more on the understandings of each individual in a society. Compared with other approaches the Actors approach relies more on to determining the meaning from the culture and language, where individuals are actors, who are acting according to their understandings of the reality they live in.

Creators of knowledge use qualitative research and data collection methods like interviews and observations. All three approaches are different but similar at the same time but it is very important to understand the four components of a paradigm to be able to incorporate the six social paradigms into different business approaches (Arbnor & Bjerke, 1994).

Following we will take a look at the chapter, where the theories and approaches applied in this project are described.

2.6 USED METHODOLOGICAL APPROACH

In this project I have used the Analytical business approach to answer to the main question of the project. According to Arbnor & Bjerke the Analytical approach uses mathematical tools in order to be used as effectively as possible – for what is called the law of large numbers to be valid – it is necessary to be able to select study units from a population, units that are assumed to be independent of each other.

Author tried to acquire quantitative data via e-mail questionnaire by contacting 60 Estonian companies, which was not successful and did not give any results, the Estonian Software Association and ICT Export Cluster was also contacted without any results. The advantage of using Analytical approach is, that it minimizes the objectivity problem and leaves minimal room for author´s values, which can impact the results and conclusions of the paper.

"…it is not possible to determine the best methodological approach, this can only be done reflectively by considering a situation to be studied and one´s own opinion on life" (Arbnor & Bjerke, 1994).

Following we will take a look at applied methods used in this thesis, to collect the data.

2.7 APPLIED METHODS

The literature studied and discussed in this project was mainly found from the books and internet. There were also several reports, statistical studies and scientific articles used to collect the nessasary data. Like it was mentioned in the chapter of Limitations, due to the failed attempt of collecting the primary data, this project does not include any primary data, only the secondary data, which author managed to find in relation to the topic.

In the next chapter we will take a look at the literature review of this project to give the theoretical background about Porters Diamond Model and internationalization theories in relation to SME´s (most Estonian ICT companies are small and medium sized).

3. LITERATURE REVIEW

In this chapter the literature review of this thesis will be presented additional with the similar researches done in the same field. The purpose of the literature review is to give an overview of the already conducted research, which will give more aspects to the problem at hand. According to Wallmann (2006), "the main purpose of the literature review is; to summarize the results to form a foundation on which build own research, collect ideas on how to collect the data, investigate methods of data analysis, to study instrumentation which has been used and to assess the success of the various research design of the studies already undertaken (Walliman, 2006).

3.2 PORTERS DIAMOND MODEL THEORY

To see intangible resources in the real environment Porters Diamond Model theory is used, to explain the external opportunities and constraints for firm's internationalization. In the first part there is a literature review about the theory following the explanation, how this theory can be used in this study.

3.2.1 PORTERS DIAMOND MODEL IN THE INTERNATIONALIZATION OF SMES

Michael Porter Diamond model can be used to analyze, why some states are more competitive and to understand why some industries in that states are more competitive than others. Porters Diamond model consists of four national determinants of competitiveness: demand conditions, factor conditions, related and supporting industries and company's strategy, structure and rivalry (Bakan & Doğan, 2012).

Porter's main focus was to build a link between the academic literatures of strategic management and international economics. Diamond Model was mentioned first time in his book "Competitive Advantage of Nations" in 1990. This built a solid fundamental for developing national policies on competitiveness. Porter stated, that most of the trade-related theories were about cost and there is a need for a new theory (*ibid*).

"*New theory should attract a comprehensive understanding of competition that contains segmented markets, differentiated products, the technological differences and economies of scale*". *(Porter M. , 1998)*

Porter proposed, that new theory should be capable of defining and answer to the question of: why companies in certain places implement better strategies than others competing in specific industries. To understand the phenomena Porter carried out an investigation in 10 countries; Denmark, South Korea, Britain, Italy, Sweden, Switzerland, Singapore, USA, Germany and Japan). The investigation contained the economic characteristics of 100 different sectors and lasted four years to find the factors that determine the competitiveness of different nations and sub-sectors.

Porter mission was to answer to the question "why some regions are more competitive than others" and to understand how companies acquire better positions in specific sectors of the country in the scale of global competitiveness (Smit, 2010).

Diamond model creates a structure that can determine the competition rules in a given sector and stresses the role to play based on the opinion of achieving a prolonged competitiveness (Sun H., 2010). Porter linked the decisiveness of sectors that state competitive advantage of different nations with the value of a diamond.

Diamond model contains four corners of; demand conditions, factor conditions, firm strategy, structure and competition and the presence of related and supporting industries. Change and government factors are also added to the diamond model. These factors affect the competitiveness as a support of the four main factors.

The Porters Diamond Model is displayed below:

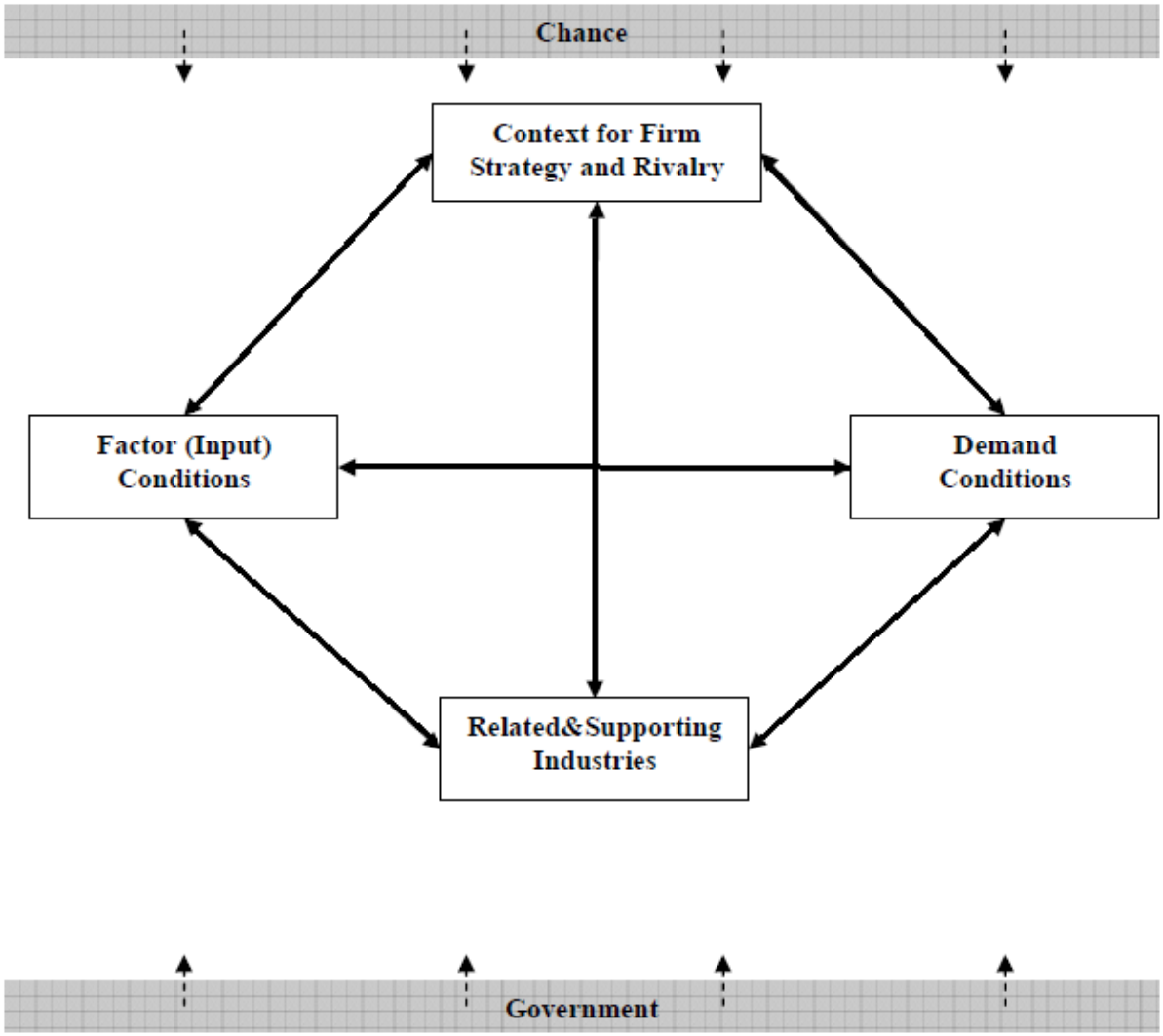

Figure 3: The determining factors of diamond model

Source: (Porter M. E., 2001)

Factor (input) Conditions

Factors of production are "the inputs necessary to compete in any industry" (Porter 1990). The factor conditions are company's values and the skill to supply those factors of research production that allow a unit to compete (Curran, 2001). Porter states, that factors should be divided into five categories;

1. Human resources
2. Material resources

3. Knowledge resources
4. Infrastructure
5. Capital resources

(Bakan & Doğan, 2012)

According to Porter there are three different distinctions among the different factors. The first distinction divides factors into basic and advanced factors. The second distinction will divide factors into generalized and specialized factors and the third distinction is whether the factors are inherited or given by the nation. Factors, which are advanced, specialized and created will provide higher sustainable preference compared with the basic generalized or inherited (Nilson, 2002). Advanced and specialized factors are regarded as being more decisive (OZ, 2002). Competitive advantage depends on how efficiently the factors mentioned above are used and also the condition of the factors while they are used (the quality of the factor).

Demand Conditions

Porter points out, that demand conditions indicating the home demand will form the second general national competitive advantage (Kuah, 2005). This is one of the intriguing dimensions relating to the consumer nature of the home market (Gallagher, 2005). Demand conditions are dependent on the buyer's needs about the price, quality and services in specific industry (Barragan, 2005). Demand conditions influence the drafting of firm conditions of factor and they have an influence on the speed and direction of innovation and product development (Naserbakht, 2008). Demand conditions are the denomination of demand by the community for a unit's investigation and can be realized in a unit's progress at publishing research and draw funding and people to guarantee research (Curran, 2001). The demand conditions are showed with three most important factors of competitive advantage;

1. *Home demand conditions*

The three main nature of characteristics of the composition of home demand are; sophisticated and demanding buyers, segmented structure of demand and anticipatory of buyer's needs. Nations reach the competitive advantage in sectors or its parts where demand allows local companies a

simpler and earlier overview of buyer needs compared with foreign competitors (Barragan, 2005). According to Porter the sophistication of the demand is more important compared with the scale of demand. Porter states, that when sector is existing in a complex and with high demand local market it is compelled to innovate and dispose of superior products because the market needs higher quality (Day, 1994).

2. *Demand Size and Pattern of Growth*

According to Porter the local market size is a clear advantage, if it helps investment and re-investment (Tasevska, 2006). The presence of a multiple individual consumers inside of the nation develops a better environment for innovation compared with the situation, where only one or two consumers command the local market for products and services (Tuna, 2006). Untimely local demand helps local companies to take action sooner compared with foreign competitors to become established in a specific nation.

3. *Internationalization of Domestic Demand*

Regarding to the demand condition Porter recommends that although, at any price, a minimum amount of local demand is must to improve the sector to increase the expand and blueprint of the quality of this demand and it is greater importance, compared with the amount of that (Mehrizi, 2008).

The overall message is that the more innovative pressure local buyers place on firms, which they do more through qualitative than quantitative factors, the greater the competitive advantage.

The related and supplier industries

Porter states, that there are several examples that show, that it is impossible to find only one single prosperous industry without having strong and supporting industries besides it (Mehrizi, 2008). The relationship with these industries is important to the success of a determined sector in the country and are thought about putting together the maximum synergies when all requisite institutions necessary to operate learning, innovation and competitiveness and economic agents are linked up (Bakan & Doğan, 2012). Related industries are industries where organizations can develop or deploy activities in the value chain, while competing. Supplier industries establishes a

comparative advantage by delivering inputs, giving new methods and ways to utilize new technology and transferring of know-how (Tasevska, 2006).

The existence of related industries can provide the emergence of new competitive industries and ways to exchange of information and technology. Competitive advantage in the supplier industry offers possible advantage to companies in several other sectors. Company has an effective, fast and early entry to the most effective input (Nilson, 2002). Often these sectors can provide cost-effective inputs taking part in the development process, hearten other companies in the chain to innovate and improve themselves. Even more important are the changes of followed co-ordination among suppliers and buyer industries in relation of innovation and development processes.

The closeness of related industries offer quicker response to the market trends and changes, which makes innovation simpler. This affirms the accessibility of the materials and skills needed to make advantage with low cost or differentiation (Day, 1994). The third competitive advantage appears with the co-operation with supplier and buyer industries. If the local supporting industries are competitive enough companies could take the change of more cost efficient and innovative inputs. This action becomes stronger, when suppliers personally are strong and important international competitors (Naserbakht, 2008).

Firms' strategy, structure and rivalry

The fourth dimension of the Porters Diamond model is called: firm's strategy, structure and rivalry. Porter revealed, that the structure of an industry and the competition have an impact on the competitiveness of a sector (Mehrizi, 2008). Company's strategy, structure and competition are indicators of condition, that show how sector is originated, ordered and handled and the nature of the local competition that can help a state to attain a competitive advantage (Nilson, 2002). Porter states, that local competition and the search for the competitive advantage in a country can support organizations with bases for completing such advantage in international scale (Porter M. E., 2001).

