

TALLINN UNIVERSITY OF TECHNOLOGY

School of Business and Governance

Department of Business Administration

Rajab Mammadli

INTERNATIONALIZATION STRATEGIES EMPLOYED BY
TECHNOLOGY-BASED VENTURES

Bachelor's thesis

International Business Administration, Entrepreneurship and Management

Supervisor: Basel Hammada, PhD

Tallinn 2022

I hereby declare that I have compiled the thesis independently and all works, important standpoints, and data by other authors have been properly referenced and the same paper has not been previously presented for grading.

The document length is 8004 words from the introduction to the end of the conclusion.

Rajab Mammadli

(signature, date)

Student code: 194430TVTB

Student e-mail address: ramamm@ttu.ee

Supervisor: Basel Hammada, PhD

The paper conforms to requirements in force

.....

(signature, date)

Chairman of the Defence Committee:

Permitted to the defence

.....

(name, signature, date)

TABLE OF CONTENTS

ABSTRACT	4
INTRODUCTION	5
1. THEORETICAL BACKGROUND	7
1.1. Technology ventures from an international perspective	7
1.2. Internationalization theories	8
1.3. Uppsala internationalization model	11
2. RESEARCH METHODOLOGY	15
2.1. Research design	15
2.2. Data collection	15
2.3. Data analysis	17
3. RESULT & FINDINGS	19
3.1. Findings	19
3.2. The importance and role of internationalization for tech firms	26
CONCLUSION	29
LIST OF REFERENCES	34
APPENDICES	38
Appendix 1. Survey questionnaire	38
Appendix 2. Non-exclusive licence	41

ABSTRACT

The internationalization of companies is rising phenomena as an increasing number of technology firms from emerging economies are changing their focus from local markets to wider international markets. Especially, in recent years, it became crucial to consider internationalizing operations in fast-growing technology companies to overcome local competition. Technology-based companies contribute to the economy by employing workers and by bringing innovation to the communities as they are more innovative compared to other types of firms which positively affects the current economic state of the country. Technology firms approach internationalization as an important strategy to grow. However, newer companies face different kinds of challenges due to a lack of resources, scale, and branding. Also, internationalization process of newer firms is substantially different from more experienced companies because of resource limitations.

Although there has been increasing research recently on internationalization of small firms, very little research has been done from the technology firms point of view and this gap in the literature is the main reason for conducting this research. This paper explains the strategies used by early-stage technology-based firms, whether these strategies are suitable for certain markets, and will investigate the challenges companies face while trying to enter foreign markets. This paper aims to examine the internationalization process of technology firms, especially software-oriented companies, determine the key elements that affect the internationalization process, and find the best strategy used for technology companies during internationalization process. The author is determining the drivers for the internationalization of technology companies and also explores the best strategies used for tech-based companies to execute internationalization successfully.

This paper concluded that the resource-based approach is the most suitable method to internationalize for technology companies. Author also found the leading motivating factors, obstacles and benefits attained by the technology companies during the internationalization process.

Keywords: Internationalization, Technology, Innovation, Emerging economy

INTRODUCTION

Internationalization is one of the most lightly accepted realities of the modern business world. Internationalization theory started to develop right after the Second World War and gained popularity around 1960s (Oviatt & McDougall, 1994). The theory of the internationalization of the companies has gained a new meaning recently due to the global market regulations, changes in policy, and increase in technology use. It still cannot be determined whether business internationalization is a new term, or it was existent for a long period of time. Companies have various motives to expand internationally, such as diversifying, expanding operations, increasing revenue, finding new talents, and new investment opportunities (Lea et al., 2014). In today's international marketplace, it is crucial to understand foreign market penetration methods in an extremely competitive and complex markets to achieve competitive advantage over domestic companies.

Although several studies have investigated the influence of internationalization on different sectors, relatively few of them have investigated the effect of internationalization on technology-based firms. Welch and Luostarinen (1988) explain the process of internationalization as the outward movement in an individual firm's international operations, which in turn underlines the firm's operations and processes. Although many studies have been conducted in this field, the generalized term for 'internationalization' is still absent, and many interpretations remain in the literature. Especially, the number of technology-specific internationalization terms and strategies is significantly less compared to other industries.