In the international world the rivalry and competition are must, when prosperous companies compete with each other to evolve (Tuna, 2006). The pattern of competition has impact on the case of innovation and the last plans for global goals. The nature in how companies are managed and

their preference to compete and evolve is greatly influenced by national conditions, as well as the cultural aspects.

State

Porter states, that there are two extra determinants that significantly influence the national system and are necessary to make the Diamond model theory complete. The first determinants is government and the second one is the change of events (Porter M. , 1998). Porter explains, that even though these two determinants are introduced as additional factors, they play a huge part and influence the rest of determinants (Tasevska, 2006). The part of the government and federal policy makers can influence positively or negatively the competency of a sector or industry by improving or limiting the national competitive advantage and competitiveness.

Government forms and influences the situation from the demand side, factor conditions additional to the supported industries (*ibid*). Some of the policies that can affect the determinants are; laws, quality standards, capital market regulation, taxes, financial incentives, education policies, public procurement etc. (Mehrizi, 2008). Government that is moving towards to the restrictions of bureaucracy and helps with the process of creation of new companies will contribute to the entrepreneurial spirit and government, whose encouragement towards joint ventures with international companies helps to shift the technology. Government that protects indigenous companies against foreign ones can effect negatively the improvements and the productivity of the competitiveness and quality (Barragan, 2005). Government influence to the nation's competitiveness can be positive or negative and it could fail if the government policy is the only source for competitiveness. It should protect local companies from "direct threat" but government should seek to establish competitive surrounding and hearten local companies to innovation (Mehrizi, 2008).

Chance

Porter states that change occasions have small influence to situations in the nation. Typical change can be improvements outside inspection of companies (Nilson, 2002). Change occasions can be defined as uncontrollable to companies but can make forces that remold the industry, letting

changes in competitive positions (OZ, 2002). These events prevent the advantage of beforehand constituted competitors and make potential that new nation companies can change to succeed competitive advantage against to new and distinct conditions (Tasevska, 2006). These changes include factors (external to the sector), which are not easily seen and new inventions; political decisions by foreign governments, warfare's, quick changes in financial markets or exchange rates, discontinuities in input costs, or other radical technical changes (*ibid)*. Among management theories, Porter‟s (1990) framework and the Resource Based View (RBV) have been recognized as the most influential perspectives to explain competitive advantage and why some firms succeed where others fail (Abbott and Bredahl, 1994; Powell, 2001).

In this project the literature review of Porters Diamond model from this chapter and it´s four main factors of; human resources, material resources, knowledge resources, information resources and capital resources described have been used to collect the data and to be able to identify the SMEs external resources and capabilities in relation to internationalization of Estonian software companies.

Theories on organization, however, can be divided in two sections: one is related to firm's internal capacity and the other is related to internationalization phenomenon. In the next chapter we will look at the internationalization phenomena and different theories related to it.

3.3 INTERNATIONALIZATION PHENOMENA

There have not been an agreed official definition of internationalization so far however in the economics, internationalization has been viewed as a process of increasing involvement of enterprises in international markets (Susman, 2007). Hollensen, (2011), describes internationalization as doing business in many countries of the world, but often limited to a certain region. According to Welch & Luostarin (1988), *"Internationalization is the process of increasing involvement in international operations".* Theories on internationalization of organizations can be broadly divided in two sections:

1. Theories related to firms regardless of the nature of the firms

2. Theories related to MNE's internationalization

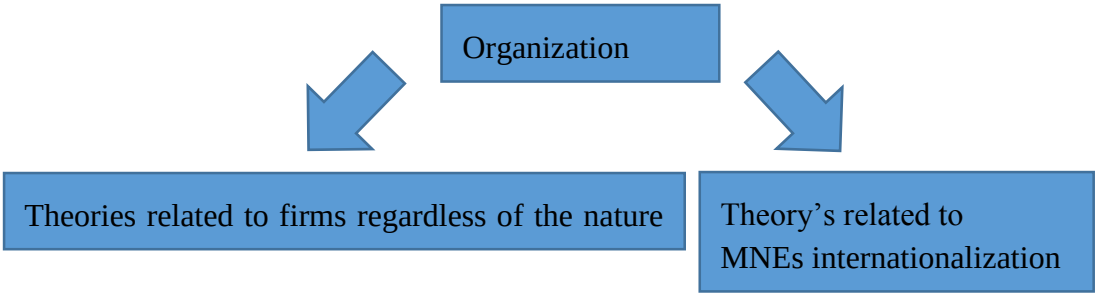

Figure 4: Organization theories

Source: Own creation

At first we will take a look at the internationalization theories related to firms regardless of the nature of the firms while taking the SMEs perspective.

3.3.1 PRODUCT LIFE CYCLE THEORY

The Product life-cycle (PLC) theory was developed by Raymond Vernon in response to the failure of the Heckscher-Ohlin model. Theory states, that in the beginning phase in the products life-cycle the components and the working force comes from the same area, where it was contrived. After the adoption of the product in the foreign markets the production slowly moves away from the area it was invented becoming sometimes even a product, which is imported by the same country (Hill, 2007). Product life-cycle theory has five stages:

- **Introduction -** Products are invented and introduced to the local and exporting markets of similar countries with common needs (Often in the most developed nations).
- **Growths -** Copy product are being produced outside of the product origin country to be able to catch the growth in the local market. This usually moves the production lines into the countries, where the production is the cheapest.
- **Maturity -** Lowes cost producer wins the competition

- **Saturation -** The sales of the specific product will reach the maximum limit and the market will stabilize. Substitution products will enter and market starts to look at new ways to use the product

- **Decline -** Developed countries are the only markets for the products and majority of the declining products are made in those countries

(Hill, 2007)

The PLC for firm's internationalization is grounded on the logic of multinational exchange among the parts of the world. This is related to the theory of Raymond Vernon, who tries to explain the arrival of international trade and investment to the PLC concept. Vernon based on his theories perspective mostly on the explanation about international trade flow. PLC has also widely used for the explanation for the firms internationalization (Törnroos, 2005). The PLC theory states, that the location of a new product is usually started in a developed country and the new product development and production goes through five stages of the product life-cycle and in the new-product phase the request and increase are bounded through the increasing markets at home.

After the growth stage comes the mature phase, where the production differentiation happens (Vernon 1996, 17-21). According to Vernon firms move to abroad markets, preferably developed markets like Western Europe, where the demand of the products is highest. Product exporting will start before the price competition among the low-cost producers.

Then according to Vernon would be economically wise to start with the FDI in the developed countries "Accordingly, it may prove wise for the international firm to begin servicing third-country markets from the new location. And if labor cost differences are large enough to offset transport costs, the exports back to the United States may become a possibility as well" (Törnroos, 2005). The PLC internationalization theory follows a company-specific stages with external home and abroad markets as drivers for corporate internationalization and trade (Vernon, 1979).

Following we will take a look at another internationalization theory, "Uppsala model".

3.3.2 THE UPPSALA MODEL

The Uppsala Model of internationalization processes was first published in an international academic review in 1977 (Johanson & Vahlne). It has since then been revised a number of times (Johanson & Vahlne 1992, 2002, 2006; Figueira-de-Lemos, Johanson & Vahlne 2010). The theory was developed because of the vast criticism of the theories at the time, which explained the internationalization activities. According to Johanson and Wiedersheim-Paul most of the theories, which existed in that time toned down the problems of cultural differences and disregarded the internal foundations for companies to handle the international activities (Johanson, 1977).

The Uppsala model is based on the empirical observation from four Swedish manufacturers and was mostly influenced by the works of Penrose (1959), Cyert & March (1963), Aharoni (1966) Vernon (1966). The Uppsala model separates four different steps of internationalization, which cannot be viewed independently of a firm's situation and market knowledge.

Step 1: No regular export activities (sporadic export)
Step 2: Export via independent representative (export mode)
Step 3: Establishment of a foreign sales subsidiary
Step 4: Foreign production/manufacturing

(Hollensen, 2011)

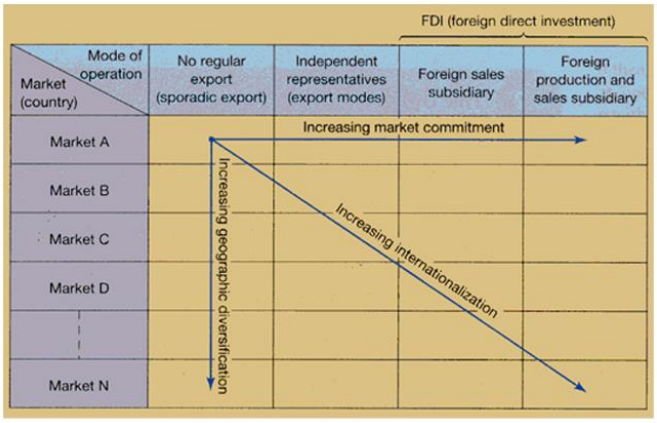

Figure 5: Internationalization of the firm

Source: (Zohari, 2014)

From the Swedish manufacturers they could find out, that companies usually start their journey in a psychic nearby countries, from where they have more market knowledge and control. After gaining the market knowledge companies are starting to expand into more distance markets (cultural distance, language barriers, politics differences, geographical distance and the difficulty to acquire market knowledge) (*ibid*). The second big common thread was, that often Swedish companies entered into a new market through export before establishing a foreign sales subsidiary or production.

The Uppsala Model refers to (Aharoni, 1966), which helps to develop a matrix model illustrating the positive relation between the market knowledge and commitment decisions. The increased market knowledge will lead into increased market commitment (Andersen, 1993).

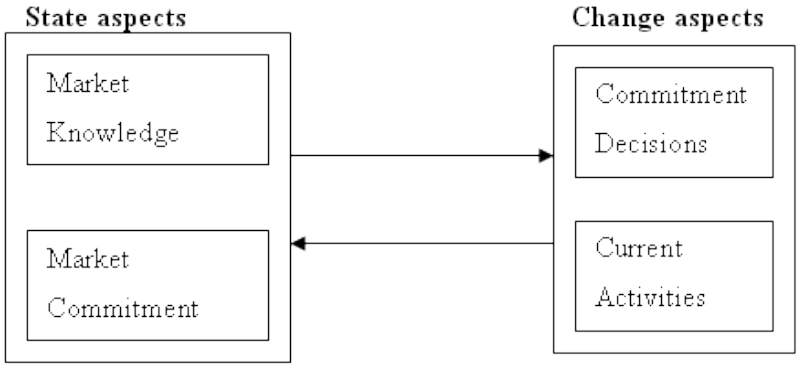

Figure 6: The Basic of Internationalization-State and Change Aspects

Source: (Johanson, 1977)

The Stages Model has been widely criticized being obsolete because of the new era of Internationalization and the emergence of *Born Global Theory*, which was first introduced by Rennie in 1993. Born Global was used as a standard term for rapid small and medium sized internationalizing companies, who are going global and start exporting from the start of their birth and look at the world as a single, borderless marketplace from the time of the firm's founding. *Born Global Theory* challenges the traditional internationalization theories, which cannot fully explain all the actions of Born Global companies (Rennie, 1993). SME´s have been traditionally considered as weak contributors to internationalization because of financial and managerial constraints. (Hamid & Richard 2003). The world market is not anymore the preserve of massive

and large companies. After 2000, when the internet bubble burst more and more SME´s are competing with larger companies starting from their birth.

Because technology changes the economy and for that the business environment for the companies it is natural, that it involves the change of internationalization theories, which can describe the behavior of the companies in the "new environment". (Ekström & Persson, 1999) Argue, that it is not possible to use traditional internationalization theories *alone* to describe the internationalization activities of e-commerce companies. The argument is based on a case study done among the Swedish SME´s, (Meyn, 2009) found out, that traditional internationalization theory is under a lot of pressure from Born Global theory when it comes to explaining internationalization of small global companies. (Bennett, 1997), revealed, that the use of Internet for global marketing enables companies to leapfrog the conventional stages of internationalization, as it has removed all geographical constraints, permitted the instant establishment of virtual branches throughout the world.

Rationale for studying internationalization of small and new firms separately from large firm internationalization relates to the key role of the owner/manager in SME and new venture internationalization (Coviello, 1999). Such differences between large and smaller firms mean that SME and new venture internationalization is not easily explained by traditional internationalization theories that were developed mainly to explain internationalization among large firms (McDougall, Covin, Robinson and Herron, 1994).

In the next chapter we will look at the international entrepreneurship theory, which focuses more on the internationalization of SMEs, which are the most common types of Estonian ICT firms.

3.3.3 INTERNATIONAL ENTREPRENEURSHIP THEORIES

Oviatt and McDougall (2005) in defining international entrepreneurship as:"…the discovery, enactment, evaluation, and exploitation of opportunities—across national borders—to create future goods and services." (Oviatt and McDougall, 2005).

International entrepreneurship arose as a separate field of research during the past two decades, starting with the interest in cross-border entrepreneurship (McDougall, 1989). International entrepreneurship also includes SME internationalization and the study of entrepreneurship in multiple countries and has been highlighted in more recent entrepreneurship research. International entrepreneurship is an interdisciplinary field drawing upon the theoretical foundations of international business and entrepreneurship. It is business research, focusing on the internationalization of the company, which was used to be dominated by research on large MNEs but now pays more attention to SMEs (Acs, 1999).