Several factors can affect the internationalization process such as company performance, cultural aspects, industry etc. Jae and Pratima (2009) did extensive research on the effects of firm performance on the internationalization process. Their research refers to the prospect theory to explain the strategic behaviours of firms performing below and above their targeted performance. Benjamin and Patricia (1997) explore the challenges to the existing internationalization process theory which in turn provides vital information for the research topic.

This paper aims to examine the internationalization process of technology firms, especially software-oriented companies, determine the key elements that affect the internationalization process, and find

the best strategy used for technology companies during internationalization process. The author is determining the drivers for the internationalization of technology companies and also explores the best strategies used for tech-based companies to execute internationalization successfully. The research problem for this paper is the lack of research on the specific strategies and internationalization process of technology-based firms.

Research questions:

1. What internationalization strategies are used by technology-based ventures?
2. What are the drivers for the internationalization of tech-based companies and obstacles evolved from this process?
3. What benefits did company receive during internationalization process?
4. What is the correlation between the internationalization process and the performance of a company?

The sample for this research is technology-based ventures, more specifically software companies. Due to the explanatory nature of the topic, a quantitative methodology will be used for this research. A survey conducted, and data was collected through cross-table analysis in order to analyse the data collected from the resources mentioned above.

The introduction part is followed by the theoretical background which focuses on internationalization processes used by the technology-based ventures and provides a better explanation of the topic studied. This part gives an extensive overview of the technology ventures along with internationalization theories and the Uppsala Internationalization Model. After the theoretical background, the author explains the methodology of the paper which includes the used methods, collection, and analysis of data used throughout the research. This is followed by the part on the results and findings that emerged from the research conducted in this field which is followed by the conclusion. The last part of the thesis is dedicated to discussing our results against extant literature, provide implications for both academia and practice and future research directions.

1. THEORETICAL BACKGROUND

This section provides an overview of technology ventures, which is the main subject of this research paper, and also discusses internationalization theories, especially Uppsala Internationalization Model.

1.1. Technology ventures from an international perspective

Entrepreneurial efforts on technology sector are a driving force for the prosperity of modern societies. Global markets started to become more technology-oriented starting from the 1990s with the emergence of technology companies. As the companies started to grow larger in size and revenue, they started to aim for international foreign markets (Aspelund & Moen, 2004). This sole factor made internationalization theories more valuable than ever before, and the number of research papers written on this topic increased significantly in the past decades as education and knowledge are essential components of internationalization when companies plan to enter foreign markets.

Technology companies started to emerge starting in the 1990s with the rise of the Silicon Valley. In order to increase their revenues and userbase technology companies started to look for foreign markets to enter with substantial technological backgrounds. Companies like Amazon and Netscape were the technology leaders of their time and created huge popularity around tech ventures. At that time companies had no clear strategies and knowledge of the factors that affected the internationalization process (Madsen & Servais, 1997). Several papers have been written on the internationalization process at the end of the 20th century but papers with a technological focus were extremely scarce.

In recent years, many companies, small and medium sized, have appeared through constant developments in technology, even though having an insufficient number of resources compared to global corporations in saturated markets. Technological development is an important factor for firm competitiveness due to the fact that it helps to gain competitive advantage in the market by gaining exclusivity. Employing better workforce in R&D operations can increase the revenue by developing existing technology, thus meaning that more technology skill levels increase export to the foreign markets (Kim et al., 2019).

Technology development is an essential topic to consider, which helps to prevent unexpected difficulties in a complicated and saturated business ecosystem. This is a fundamental issue in gaining competitive advantage and differentiation over local companies in entered market. Technology development is rather complex topic, but it assists companies to avoid unnecessary competition that could be faced otherwise and promote the growth of the firm.

Technology development performance research affects companies in governmental and institutional level which in turn promotes the investment in technology. Most of the research papers written on topic tried to demonstrate the correlation between the results attained by technological advancements and their possible effects on the company. Research conducted on the measurement of performance of the technological advancement has been constantly studied in order to determine the effect of these factors on the performance of the firm. However, most of the conducted studies point out that the technology development performance is concentrated on the realization of technological advancement in one dimensional level (Kim et al., 2019).