The IE has been studied by economics, sociology and psychology and other business sub disciplines; marketing, finance and strategic management (Oviatt, 2005). International entrepreneurship is the economic research that mainly deals with entrepreneurship and focuses on the economic importance and the worth of entrepreneurship and explaining the judgment of individuals to go into the entrepreneurship. This research type does not usually take cross-border activities into account, it concentrates mainly on the studies of flow goods and services in the macro-level and focuses to internationalization at the micro-level of MNEs (Brakman, 2006).

In this paper I will mainly consecrate on the SMEs, because almost all Estonian ICT companies are small and medium size companies, according to the European Commission SMEs definition.

In the next chapter of the project we will take a look at the theory related to MNE's internationalization, since some of the Estonian companies work as a point of outsourcing for MNEs also, while taking the MNEs perspective, so the OLI Model is introduced and explained in the next chapter.

3.3.4 OLI MODEL

Traditional approach representative John H. Dunning developed the *Eclectic Paradigm Theory (1980)*, which is also known as *OLI-Model* and is based on *Transaction Cost Theory*. The intention was to offer a holistic framework by which it was possible to identify and evaluate the significance

of the factors influencing both the initial act of foreign production by enterprises and the growth of such production. The choice of the word eclectic was an ambitious yet deliberate one. It was meant to convey the idea that a full explanation of the transnational activities of enterprises needs to draw upon several strands of economic theory; and that foreign direct investment is just one of a number of possible channels of international economic involvement, each of which is determined by a number of common factors (Dunning, 1987).

This theory stated, that transactions are made in an institution only, if the transaction cost of the free market is higher than the internal cost. This is called Internalization. Dunning also added three additional factors; ownership, locational and internalization advantages (Twomey, 2001).

Ownership advantages – Entrepreneurial skills, returns to scale, production technique. Ownership advantages are competitive advantages of enterprises looking for FDI. The better the competitive advantage of the investing companies, the greater is the change that they will engage in their foreign production.

Location advantages – Raw materials, low wages, taxes and tariffs. Location benefits are the alternative countries and regions for undertaking the value adding activities of MNEs. The higher the natural or made resources, important for a company to use jointly with their own competitive advantage, favor a presence in an abroad location the higher the change, that companies will choose to augment or exploit their O specific advantages through FDI.

Internalization advantages – Advantages by own producing vs licensing or joint venture. Companies can organize the establishment and the research of their core competencies. The higher the benefits of internalizing cross-border markets, the more is the probability that a company will engage in foreign production vs. license to do so.

(Dunning, 2000)

Following the Eclectic Paradigm figure is displayed below:

Source: Dunning (1981)		Categories of advantages		
		Ownership advantages	Internalization advantages	Location advantages
Form of market entry	Licensing	Yes	No	No
	Export	Yes	Yes	No
	FDI	Yes	Yes	Yes

Figure 7: Eclectic paradigm

Source: Dunning (1981)

The purpose of the Eclectic Paradigm is to assemble multiple international economics theories into one. The three most common forms of international activities are: Foreign direct investment, exporting and licensing. In the OLI Model the three advantages are: ownership, locational and international advantages, which can both be material and immaterial. Dunning differentiated among two types of FDI, while resource seeking investments are done to make entrance to basic raw materials, the market seeking investments are made to be able to enter or establish a new market (*ibid*).

In this chapter we looked at the theoretical background of the Porters Diamond Model and the internationalization theories related to firms regardless of the nature of the firms and in relation to MNE's. In the following chapter I will apply Porters Diamond Model to be able to collect the necessary secondary data to answer to the main question of this project: *what external factors influence the internationalization of Estonian software companies.* Also to be able to evaluate the competitiveness level of Estonian ICT industry and software sector.

4. APPLYING PORTERS DIAMOND MODEL

4.1 RESEARCH RESULTS & FACTS

In the following chapter the Porters Diamond Model is applied to measure the overall competitiveness of Estonian software sector to be able to answer to the question of the project: what external factors influence the internationalization of Estonian software companies.

Each factor in the Diamond Model shows a comprehensive set of particular attributes of a nation. These factors shape the environment individually and as a system, in where the local companies are operating and competing. The Porters Diamond facets resemble the major ideas of the economic theories invented during the past two and a half century. Factor conditions is a direct descendant of Richards Comparative Advantage theory, also Smiths Absolute advantage. Porters demand conditions resembles the ideas of Vernon and the PLC Model and the importance of the demand conditions. Government and Change were introduced by Porter to make the model complying with the world's latest developments (Litvinova, 2011). Following I will apply Porters Diamond Model to Estonian ICT industry to measure the competitiveness of the industry.

4.1.1 KEY FACTS ABOUT ESTONIA

Population: 1,311,870 (01.01.14) (Census, 2014).
GDP (PPP): $29.1 billion
3.2% growth in 2012
5-year compound annual growth –1.0%
$21,713 per capita
Unemployment: 9.8%
Inflation (CPI): 4.2%
FDI Inflow: $1.5 billion

(Heritage, 2014)

4.2 GOVERNMENT

Porter explained the Governments factor as followed *"Acting as a catalyst and challenger; it is to encourage or even push – companies to raise their aspirations and move to higher levels of competitive performance…*" (Porter, 1990). This means, that countries government should be able to create a good market environment, which stimulates the competitive advantages in different industries through the policies legislations. In the Western economy the government is less dominant compared with the developing countries believing in the free-market economy principle.

In the fallowing chapter I will analyze the Estonians government's impact into the software sector applying the Porters Diamond Model.

The re-establishment of Estonia´s independence from Soviet Union was in August of 1991. Since then the transition of the economy has been characterized by rapid steps of macro-economic stabilization compared with other transition economies. Large-scale privatization was undertaken in 1995, when almost all companies were privatized, to allow technology transfer, the improvement of managerial skills and market competition increase. This favored the inflow of foreign direct investments to Estonia (Hunya, 2000).

Most FDI has been from the neighboring countries (Sweden and Finland). Estonian economy has been successful in catching up the developed countries through the application of technologies work organization and know-how, which has been imported from more advanced countries. Estonia has one of the freest economies in the world by ranking into 11th in the 2014 Index, ranking 4th out of 43 countries in Europe. Over two decades Estonia has recorded and impressive score improvement of almost 11 points, raising the economy from the "moderate free" to the "mostly free"

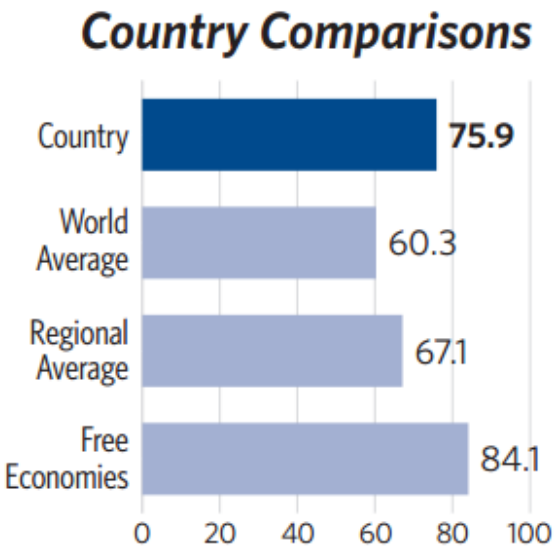

Figure 8: Economic Freedom Index 2014

Source: (Heritage, 2014)

Estonia joined the NATO and the European Union in 2004 and the Organization for Economic Co-operation and Development in 2010. In 2011 Estonian adopted the euro, being the first ex-Soviet state. Because of the liberate investment climate the foreign investments have grown significantly. Estonia profits from a strong electronics and telecommunication sectors, having strong relations with Germany, Russia, Sweden and Finland. Estonia has had occasional problems with government corruption the parliament strengthen already tough anti-corruption laws in 2012 to increase the transparency and requirements for politicians to declare their assets.

Business start-up process in Estonia is very straightforward and does not take more than a week. The cost of completing licensing requirements has been cut to less than a quarter of the level of average annual income. All EU members have very low tariff rate of 1, 1% and very limited trade barriers set, which all encourage the trade with Estonia and makes it easier for Estonian companies ti internationalize (Freedom, 2014). With its liberal and free economic environment Estonia is definitely one of the best environments in Europe for software companies in relation to Governments influence into the competitive advantage.

4.3 FACTOR CONDITIONS

Porter (1990) pointed out, that factor conditions included five aspects: human resources (labor resources), physical resources, knowledge resources (science and technology), capital resources and infrastructure. First we will take a look at the human resources of Estonian ICT industry. After that we will take a look at the physical, infrastructure, and knowledge and capital resources.

4.3.1 HUMAN RESOURCES

To be able to identify the working population of Estonia I have to first define the "working population". According to Paul Ashworth the best measurement labor market conditions is the ratio, that measures the proportion of the countries working-age population, which is 15-64 in most of the OECD countries (Estonia is a member since 09.12.2010 December 2010), (Census, 2014).

According to Estonian statistics in 2012 Estonia had a working-age population of 882 294, forming 67, 2% of the whole population in Estonia, which gives Estonia the 18-st position in the list of the 44 OECD countries, Iceland is number one with 80,2% and South Africa with the lowest of 41% (Extrats, 2014). This means, that the amount of Estonian working population is slightly over the average.

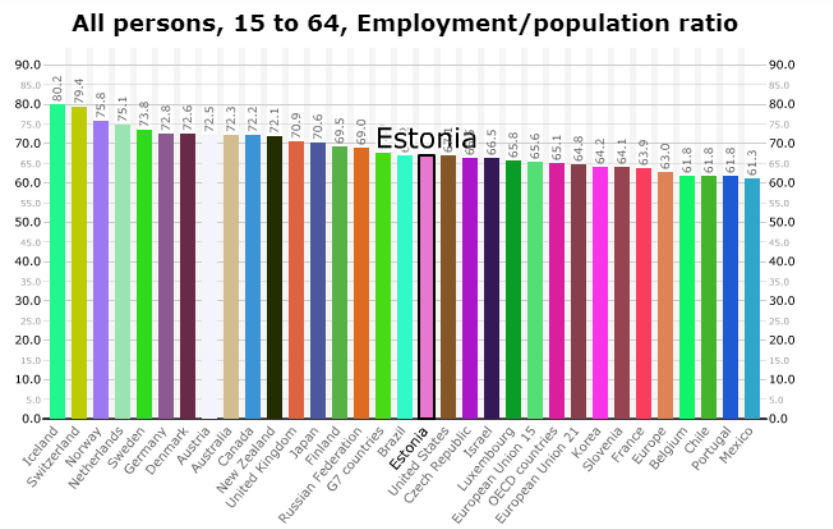

Figure 9: All persons, 15 to 64, Employment/population ratio

Source: (Extrats, 2014)

4.3.2 PHYSICAL RESOURCES

Estonia is resource-poor country, all thought the land still offers variety of different resources. Estonia has a large oil shale and limestone deposits. Estonia has a lot of forest (48% of the country is covered) (Estonian Statistics, 2014). Addition to the limestone and oil shale Estonia has a big reserve of phosphorite pitchblende and granite.

Estonian also has rare earth oxides found in tailings, which have been accumulated around 50 years ago from uranium, ore, loparite and shale. These oxides can become significantly important in the future. Estonian is currently exporting around 3000 tons per year, which represents approximately 2% of world production (Kamps, 2014).

While Estonia has some physical resources, they do not add any critical value to the competitiveness of software sector.

4.3.3 INFRASTRUCTURE

Estonia has incredibly high penetration of digital infrastructure. Almost the whole country is covered with fiber optic cables and there are direct undersea connections with Finland, Sweden, Russia and Latvia will provide high-standard communication every day. It is estimated, that by the year of 2015 all Estonian households, companies and institutions can connect to a 100 MBps fiber optical network connection. Today Estonia has more than 1200 public places, where people can use Free Wi-Fi internet connection (including trains, long distance busses).

Whole Estonia is covered with 3G digital mobile phone network including 4G in the major cities and town areas (Saar, 2013). The telecommunications market in Estonia is among the most liberalized in Eastern Europe and Estonia has the highest number of mobile phone users per capita in Eastern Europe.

So if we take the infrastructure factor, Estonia is probably one of the most competitive environments for ICT companies.

OECD Broadband statistics (Internet penetration)

Wireless broadband penetration has increased up to 68, 4% in the OECD area (June 2013). This means, that there are more than two wireless subscriptions for every three inhabitants. Wireless broadband subscriptions increased 16, 63% compared with 2012 because of the high demand of smartphones and tablet computers. Estonia holds 8 place before Norway and New Zealand.

Estonia is definitely one of the leading countries in OECD area, when it comes to infrastructure (the figure above shows the OECD wireless broadband subscriptions per 100 inhabitants in Estonia).