One of the case study research papers (Oviatt & McDougall, 1994) determined that the international ventures succeed if the firm has an innovative service or product from the foundation and also has a strong marketing network. Many research papers have been written on this matter and also most of them state that company gains competitive advantage in foreign market by investing in research and development (R&D) heavily. These results originate from the fact that domestic companies cannot invest in R&D in short period of time thus loses the ability to compete with foreign companies (Caves, 1971).

1.2. Internationalization theories

The early theories of internationalization started to emerge back in the 1960s and 1970s and before those theories business studies initially relied on economic theories that were originating back to the 1930s. Internationalization was initially theorized by Buckley and Casson (1976). Buckley and Casson (1976) demonstrated that Multinational Enterprises organize their internal activities in order to take the competitive advantage in intermediate products and knowledge. More briefly, Buckley and Casson (1976) theorized that any flaws in the market can lead to the excessive pressure for internationalization

by the company. After Buckley and Casson (1976), Rugman (1981) developed the initial internationalization-theory model which was established on economics and was focused on efficiency. Other than that, Rugman (1981) also developed a temporal model of the internationalization. This model started to consider net present value of exporting, licensing, and foreign direct investments (FDI). Rugman suggested that when benefits exceed the costs it acts as an essential element of FDI to take place.

Modern approaches to internationalization include a resource-based view (RBV) and the contingency theory developed in the 1980s, which aim to explain the international behaviour of the firms during the internalization process (Cumberland, 2006). The significance of knowledge-based resources is emphasized in **Resource-based models**, as is the dynamic ability for organizational learning necessary to produce new resources (Ruzzier et al., 2006). Briefly, a firm's ability to defend its position in profitable markets mostly depends on its capability to hold and achieve beneficial positions with respect to proper resources critical to the firm (Conner, 1991).

Some of the other recognized theories on internationalization include the eclectic paradigm, monopolistic advantage theory, the transaction cost theory, internalization theory, absolute advantage, and comparative cost theory (Ruzzier et al., 2006). According to Buckley and Casson (1993) **Internalization theory** is the concept that proposes the idea of creation internal markets of the companies and will remain till the expenses and benefits of internalization are equal to the margin. Internalization brings new activities and operations, under the direct control of the firm, specifically when proper marketplaces are absent which in turn leads to the formation of multinational companies.

The eclectic paradigm attempts to explain distinct variants of international production as well as countries for FDI and relies solely on internalization theory. Dunning (1988) determines 3 types of advantages that needs to be realized for the internationalization of economic activity:

- **Ownership advantages.** These advantages are related to the growth of product innovations and technological capacities.
- **Internalization advantages.** These advantages are emerging from the ability of the company to coordinate and manage interests internally.

- **Location advantages.** These refer to the productive factors that are available in a certain geographic region.

Monopolistic advantage theory describes that, companies exist because they have exclusive dominance over local companies in the markets that they entered. The advantages belong to the multinational enterprises exclusively and cannot be possessed by other companies. These advantages can be found in forms of brand names, manufacturing processes, differentiated products, patented technology etc (Hymer, 1976). According to Caves (1971), monopolistic advantage theory suggests that companies can exploit its advantages in foreign markets which emerged by the help of the development in superior knowledge in the industry at almost no expense compared to the home market. On the contrary, local companies have to pay premium in order to develop this exclusive knowledge which they are unable to do in a short period of time thus making them unable to compete against superior firms in their domestic market despite the knowledge they obtained throughout the years.

According to Teece (1986), **transaction cost theory** is almost the same with internalization theory. Teece (1986) mentions that for profit companies internalize their procedures which lowers the cost of transacting and organizing business substantially. Also, transaction cost theory considers transaction as the unit of analysis which is not the case for internalization theory (Williamson & Oliver, 1975).

The last two internationalization approaches are absolute and comparative cost advantage theories. Compared to other theories mentioned above, these two theories are much older and cannot be considered as a general internationalization approach.

Absolute cost advantage theory was developed in 1776 by Adam Smith. This theory comprises of the ideas that any country should focus on exports and gain absolute advantage permanently. Principle of absolute cost advantage theory is to produce greater quantity of services, goods, and products than competitors, without changing the amount of resources allocated. This principle makes this theory relevant for contemporary technology companies as they tend to be more scalable in comparison to firms that are operating in more traditional industries. Although, this theory points out the importance

of absolute advantage, it also states that comparative advantage is crucial for any trade (Smith, 2008).