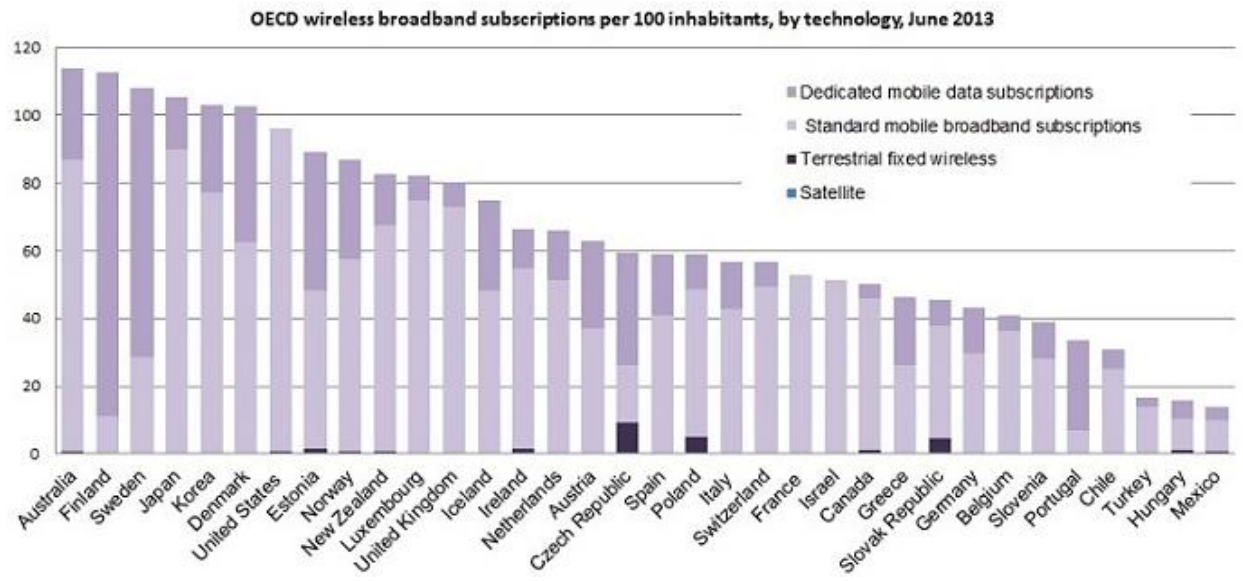

Figure 10: OECD wireless broadband subscriptions per 100 inhabitants by technology

Source: (OECD, 2014)

IT industry Infrastructure competitiveness index (2007)

Infrastructure as the production base is also crucial raise competitive advantage in order to coordinate production process. All in all, abundant factor resources could bring immense competitive advantages as basic elements and should be stocked for production (Jones, 1984). Estonia ranks in 23 place according to The Economist Intelligence Unit, who analyzed 64 world top IT industries in 2007. Estonia scored 38, 5 points out of 100. According to the Economists study the world's most competitive IT industry is in Switzerland, Canada and United States.

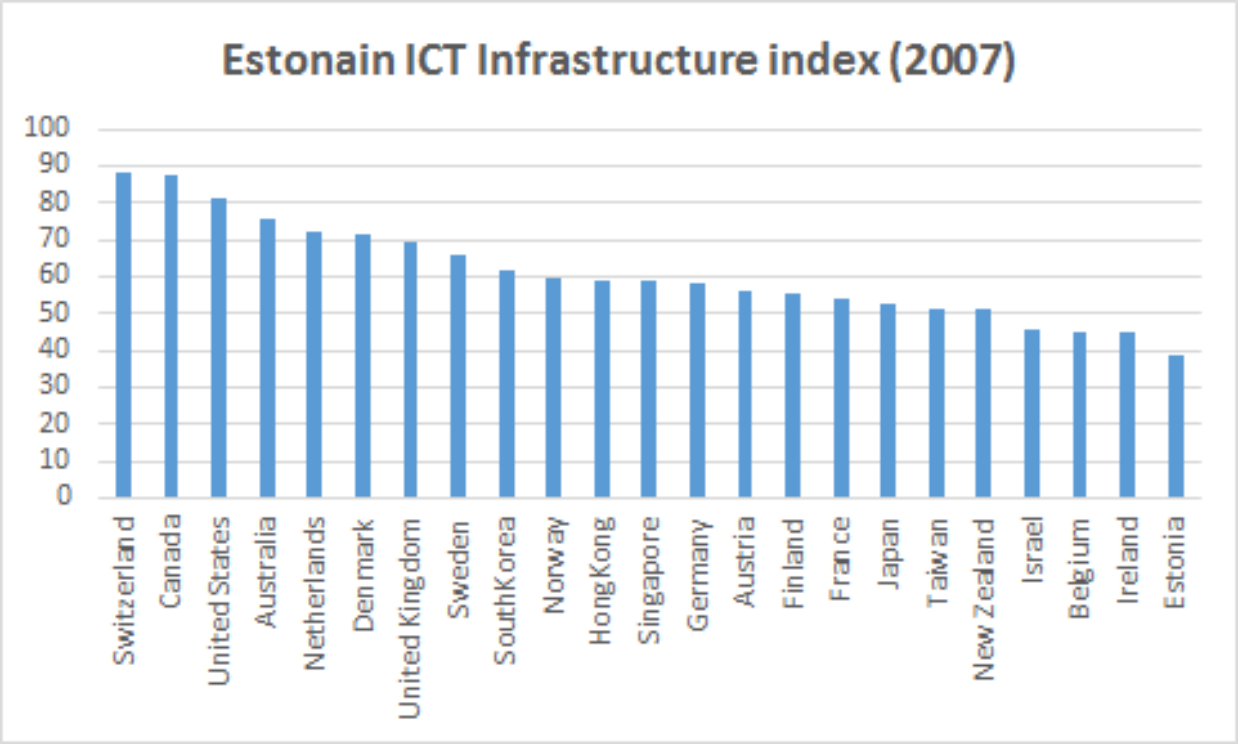

Figure 11: Estonian ICT Infrastructure index (2007)

Source: (Economist, 2007)

Data shows us, that Estonia ICT companies have a good environment to start their businesses, as Estonia has one of the best ICT infrastructure environments in the world. Estonian infrastructure is definitely one of the top software sector competitiveness factor.

4.3.4 KNOWLEDGE RESOURCES

Nowadays, in the "knowledge economy" and "information super highway" age, knowledge resources (science and technology) play a key role of profiting long-term economic development (Solow, 1956).

High knowledge resources and skills are important in every industry and without it, it is very hard to stay competitive in the local market not to mention to international market. The research done among the Estonian ICT industry in 2010 showed, that the number one factor mentioned by the

companies related to internationalization was the lack of qualified workforce, the second was the lack of networks abroad and the third factor was high competition of the market (see the figure below).

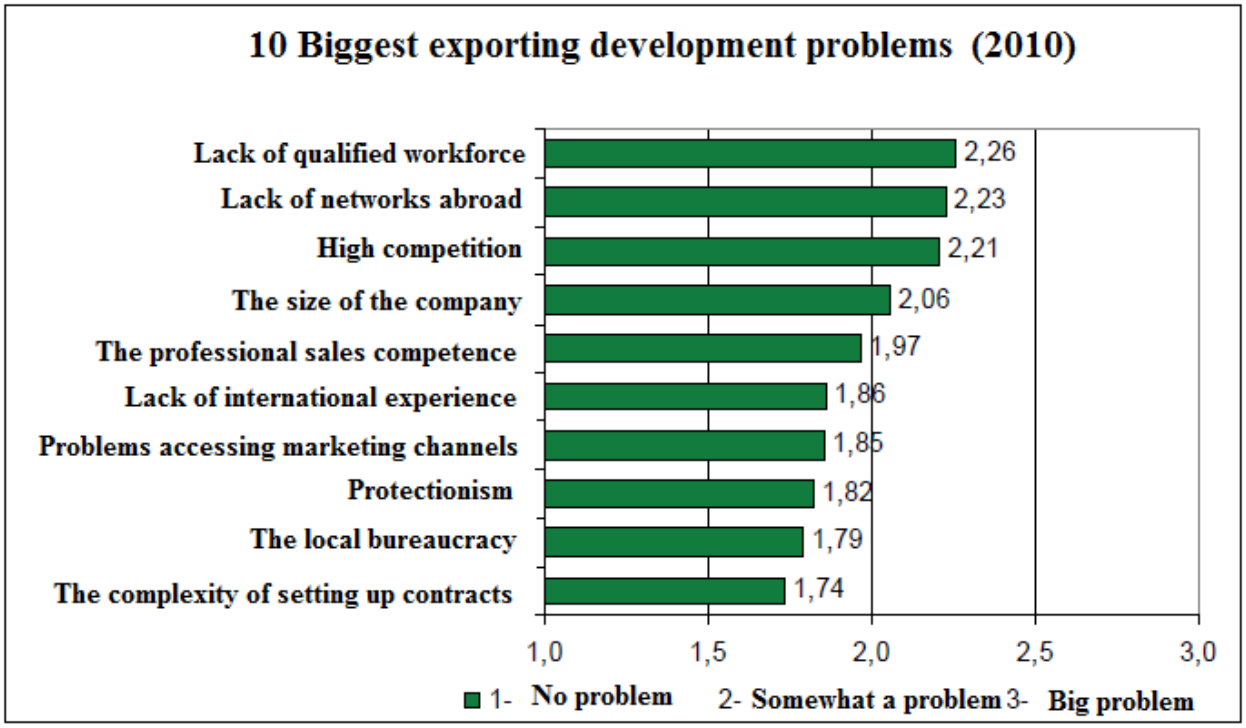

Figure 12: 10 biggest exporting development problems

Source: (Kaubandus-Tööstuskoda, 2010)

From the results I can conclude, that nonetheless Estonia is among the top IT countries in the world companies still consider the knowledge and skills of employees to be the biggest problem and limitation towards internationalization.

To be able to identify the competitiveness level of Estonian ICT knowledge resources we will take a look at the secondary data of Estonian statistics. Following graph shows the number of science and technology graduates for thousand people in the age of 20-29 (man and women) compared with European Union average.

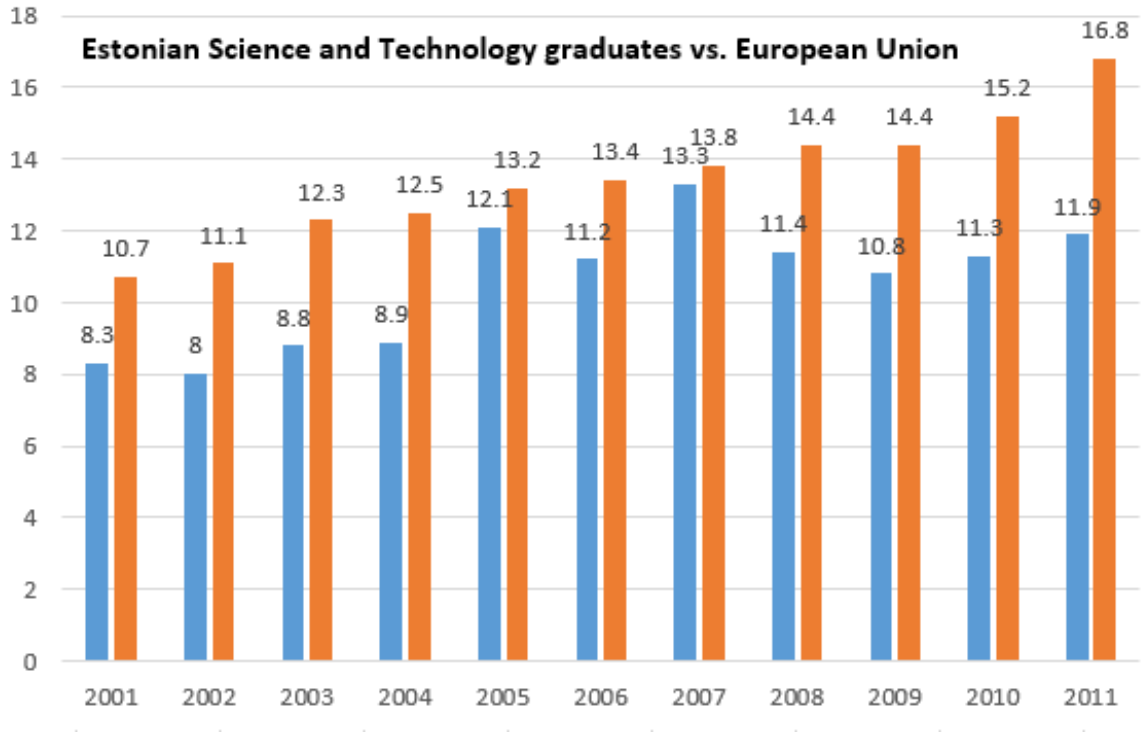

Figure 13: Estonian Science and Technology graduates vs. European Union average

Source: (Statistics, Teadus- ja tehnoloogiaerialade lõpetanud soo järgi, 2014)

We can see from the graph, that the average number of graduates for 1000 people in the age of 20-29 is lower than the European Union's average. In Estonia it has gradually increased until 2007, where it was almost tied with the EU average. After that it fell below eleven graduates. From 2009 it has started to rise again together with EU´s average.

IT industry Human resource competitiveness index (2007)

In 2007 The Economist Intelligence Unit compared the top 64 IT countries in all regions of the world on the extent to which they support the competitiveness of human resources of information technology (IT) industry. Some of the factors, which were investigated are the quality of the IT and communications infrastructure, the supply of local talent, the research and development (R&D) environment and the legal regime, the overall business environment was also taken into account and scored.