Absolute cost advantage theory has several assumptions that needs to be considered:

- No transportation cost
- Labour is only mobile within a country
- Cost of commodities are relative to the required amount of labour

According to this theory, absolute advantage can refer to a firm and individual who produces services, products, and goods at low marginal cost. Absolute advantage occurs when:

- Less time needed to produce service, good, and product
- Less material needed for production
- Cheaper labour cost
- Cheaper materials used for production

Improving Adam Smith's absolute cost advantage theory, David Ricardo in 1817, came up with **comparative cost advantage theory**. This theory explains that Adam Smith's idea is redundant and no country in the world would need this method in order to be productive and profitable in international trade with other countries. Comparative cost advantage theory is considered to be more profitable in comparison to absolute cost advantage theory. It is due to the fact that country specializes on products they may have comparative advantages over others. Comparative cost advantage theory also has its own assumptions:

- The cost of production of commodities can be expressed as labour only
- Trading products can only refer to the commodities
- It can only emerge between two countries

Although, this theory has many advantages there are some discrepancies concerning comparative cost advantage theory. First of all, determining the product in which countries will have comparative advantage is extremely difficult as there are a wide range of products and countries to consider. Modern theories such as Uppsala Internationalization Model does not agree with some of the principles of Ricardo's theory. This is due to the fact that comparative cost advantage theory is based on labour theory, but Uppsala Model relies on behavioural theory. Comparative cost advantage theory also disregards transport cost factor of the exported product. Transport cost is a crucial element of

comparative advantage as adding them to overall costs can change any advantage obtained by country in foreign market. Other than that, comparative cost advantage suggests that costs for production and export is constant but in today's world we can confidently say that this idea is flawed due to the volatile pricing of the products in the market and fast-changing regulations in foreign countries. Lastly, Ricardo thought of comparative advantage as a static concept. But comparative advantage can be differed by imposing heavy regulations on imports or changing available labour force and it proves that comparative cost advantage theory is not a static but rather dynamic theory.

1.3. Uppsala internationalization model

Ruzzier et al. (2006) defines the two models for internationalization – the Uppsala Internationalization Model, and the Innovation-related Model.

Johanson and Vahlne (1977) developed Uppsala Internationalization Model suggesting that internationalization of the business begins to enter foreign markets with a small, progressive steps. Uppsala Internationalization Model is influenced by Penrose's theory of knowledge (Penrose, 1959) and behavioural theory of the firm developed by Cyert and March (1963). At the time, authors of this model believed that most of the existing theories ignored cultural differences and internal foundations needed for the companies to internationalize. Johanson and Vahlne (1977) suggest that practical market experience and resource dedication of companies impact the decisions concerning recent business activities. Current business activities stimulate further resource commitment and increase the market knowledge to foreign markets in later cycle (Andersen, 1993). Based on their experience with Scandinavian companies, Johanson, and Vahlne (1977) found that European companies usually enter international markets in small, incremental steps. Companies then enters new markets by considering obstacles occurred by the differences in languages, business practices and education between nations. Firms will then enter new international markets at a safer "psychological distance" due to differences in languages, business practices and education. The Uppsala Internationalization Model specifies four steps of entering foreign markets (Arvidsson, 2019):

1. Sporadic export, which means no regular export activities
2. Export mode, which means export via independent representative
3. Establishment of a subsidiary abroad

4. Foreign manufacturing, direct creation of a subsidiary in the foreign country (Johanson & Vahlne, 1977)

Authors of the model found that companies normally enter countries for expansion with closer ties in aspects such as culture and psychology. In these markets they increase their knowledge and have more control on resources, and after getting sufficient amount of experience they start to aim for more distant markets. According to this model most easy and established method of entering foreign market is through export of products.

Forsgren and Johanson, in order to demonstrate the relation between commitment decisions and market knowledge of the companies, created a matrix model (See Figure 1). The concept of foreign market commitment is comprised of two factors: the level of commitment and the number of resources dedicated. In general, this model explains that enhanced market knowledge will lead to increased market dedication, and vice versa (Andersen, 1993).