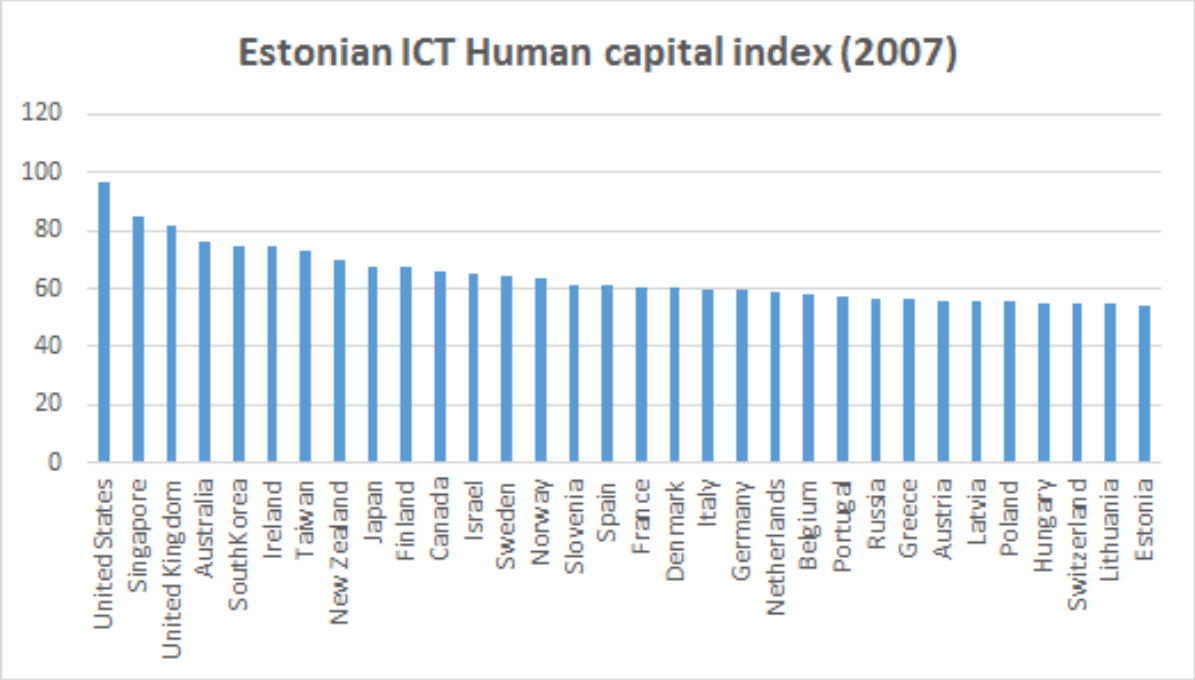

Figure 14: Estonian ICT Human capital

Source: (Economist, 2007)

Estonia ranked in the position of 33 in the IT competitiveness Human resource index, where the quality and quantity of the production where taken into account. United States ranked on top of the list followed by Singapore and United Kingdom. Several members of different ICT Company's management were interviewed during the research.

According to the data Estonia has the world's 33-nd competitive ICT human resource and the OECD average working population index. While Estonian IT human resource knowledge level is increasing, it still is one of the main weaknesses of the sector according to the local ICT companies.

4.3.5 CAPITAL RESOURCES

Capital resources are financial supplies for an industry's development, and mainly manifest through Gross Domestic Investment, Foreign Direct Investment, and Stock Market Capitalization (Porter, 1990).

According to Estonian Banks statistics the domestic FDI investments of ICT industry has increased from 2008 while the foreign FDI of ICT has significantly decreased after the economic crisis. Following there is a graph showing the Estonian ICT sector domestic investments during the period of 2000-2012.

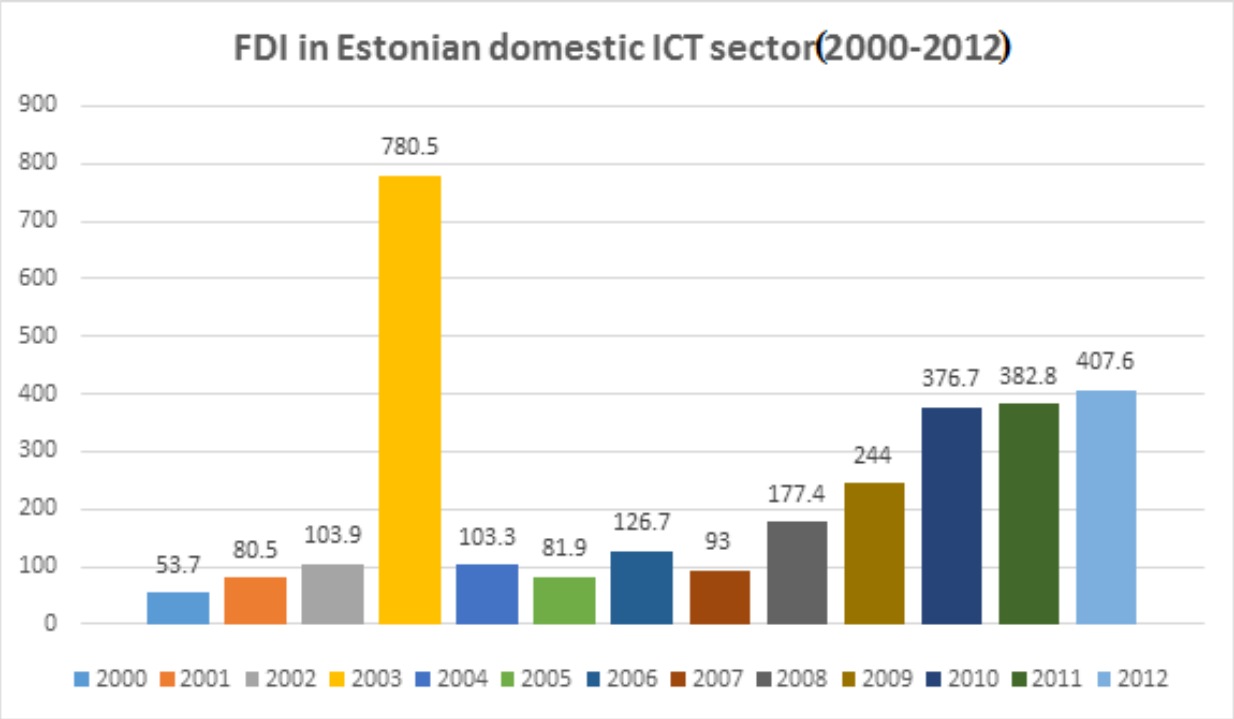

Figure 15: FDI in Estonian domestic ICT sector (2000-2012)

Source: (Bank of Estonia, 2014)

As we can see the domestic FDI in ICT sector was 53, 7 million € in 2000 and increased up to 780, 5 million $ in 2003. After that it stabilized and decreased during the economic crisis and started to increase again after 2007. In 2012 the domestic FDI of ICT sector was 407, 6 million €. Next graph shows the abroad FDI investments done in the Estonian ICT industry during the same period of 2000-2012.

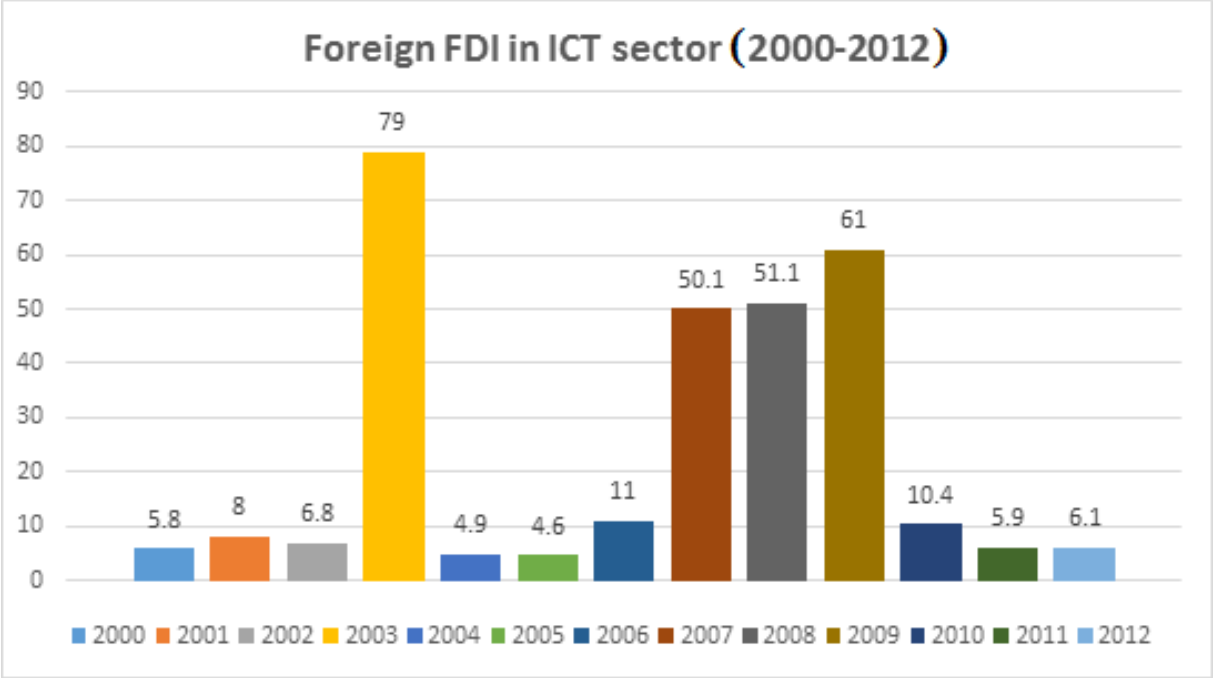

Figure 16: Foreign FDI in Estonian ICT sector (2000-2012)

Source: (Bank of Estonia, 2014)

We can see, that foreign FDI also peaked in 2003 with 79 million € and stabilized until the economic boom reaching the 61 million € and has decreased after that stabilizing recent years.

Estonian domestic FDI has increased significantly after the economic crash encouraging the growth of the software sector, while the foreign FDI has not recovered so well.

In the next chapter we will look at the demand conditions of Estonian ICT sector through Porters Diamond Model.

4.4 DEMAND CONDITIONS

Demand conditions describe the local market demands, which includes the products and services, what potentially can become the source of competitive advantage of the industry (Jin, 2006). Porter studied demand conditions from the market size, growth rate and the amount of sophisticated and demanding buyers. Demand conditions factors can be measured by GDP and its growth of a country to identify the competitiveness of an industry.

Market size

First we will take a look at the overall GDP per capita of Estonia to determine the Estonian whole market size and purchasing power compared with the European Union average GDP per capita.

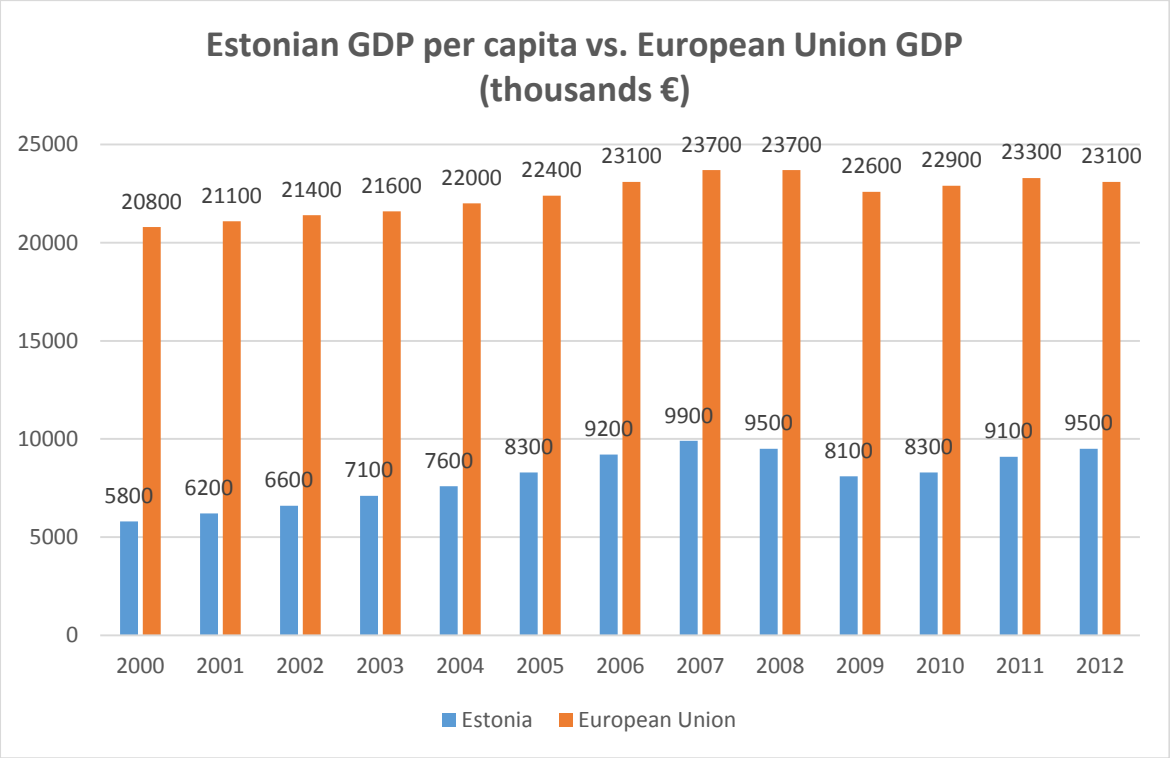

Figure 17: Estonian GDP per capita vs. European Union average GDP per capita

Source: (Estonia, 2012)

As we can see the average GDP per capita in European Union has been over 20 000€ from the year of 2000. GDP per capita in Estonia has grown around 50% since 2000, which is estimated to rise over the 10 000€ in 2013, still the number is around 60% smaller than in the average European Union country, which means, that the purchasing power of Estonia is smaller than most of European Union countries. According to Porter one of the main factors of demand condition is the GDP growth of a country.