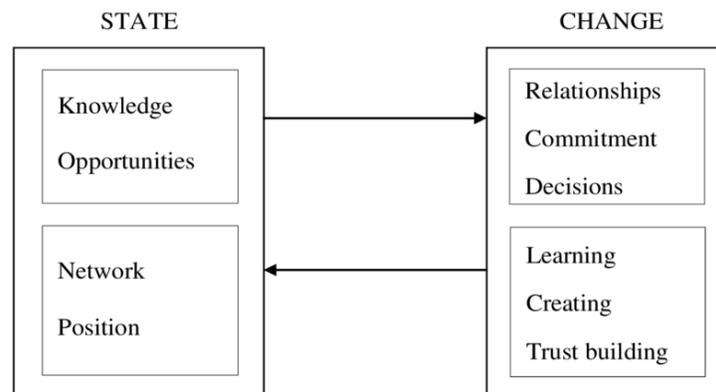


Figure 1. The Uppsala internationalization process model.

Source: Johanson and Vahlne (1977)

The Scandinavian internationalization models have had a considerable effect on some research concentrating on the internationalization of companies. This research provided valuable information for internationalization models but despite this information many criticisms have appeared (Ruzzier et al., 2006). Reid (1981) stated that Uppsala Internationalization Model is deterministic, which means that it follows pre-determined steps that needs to be followed by companies in order to be successful.

If firms chose Uppsala Model as their main strategy for internationalization, they would have no flexibility of choices. This is supported by the fact that companies today do not follow traditional patterns for internationalization as it was before. Some firms are international from their birth, and they are called different names by different authors: Oviatt and McDougall (1994) called them international new venture, Madsen and Servais (1997) born global and Oviatt and McDougall (1995) global start-ups (Ruzzier et al., 2006). Born global refers to the company that from the time of its founding seeks to obtain most of its revenue from international markets that it entered. Generally, these companies are smaller in size and have no resources to maintain their position in the market that they entered for a long period of time.

Overall, companies employing Uppsala model for their internationalization process tend to be more successful in entering foreign markets.

2. RESEARCH METHODOLOGY

2.1. Research design

Due to the explanatory nature of this research topic, the quantitative method was used for this paper. Primary aim of this research paper is to examine the internationalization process of technology firms, especially software-oriented companies, determine the key elements that affect the internationalization process, and find the best strategy used for technology firms during the internationalization process.

Data for this research is collected through statistical information, case-studies, research papers, and other official resources. These resources helped to form some central ideas and help reader to understand why companies internationalize from different author's perspective. However, data collected only through secondary resources can yield irrelevant results and may not be enough to compare variables. In order to increase the accuracy of the research the online survey was conducted aiming technology companies predominantly residing in Europe and North America. Additionally, the members of leadership team from corresponding companies participated in survey which helped to draw more clear results. Overall, survey lasted for two weeks and in total 138 companies participated in this questionnaire. Survey questionnaires were sent to the respondents through pollfish and surveysparrow platforms.

Thereafter, collected data is organized in tables in order to prepare it for analysis. Cross-table analysis is used as a method to analyse the organized data collected from online survey and secondary resources mentioned above. Cross-table analysis documents the number of respondents in the survey which have the specific qualities described in the sections of the table. Thus, these tables provide abundant information about the correlation between the variables.

2.2. Data collection

This research was concluded predominantly through online surveys which is specified as quantitative method. Leedy and Ormrod (2001) explain the research methodology as the general steps a researcher

employs for a research work. Therefore, a quantitative research method deals with quantifying the analysis variables in order to get results (Leedy & Ormrod, 2001). According to Sukamolson (2007), survey research uses the systematic sampling method with a designed questionnaire to assess a given population's characteristics through the utilization of statistical techniques. Survey has several criteria for samples which makes it non-random sampling. Target group for survey can be found below (See Table 1).

Table 1. Target groups for online survey

Variables	Target group
Gender	Male/Female
Age	18-54
Region	Europe and USA
Employment sector	Technology/Entrepreneurship

Source: Author

Survey aims to determine the challenges faced and elements affected the internationalization process the most. By the end of the research, 138 responses collected through pollfish and surveysparrow platform targeting above-mentioned group. Questions used for surveys are provided below (See Table 2). These questions are based on previous research papers and books written on the topic by different authors (Czinkota et al., 2004; Lea et al., 2014; Yener et al., 2014).