In following graph we can see Estonian GDP growth in the period of 2002-2012 compared with the European Union average GDP growth. As we can see Estonian GDP growth has been significantly higher than the European Union average. Estonian GDP growth took an enormous fall in 2009, dropping -14, 1 billion € against -4, 5 billion of European Union average.

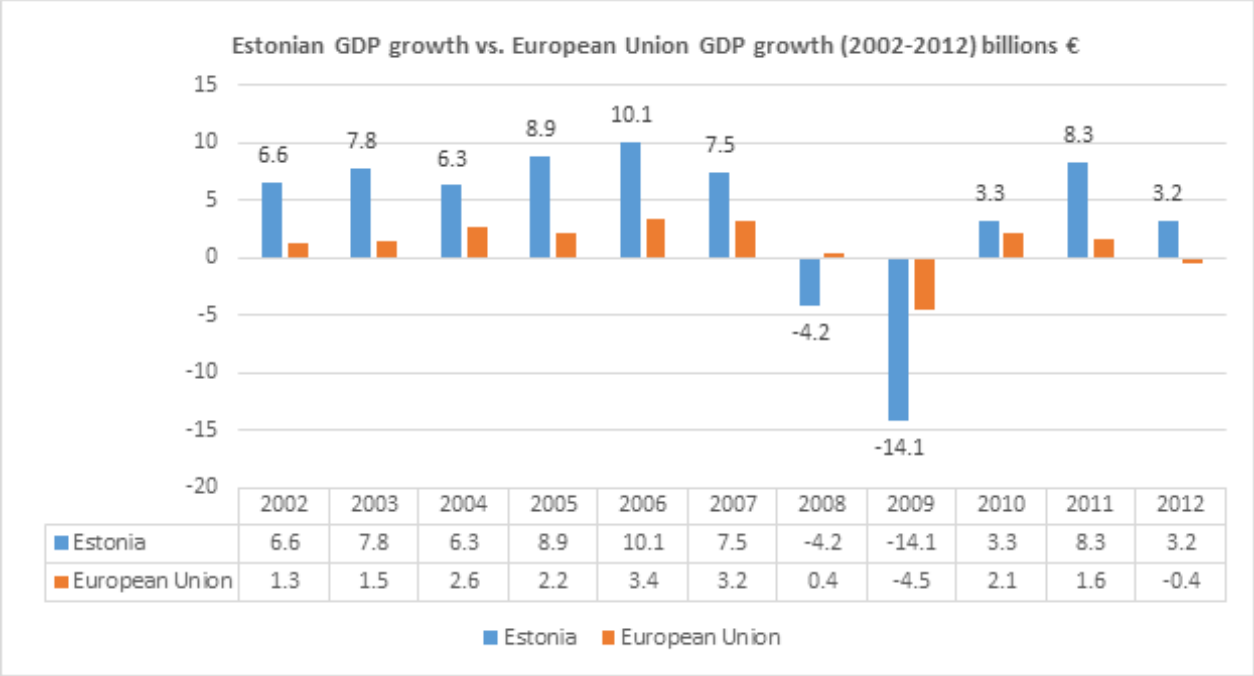

Figure 18: Estonian GDP growth vs. European Union GDP growth (2002-2012)

Source: (Eurostat, 2012)

Estonia recovered from the economic crises quite well, in 2011 the GDP growth rate was 8, 3% against European Union average of 1, 6%. Software industries represent less than 10% of the total ICT market in the OECD area but they are growing fast and is facing many obstacles compared with ICT manufacturing industry (Kalvet, 2004). IT expenditure in Estonia is 3, 1% of GDP, which is higher than in the average OECD country (2, 3%).

In absolute terms the Estonian software market is very small, even smaller than Latvian and Lithuanian markets. Estonian ICT market is dominated by telecommunication network services, which contain 58% of the whole industry. The whole value of Estonian IT market is estimated to be 216 million € and the IT spending per capita is 150€, which is much lower than the Western Europe (735€) but still over the OECD average (111€ per capita) (*ibid*).

In the next chapter we will look at the Estonian related and supplier industries in relation to the software sector.

4.5 THE RELATED AND SUPPLIER INDUSTRIES

The related and supporting industries are relevant industries in a chain. Industries, which can become an industrial cluster help the dominant industry to gain competitive advantages, industrial cluster theory was introduced by Porter in his book of "The Competitive Advantages of Nations, in 1990. Porter revealed, that the dominant industry, which is related and supporting the dominant industry is able to provide "efficient, early, rapid and preferential access to inputs" (Porter, 1990), because of that, the supporting and dominant industry can evolve together.

Traditional Estonian industries have a marginal impact on the emergence of ICT sector because traditional industries in Estonia are mostly supplier-intensive. Technologies used are developed outside of Estonia leaving minimum participation to domestic companies. The emergence of Estonian software sector have mostly been influenced by the development of governmental structures.

Thanks to the legislation, which has created a favorable environment for the local software companies. Some examples are the on-line services of the Taxation Board, X-road initiative to modernize the national databases and ID-card. Local companies have been mainly contracted by the State to provide customized solutions, still a positive spillovers have emerged (Kalvet, 2004). The second industry, which has been the most influential industry in relation to the software sector is Estonian banking sector. Estonian modern banking system was established by 1993.

Telecommunication, banking and governmental structures have been the key drivers for Estonian ICT industry and software sector. The re-establishment of governmental structures, the emergence of the private sector and banking system and fast growth of the retail and wholesale have created the environment needed for Estonian software companies to become and stay competitive.

Following we will look at the Estonian ICT industries structure and rivalry.

4.6 FIRM STRATEGY, STRUCTURE AND RIVALRY

In this chapter we will take a closer look into the ICT industry and Estonian software sector structure and competition. As already mentioned, that the software industries represent less than

10% of the whole ICT industry, which means, that most of the top Estonian ICT companies have software only as their sub-activity. Following let's take a look at the statistics of Estonian ICT companies and their most important stats.

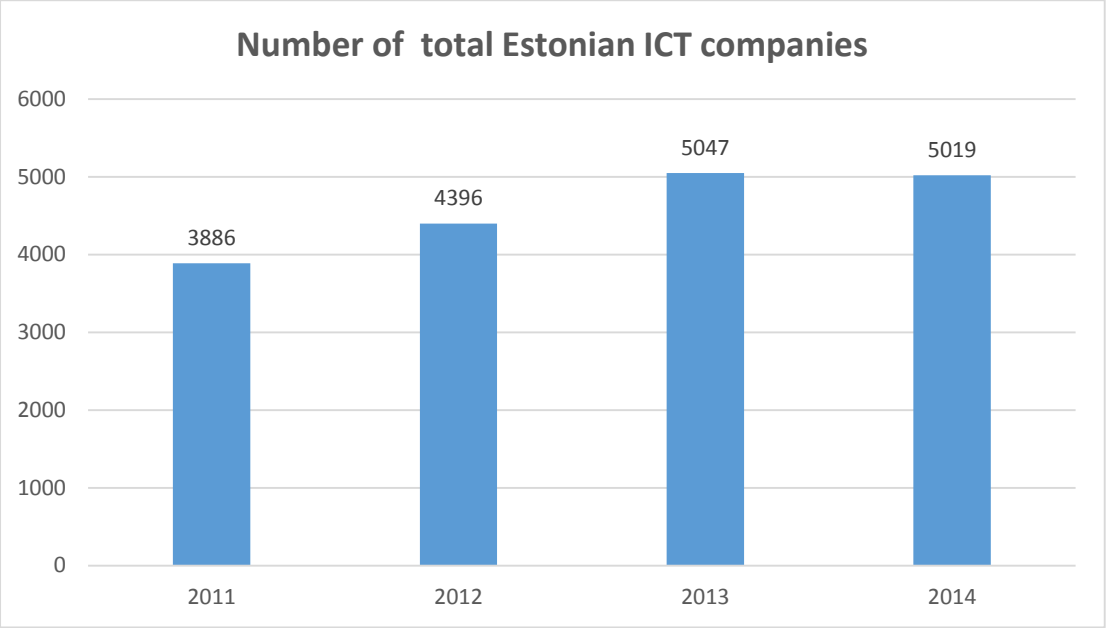

Figure 19: Number of total Estonian ICT companies

Source: (Äripäev, 2014)

As we can see the number of ICT companies have increased from the year 2011 over 5000. As mentioned above small amount of these companies are only software oriented, nor do software companies have their own rankings inside of the ICT industry. Because of that, we will look closely the top 10 ICT companies (2012 data) and look for how much does software accounts from their activities.

The rankings have been made, while taking into the account; net sales, operating profit, and the balance sheet total at the end of the year of 2012. The ICT activities must form more than 51% from the turnover and the company must have been in business for two consecutive years.

Company name	Number of employees	Activities
1. Creative Mobile OÜ	33	95% Programming, 5% sales
2. Titanium Systems OÜ	19	98% Programming, 2% sales
3. Codeborne OÜ	17	100% Programming
4. Icefire OÜ	51	100% Programming
5. APS Communications OÜ	3	98% Data processing, 2% sales
6. Toggl OÜ	7	100% Programming
7. Sertifitseerimiskeskus AS	26	Certifying software development
8. Visiometric OÜ	1	Software consultancy
9. BANG & OLUFSEN OÜ	51	100% Programming
10. Sanoma Baltics AS	23	90% Web portals, 10% sales

Table 3: Top Estonian ICT companies (2012 data)

Source: (Äripäev, 2014)

6 companies out of 10 have the main activity "Programming", one company has "Web portals" as their main activity and "Data processing" is also represented.

Because software constitutes such a small part from the whole ICT industry there is no TOP for companies with only software activities, therefore it's impossible to identify any rivalry or competition specifically in the domestic software sector of Estonia.

In the next chapter we will take a look at the "Change" factor according to Porters Diamond Model.

4.7 CHANGE

Porter defined the change as "few external events, which do not come from the industry but can effect of benefit the specific industry" (Porter, 1990). There are different changes: science and technology inventions, production cost increase, gap in traditional technologies, changes in the financial market, demand increase or decrease and government's policy changes.

Companies cannot control the "change" but if they know how to identify and utilize it in their process of manufacture and management, it is possible to gain competitive advantage from the "change" (*ibid*).

In the following chapter I will conclude the part of the study results of this paper, which focuses on the main and most important external factors, which influence Estonian Software Company's internationalization and the competitiveness of the ICT industry.

5. PORTERS DIAMOND MODEL DISCUSSION & CONCLUSION

In this chapter the author tries to answer to the question of this paper using the secondary data found in the previous chapter. The question of this project was: *"What external factors drive internationalization process of Estonian software companies and how?* "The Porters Diamond Model was used to measure different factors of the external environment of Estonia. Following there is a Porters adapted Diamond model, where all the external factors, which drive the internationalization of Estonian ICT companies and influence the competitiveness of Estonian ICT industry are displayed.

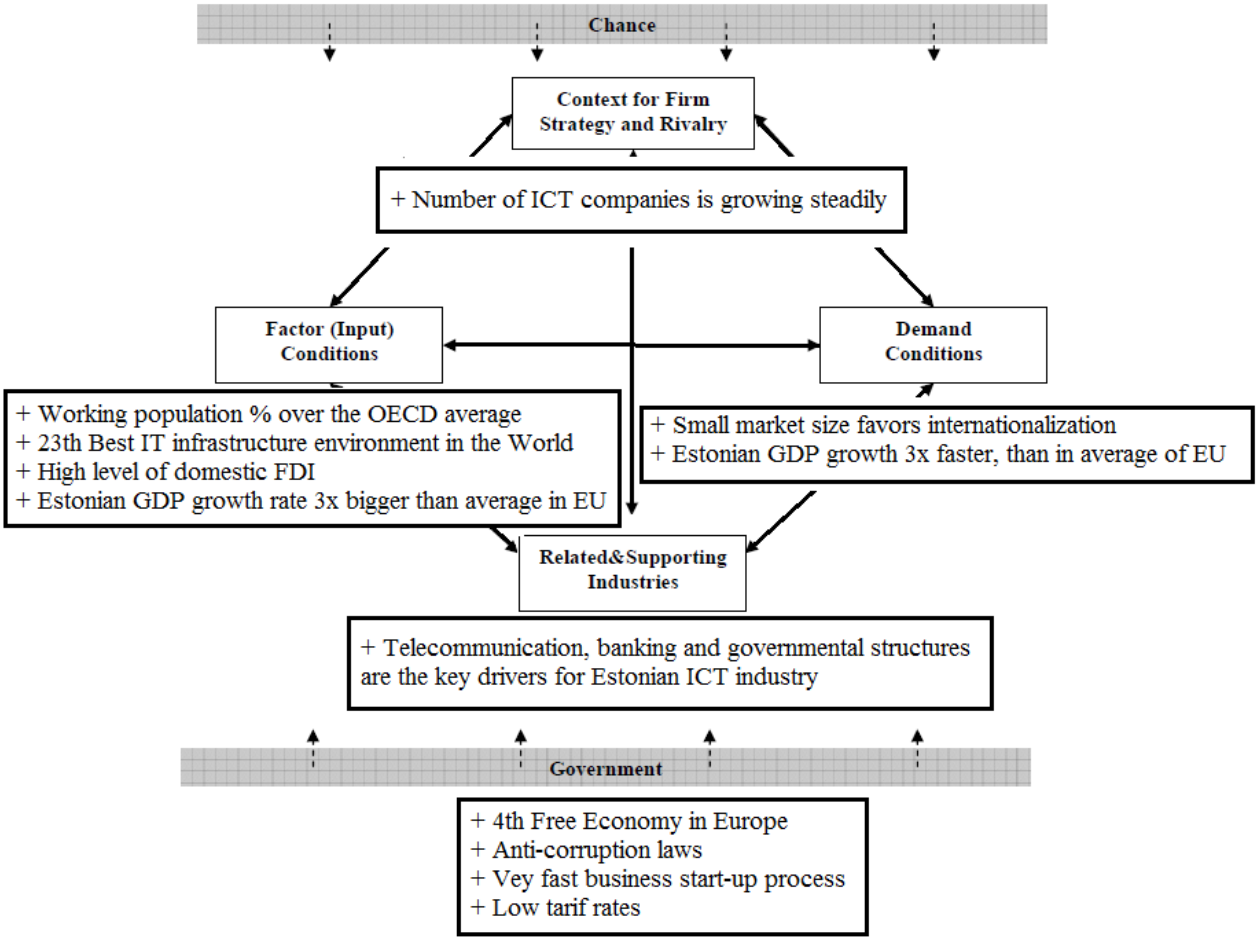

Figure 20: Adapted Porters Diamond Model

Source: Own creation

Estonian government is definitely a good environment to start ICT business because of the "Free economy" factor, quick start-up process and non-bureaucratic business environment. In Estonia it is possible to register your business within 24h and it is all done via internet. The corruption level is minimum and low tariff marketing rates makes Estonia a good place to start domestic business and if desired internationalize it. Estonia has plenty of human resources, which is over the average of OECD area (67, 2%), making it an important competitiveness factor. Estonia has one of the best IT infrastructures in the World (23th place, 1th place in Eastern-Europe), which is very important, when planning to start ICT business. Estonian domestic FDI is above the average of EU reaching over 400€ million and growing steadily.

The size of the software market is small and forms less than 10% of the OECD, ICT industry and the Estonian software market is even smaller than Latvian and Lithuanian. Estonian GDP per capita is also around 50% smaller compared to the average EU, GDP per capita, which means, that the purchasing power is quite small. These facts may inhibit the competitiveness of Estonian Software Company but this is also a good thing, because it forces Estonian companies to internationalize to foreign markets to be able to grow because of the small domestic market size. Estonian GDP has grown around three times faster than the average EU, GDP growth in the period of the last 10 years.

Telecommunication, banking and governmental structures are the key drivers for Estonian ICT industry. Since there are a lot of customized software products designed for banks and financial institutions, there are many foreign companies, who are outsourcing Estonian companies for similar services.

All the above mentioned factors are crucial internationalization factors for Estonian software companies and the number of ICT companies have been growing for the past 4 years.

There are more and more Estonian software Born Global start-up companies going global immediately after their birth. For conclusion I would like to say, that considering all the secondary data and findings in this project, it is clear, that Estonia is one of the best environments to start ICT related business, because of the free and highly developed infrastructure environment. We can expect, that ICT industry and software sector will remain and become even more competitive industry during the near future.

FURTHER RESEARCH AND SUGGESTIONS

As already mentioned above this is certainly a fairly unexplored topic and needs to be studies further. Here are some of the suggestions that author wants to forward to other potential creators of knowledge wanting to undertake a research in the same field.

First of all the author in this project tried to study Estonian software sector, which constitutes a very small part out of the whole Estonian ICT industry and the size and statistics of this sector is very hard to grasp. The main reason for this, is that, it is almost impossible to identify "only" software related activities unless the case study in form of an actual company and primary data can be used.

In this project the author tried to acquire the primary data from Estonian ICT companies, ICT Association and ICT Export Cluster, which was not successful. With this in mind, it is suggested to be sure, that the company, who is agreed to co-operate is found before making any questionnaires or preparations for the research at hand.

REFERENCES

Acs, Z. a. (1999). *Small and Medium Sized Firms in the Global Economy.* The University of Michigan Press.

Andersen. (1993). On the Internationalization Process of Firms: A Critical Analysis. *Journal of International Business Studies*, Vol. 24, No. 2, pp. 209-231.

Andersen, O. (1993). On the Internationalization Process of Firms: a Critical Analysis. *Journal of International Business Studies*, 24(2), 209–231.

Arbnor, I., & Bjerke, B. (1994). *Methodology for Creating Business Knowledge.* London: SAGE Publications.

Äripäev. (31. January 2014. a.). *Info ja side.* Allikas: Äripäev: http://agent.aripaev.ee/default.aspx

Asc, Z. &. (2002). *Small and medium-sized enterprises in the global economy.* Michigan: Michigan Press.

Authority, E. I. (11. Aprill 2013. a.). *Facts about e-Estonia*. Allikas: Estonian Information System´s Authority: https://www.ria.ee/facts-about-e-estonia

Bakan, İ., & Doğan, İ. F. (2012). Competitivness of the Industries Based on the Porter´s Diamond Model: Empirical Study.

Bank of Estonia. (29. January 2014. a.). *Otseinvesteeringute positsioon tegevusalade lõikes (miljon eurot).* Allikas: Bank of Estonia: http://statistika.eestipank.ee/?lng=et#listMenu/1293/treeMenu/MAKSEBIL_JA_INVPOS/146

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 99-120.

Barragan, S. (2005). *Assessıng The Power Of Porter's Dıamond Model In The Automobıle Industry In Mexıco After Ten Years Of Nafta.* Alberta: University Of Lethbridge.

Bennett, R. (1997). Export marketing and the internet: Experiences of web site use and perceptions of export barriers among UK businesses. *International Marketing Review*, 324-44.

Blomstermo, A. (2003). *Learning in the Internationalisation Process of Firms (New Horizons in International Business).* Edward Elgar Pub.

Brakman, S. G. (2006). *Nations and Firms in the Global Economy. An Introduction to International Economics and Business.* Cambridge: Cambridge University Press.

Cairncross, F. (1998). *How the Communications Revolution Will Change our Lives.* London: The Orion Publishing Group.

Cavusgil, S. T. (2007). Toward a Typology of Commitment States Among Managers of Born-Global Firms. *Journal of International Marketing*, 15(4), 1–40.

Census. (29. January 2014. a.). *Employment/Population Ratios for the 50 Largest Metropolitan Statistical Areas: 2008, 2009, and 2010.* Allikas: Census: http://www.census.gov/prod/2011pubs

Census, P. (29. January 2014. a.). *Population (including migration), 1 January, years*. Allikas: Statistics Estonia: http://www.stat.ee/34277

Commission, E. (2005). *The new SME definition.* Brussels: European Commission.

Commission, E. (3. January 2013. a.). *SMEs Definition*. Allikas: European Commission: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition

Covin, J. G. (1986). *The development and testing of an organizational-level entrepreneurship scale.* Wellesley: Frontiers of entrepreneurship research.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches.* Thousand Oaks, CA: Sage.

Curran, P. (2001). Allikas: Informa World: http://www.informaworld.com/smpp/title~content=t713445574

Curran, P. (2001). Competition in UK Higher Education: applying Porter's diamond model to Geography departments. 26(2), 223- 251.

Dana, L. W. (2004). Back to the Future: International Entrepreneurship in the New Economy. *Emerging Paradigms in International Entrepreneurship*, 19.36.

Day, G. S. (1994). The Capabilities of Market Driven Organizations. *Journal of Marketing*, 58(4), 37-52.

Downes, L. a. (1999). *Unleashing the Killer App – Digital Strategies for Marketing Dominance.* Boston: Harvard Business School Press.

Dunning. (1987). The Eclectic Paradigm of International Production. *Palgrave Macmillan Journals*.

Dunning, J. H. (2000). *The eclectic paradigm as an envelope for economic and business theories of MNE activity.*

Economist, T. (2007). *The means to compete Benchmarking IT industry competitiveness.* New York: The Economist Intelligence Unit.

Estonia, S. (31. January 2012. a.). *Real GDP per capita, growth rate and totals*. Allikas: Statistics Estonia: http://www.stat.ee/29958

Estonian Statistics. (31. January 2014. a.). *Forest resources based on national forest inventory*. Allikas: Estonian Statistics: http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=EN51&ti=FOREST+RESOURCES+BASED+ON+NATIONAL+FOREST+INVENTORY+%28NFI%29&path=../I_Databas/Environment/04Natural_resources_and_their_use/06Forest_resources/&lang=1

Eurostat. (2012). *Macro-economic indicators 2002-2012.* Eurostat.

Extrats, O. S. (29. January 2014. a.). *http://stats.oecd.org/Index.aspx?DatasetCode=LFS_SEXAGE_I_R*. Allikas: OECD Stat Extrats: http://stats.oecd.org/Index.aspx?DatasetCode=LFS_SEXAGE_I_R

Freedom, 2. I. (3. February 2014. a.). *Economic Freedom Score*. Allikas: 2014 Index of Economic Freedom: http://www.heritage.org/index/pdf/2014/countries/estonia.pdf

Gallagher, S. (2005). *Why Does Firm Performance Differ*.

Grillet, M. (27. January 2014. a.). *Theories about Internationalization*. Allikas: eThesis: http://www.ethesis.net/china_wto/china_wto_part_I_II.htm

Heritage. (3. January 2014. a.). *2014 Index of Economic Freedom*. Allikas: Heritage: http://www.heritage.org/index/pdf/2014/countries/estonia.pdf

Hessels, J., & Terjesen, S. (2007). *SME Choice of Direct and Indirect Export Modes: Resource Dependency and Institutional Theory Perspectives.*

Hill, C. (2007). *International Business - Competing in the Global Marketplace - 6th (Sixth) Edition.* Boston.

Hollensen, S. (2011). *Global Marketing - A Decision Oriented Approach (Fifth Edition).* Edingburg: Prentice Hall.

Hunt, E. K. (2002). *History of Economic Thought: A Critical Perspective.* M E Sharpe Inc; 2 edition.

Ingham, B. (2003). *International Economics.* Financial Times Management.

Jin, B. &. (2006). The Diamond Approach to Competitiveness of Korea‟s Apparel Industry: Michael Porter and Beyond. *Journal of Fashion Marketing and Management*, Vol. 10 (2), p. 195-208.

Johanson, J. &.-E. (1977). The Internationalization Process of the Firm – A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies.*

Johansson, J. (2000). *Global Marketing, Foreign Entry, local Marketing and Global Management, Second Edition.* Irwin Mcgraw-Hill.

Jones, R. W. (1984). *Handbook of International Economics.* Elsevier.

Kalvet, T. (2004). *The Estonian ICT Manufacturing and Software Industry. Current state and future look.* Tallinn: European Commission.

Kamps, M. (31. Januaary 2014. a.). *Tulevikuraport: Soome-Eesti tuumajaam võiks olla Eestis*. Allikas: E24: http://e24.postimees.ee/1810367/tulevikuraport-soome-eesti-tuumajaam-voiks-olla-eestis

Kaubandus-Tööstuskoda, E. (2010). *Eesti ettevõtete ekspordiprobleemide uuring.* Tallinn: Eesti Kaubandus-Tööstuskoda.

Kindleberger, C. (1969). *American Business Abroad.* New Haven: Yale University Press.

Kostopoulos, K. C., E. Spanos, Y., & Prastacos , G. (2001). *The Resource – Based View of the Firm and Innovation: Identification of Critical Linkages.* Athens.

Kuah, A. V. (2005). Revisiting the Porter Diamond: Applying Importance Performance Matrix to the Singaporean Financial Cluster. *Working Paper Series*, No 05/39.

Lamnek, S. (2005). *Qualitative Sozialforschung: Lehrbuch. Mit Online-Materialien.* Beltz.

Lee, C. L. (2001). Internal Capabilities, External Networks and Performance: a Study of Technology Based Ventures. *Strategic Management Journal*, 22. (6/7), 615-640.

Linton, S. (12. May 2011. a.). *Bye Bye Skype, Top 3 Free Replacements*. Allikas: Ostatic: http://ostatic.com/blog/bye-bye-skype-top-3-free-replacements

Litvinova, E. (2011). *An Analysis of the Hotel Industry of Croatia: Applying Porters Diamond Model.*

Liu, L., & Li, S. (2004). *The Internet and SME´s Internationalization-Case Studies of Swedish Manufacturing SME´s.* Lulea.

McDougall, P. (1989). International versus Domestic Entrepreneurship: New Venture Strategic. *Journal of Business Venturing*, 4(6), 387-400.

Mehrizi, M. v. (2008). Comparatıve Analysıs Of Sectoral Innovatıon System And Dıamond Model (The Case Of Telecom Sector Of Iran). *Journal Of Technology Management & Innovation*, 3(3), ss.78-90.

Mintzberg, H. (1973). Strategy-making in three modes. *California Management Review*, 16(2), 44-53.

Naserbakht, M. A. (2008). *Merging the Porter's Diamond Model with SWOT Method in Order to Analyze the Iranian Technology Parks Competitiveness Level.* Cape Town: PICMET Proceedings.

News, C. |. (8. March 2011. a.). *Skype grows FY revenues 20%, reaches 663 mln users*. Allikas: Telecompaper: http://www.telecompaper.com/news/skype-grows-fy-revenues-20-reaches-663-mln-users--790254

Nilson, E. v. (2002). *The HomeCom Project – an Analysis of Collective Action between Competitors and Educational and Municipal Institutions.* Linköpıng.

O'Driscoll, G. H. (2002). Index of Economic Freedom. *The Heritage Foundation and The Wall St Journal*.

OECD. (29. January 2014. a.). *OECD broadband statistics update*. Allikas: OECD: http://www.oecd.org/sti/broadband/broadband-statistics-update.htm

Oviatt, B. a. (2005). Defining International Entrepreneurship and Modeling the Speed of Internationalization. *Entrepreneurship Theory and Practice*, 29(5), 537-553.

OZ, O. (2002). Assessing Porter‟s Framework For National Advantage: The Case Of Turkey. *Journal of Business Research*, 55 (6), ss.509-515.

Penrose, E. (1959). *The Theory of the Growth of the Firm.* Blackwell.

Porter. (1990). *The Competitive Advantage of Nations.* New York: The Free Press.

Porter, M. (1998). *The Competitive Advantage of Nations.* New York: Free Press.

Porter, M. E. (2001). Strategy and the Internet. *Harward Business Review*, 63-78.

Rennie, M. W. (1993). Global competitiveness: Born Global. *McKinsey Quarterly*, 45-52.

Saar, E. (2013). *Estonian ICT Export Cluster.* Tallinn: Estonian ICT Export Cluster.

Saarenketo, S. (2002). *Born Globals - Internationalization of Small and Medium Sized Knowledge-Itensive Firms.* Lappeenranta: Digipaino.

Saeedi, M. R., Dadfar, H., & Brege, S. (2012). *Rapid Internationalization of SMEs from Resource Based View: A longitudinal Study of a Pharmaceutical company in Iran.* Linkoping.

Schramm, W. (1971). *Notes on case studies of instructional media projects.* Washington DC: Academy for Educational Development.

Scott, W. (1995). *Institutions and organizations.* Sage: Thousand Oaks, CA.

Selznick, H. (1957). *Leadership in administration: A sociological interpretation.* New York: Harper & Row.

Smallbone, D., & Venesaar, U. (2006). *The State of Small and Medium-Sized.* Tallinn.

Smit, A. (2010). The competitive advantage of nations: is Porter‟s Diamond Framework a new theory that explains the international competitiveness of countries? *Southern African Business Review*, Vol. 14 No. 1, pp.105-130.

Society, E.-E. t. (2. January 2013. a.). *m-Parking*. Allikas: E-Estonia the Digital Society: http://e-estonia.com/components/m-parking

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, Vol. 70 (1), p. 65-94.

Sormunen, R. (10. May 2011. a.). *44% Skype`i töötajatest on pärit odava tööjõuga Eestist*. Allikas: Äripäev: http://www.aripaev.ee/article/2011/5/10/44-skype-i-tootajatest-on-parit-odava-toojouga-eestist

Stalk G., H. T. (1990). *Competing against time.* New York: Free Press.

Stat, W. (29. January 2014. a.). *Estonia*. Allikas: World Stat: http://en.worldstat.info/Europe/Estonia/Land

Statistics, E. (29. January 2014. a.). *III kvartalis töötus stabiliseerus*. Allikas: Estonian Statistics: http://www.stat.ee/65319

Statistics, E. (19. February 2014. a.). *Teadus- ja tehnoloogiaerialade lõpetanud soo järgi*. Allikas: Estonian Statistics: http://www.stat.ee/29993

Stopford, J. M., & Susan Strange, J. S. (1991). Rival states, rival firms. *Cambridge University Press*, p. 76.

Sun H., F. Z. (2010). Empirical Research On Competitiveness Factors Analysis Of Real Estate İndustry Of Beijing And Tianjin. *Engineering, Construction and Architectural Management*, 17(3), ss. 240-251.

Susman. (2007). *Small and Medium-Sized Enterprises and the Global Economy.* Edward Elgar Pub.

Susman, G. I. (2007). *Small and Medium-Sized Enterprises and the Global Economy.* Pennsylvania: Edward Elgar Pub.

Systems, C. o. (2. January 2013. a.). *e-Business Register*. Allikas: Centre of Registers and Information Systems: http://www.rik.ee/en/e-business-register

Tallinn, L. |. (11. July 2013. a.). *Estonia's technology cluster*. Allikas: The Economist: http://www.economist.com/blogs/schumpeter/2013/07/estonias-technology-cluster

Tänavsuu, T. (13. September 2013. a.). *"How can they be so good?": The strange story of Skype*. Allikas: Ars Technica: http://arstechnica.com/business/2013/09/skypes-secrets

Tasevska, G. (2006). *An Economic Analysis of the Macedonian Viticulture – A Competitiveness View of the Grape and Wine Sectors.*

Törnroos, J.-Å. (2005). *Internationalisation of the firm – a theoretical review with implications for business network research.* Åbo Akademi University.

Tuna, E. (2006). *The Tobacco Sector İn The Republic Of Macedonia- Competitiveness Analysis.* Department of Economics.

Twomey, M. (2001). *A Century of Foreign Investment in the Third World (Routledge Studies in International Business and the World Economy).* Routledge; 1 edition.

Vernon, R. (1966). International investment and international trade in the product cycle. *International Marketing Review*, 20-9.

Week, B. (22. June 2003. a.). *Commentary: Business Software Needs a Revolution*. Allikas: Business Week: http://www.businessweek.com/stories/2003-06-22/commentary-business-software-needs-a-revolution

Wernerfelt, B. (1971). *A Resource based view of a firm.* Michigan: Strategic Management Journal.

Wright, M. W. (2007). Internationalization of Small and Medium Sized Enterprises (SMEs) and International Entrepreneurship: a Critique and Policy Implications. *Regional Studies*, 41(7), 1013–1029.

Wynarczyk, P. W. (1993). *The managerial labour market in small and medium sized enterprises.* London: Routledge.

Yin, R. K. (2009). *Case Study Research: Design and Methods (Fourth Edition).* London: SAGE Publications, Inc.

Zohari, T. (27. January 2014. a.). *The Uppsala Internationalization Model and its limitation in the new era*. Allikas: DigitPro: http://www.digitpro.co.uk/2012/06/21/the-uppsala-internationalization-model-and-its-limitation-in-the-new-era/#_ftn1

Zuboff, S. &. (2004). *The support economy: Why corporations are failing Individuals and the next episode of capitalism.* New York: Penguin Books.

Appendixes

Questionnaire template

1. General information questions

1. How long have you been in business/how long have you exported?

2. What is your product/service that you are offering?

3. What is your company's ownership and organizational structure?

4. How many employees do you have?

5. How big is the turnover/export intensity % of that?

6. Is your company currently active in foreign market/markets?

7. Who are your main customers and competitors?

2. Internationalization of the company questions

- *Do identify how and why Estonian software companies internationalize*
- *Highlight the critical issues, which have to be taken into consideration, when internationalizing an software company*

8. What are the main reasons why have you chosen to expand into new markets?

9. How are you marketing yourself in foreign market, is it different compared with local conditions?

10. How fast did you entered into international market starting from the birth of the company?

11. Was it decided from the beginning that you would expand to other countries?

12. In which countries have you currently expanded?

13. Can you describe your internationalization in chronological order?

14. Why did you choose to establish yourself in this specific order?

15. What factors do you take into consideration when choosing countries to enter?

16. How did you prepare yourself before entering the foreign markets?

17. What are the main problems you have faced in entering into foreign markets?

18. If you had the possibility to re-start your internationalization process, what would you have done differently?

3. Resource based-view questions

- *What internal factors drive internationalization process of Estonian software companies and how?*

Entrepreneurship Orientation (EO)

What are the most important internationalization factors in relation to Innovativeness?

What are the most important internationalization factors in relation to Risk taking?

What are the most important internationalization factors in relation to Proactivness?

Networking Capability (NC)

What are the most important internationalization factors in relation to Relational skills?

What are the most important internationalization factors in relation to Coordination?

What are the most important internationalization factors in relation to Partner knowledge?

What are the most important internationalization factors in relation to Internal communication?

Adaptive Production Capability (APC)

What are the most important internationalization factors in relation to Lead time?

What are the most important internationalization factors in relation to Providing demanded quality?

What are the most important internationalization factors in relation to Flexible production?

Estonian ICT Companies contacted

Aktors
Cybernetica
Bytelife
Titanium Systems
Zero Technologies
Regio
Toggl
Raintree Estonia
OSKANDO
MTM-Medical Technology Management
EDS Systems
Stream Proactive
Santa Monica Networks
Mobi Solutions
Codeborne
Defendec
Nortal
Apteekide Infotehnoloogia
Datel
Net Group
Proekspert
Creative Mobile
Modera Consulting
KonceptForm
Scanpix Baltics
Directo
APSCommunications
Modirum MDPay
Astro Baltics
New Vision
Fujitsu Estonia
AK Süsteemid
Columbus Eesti
ID Süsteemide
BCS Itera
Andares Consulting
USESOFT
ALPHAGIS
Medisoft
Stallion
Cleveron
Datagate
Edisoft Baltic
SAP Estonia
Sports Holding
Proact Estonia
SQA Partners
Swedbank Support
Tieto Estonia Services
Trinidad Consulting
Hireright Estonia
Icefire
Symantec Estonia
Omatakt
ADM Interactive
Affecto Estonia
MassMedia
GuardTime
Sanoma Baltics

Küsimustik (Questionnaire in Estonian)

Antud küsimustiku eesmärk on uurida, et kuidas ja miks Eesti info-ja side tööstuses olevad firmad on sisenenud välisturule ning millised on firma sisemised tegurid, mis rahvusvahelistumist soosivad.

1. Üldised küsimused firmast

Firma nimi:

Vastaja nimi:

Vastaja ametipositsioon:

NB: Palun vastata võimalikult täpselt ja vajadusel mitme lausega!

1. **Kui kaua on firma olnud tegevuses ja kaua eksportinud oma tooteid/teenuseid?**

Vastus:

2. **Mis on firma peamine toode/teenus?**

Vastus:

3. **Milline on firma osalus ning organisatsiooniline struktuur?**

Vastus:

4. **Kui palju on firmas töötajaid (2014 seisuga)?**

Vastus:

5. **Kui suur on firma käive/ekspordi osalus sellest?**

Vastus:

6. **Kes on firma peamised kliendid ning konkurendid?**

Vastus:

2. Küsimused ettevõtte rahvusvahelistumise kohta

7. **Mis on peamised põhjused, miks firma on sisenenud uutele turgudele (välisturule)?**

Vastus:

8. **Kuidas näeb välja firma turundamine välisturul, kas sellega seotud tegevused erinevad kohalikust turust?**

Vastus:

9. **Kui kaua läks firmal aega, et siseneda välisturule firma sünnist alates?**

Vastus:

10. **Kas plaan minna välisturule oli firma strateegias juba algselt sees?**

Vastus:

11. **Millistele maadele (turgudele) on firma preaguse seisuga laienenud?**

Vastus:

12. **Kirjeldage firma rahvusvahelistumist kronoloogiliselt**

Vastus:

13. **Miks toimus rahvusvahelistumine just selles järjekorras?**

Vastus:

14. **Milliseid kriteeriumeid pidas firma silmas kui valisite turge, millele siseneda?**

Vastus:

15. **Kuidas valmistusite välisturule sisenemiseks esmakordselt?**

Vastus:

16. **Millised on/olid peamised takistused/probleemid seoses välisturule minekuga?**

Vastus:

17. **Millistele turgudele on firmal plaanis siseneda lähiajal?**

Vastus:

3. Firma sisemised tähtsaimad rahvusvahelistumist soosivad tegurid

Firma Orienteeritus (Millised on olnud peamised kõige tähtsamad innovaatilised, riskirohked ning proaktiivsed tegurid, mis on mõjutanud firma rahvusvahelistumist).

(Innovatiivsuse näide: uute toodete/teenuste loomine, täiustamine ning tootmisprotsessi arendamine)

NB: Palun mainida vähemalt 2 tegurit igas kategoorias!

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses Innovatiivsusega?**

Vastus:

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses Riskide võtmisega?**

Vastus:

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses Proaktiivsusega?**

Vastus:

Võrgustike loomine (Millised on olnud peamised kõige tähtsamad suhtlemisoskusega, koordineerimise ning koostööpartnerite teadmistega seonduvad tegurid, mis on mõjutanud firma rahvusvahelistumist).

(Suhtlemisoskuse näide: head suhted klientide ning varustajatega, klientide vajaduste väljaselgitamine)

NB: Palun mainida vähemalt 2 tegurit igas kategoorias!

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses Suhtlemisoskusega?**

Vastus:

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Koordineerimisega</u>?**

Vastus:

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Koostööpartnerite teadmistega</u>?**

Vastus:

- **Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Sisekommunikatsiooniga</u>?**

Vastus:

<u>Kohanemisvõimelisus</u> (Millised on olnud peamised kõige tähtsamad tellimuse õigeaegse täitmise, kvaliteedi ning selle tootmise paindlikusega seonduvad tegevused, mis on olnud abiks teie firma rahvusvahelistumisel)

(<u>Tellimuse täitmise õigeaegselt näide</u>:Toote/teenuse õigeaegne tarbijani jõudmine)

NB: Palun mainida vähemalt 2 tegurit igas kategoorias!

- Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Tellimuse täitmisel õigeaegselt</u>?

Vastus:

- Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Nõutud kvaliteedi pakkumisega?</u>

Vastus:

- Millised on olnud kõige tähtsamad rahvusvahelistumist soosivad tegurid seoses <u>Paindliku tootmisega</u>?

Vastus:

Tänan teid, et leidsite aega!