Table 2. Survey questions

Question	Aim
What is your age group?	Determining age group can potentially help to understand if there is correlation between age and subsequent behavioural traits.
What is your gender?	Learning gender of the targeted groups also helps to determine the correlation between gender and opinion of the respondents.

How long have your company been operating?	Company age helps to ascertain if the older companies are more advantageous during the internationalization process.
What is your organization's primary line of business?	Primary line of business helps us to understand the relationship and differences between different types of businesses.
What is the size of the organization?	Company size assists us in determining the advantages and disadvantages of the large and small companies during the process.
Which regions company expanded to internationalize?	Different regions would help us to find if the challenges faced during the internationalization process are the same or different for various cultures and states.
How long did the internationalization process take?	Determining the length of internationalization process helps to define problems emerging from long or short internationalization duration.
What was the most faced challenge during the firm internationalization process?	Specific challenges faced by company during the process.
Motives behind internationalization decision	Motives for internationalization can also be a decisive factor for choosing internationalization strategies.
Which strategies are used by the company to internationalize?	Specific strategies used by company such as, exporting, acquisition, licensing etc.

Source: Author

2.3. Data analysis

The survey was conducted for 2 weeks, collected after reaching the maximum number of targeted respondents. Collected data was analysed using cross-tabulation method. Cross-tabulation method is considered to be one of the most widely used and reliable data analysis method. This method assists researcher to collect data into easily comprehensible tables, which in turn helps to draw conclusion between various research variables. It generally includes information that is equally exclusive or have some correlation with one another. After collecting data and implementing cross-tabulation method

in order to find the correlation between different variables were determined by the author. Cross-table was created with IBM SPSS and Microsoft Excel tools.

3. RESULT & FINDINGS

This section represents the findings developed from the result of this research and analyses these results to find the best internationalization strategies for technology-based ventures.

3.1. Findings

Based on the survey conducted between tech entrepreneurs, cross-tables were formed in order to start the analysis of the best strategies for internationalization of technology firms. Cross-table analysis provide a way of analysing and comparing the results for one or more variables with the results of another. This analysis method is typically used when researcher has categorical data or variables, in other words, information that can be divided into mutually exclusive groups.

As almost all of the technology-based companies around the world consider internationalization, identifying a single variable for this research is complicated and cannot retrieve accurate results. This paper analysed the collected data based on six different variables. These six different variables were then added to the cross-tables which are sorted by the relevancy of the selected two variables. Cross-tabulation analysis in this research is based on the variables arose from the questions that was asked throughout the online survey. Compared variables are added below:

- Respondent age – gender
- Firm age – challenge
- Process length - motive

Respondent age – gender correlation

First analysis was conducted in order to find the connection between the age group and gender of the respondents of the survey. Finding demographic variances between respondents is a crucial element for further research process of this paper as it also demonstrates the correlation between this analysis and behavioural traits of the internationalization process. There are several factors that led to the analysis of these two-variable pair. First of all, by identifying the age of the respondent, paper tries to determine the importance of experiential knowledge on internationalization process. The other factor

for choosing the gender variable is to find the relevance of this in the process of internationalization. Lastly, combining these two variables helps author to make a conclusion whether the tendency is the same for both genders throughout different age groups.

Table 3. Age – gender cross-table analysis

	Base	Age						
		Under 18	18-24	25-34	35-44	45-54	55-64	65+
Base	138	0	26	54	37	16	4	1
Gender								
Male	118	0	26	48	29	11	4	0
Female	20	0	0	6	8	5	0	1

Source: Author

Table 3 demonstrates the number of respondents participated sorted by age and gender. First of all, it should be stated that none of the participants in the survey were under 18. About 86% of the respondents are male and majority of them belong to the age group of 25-34. This tendency seems to be different in females as they only take up 14% of the respondents and the dominant age group for females is 35-44. Males that were involved in the internationalization process of the technology firms tend to be younger than their female counterparts. As there was no data on the success of internationalization process led by male and female from different age groups it was hard to draw conclusion whether the experiential knowledge is important or not. By the information gathered from Table 3 we can conclude that males were almost six times more involved in internationalization process of the companies compared to their female counterparts. The result of this analysis is supported by two previous studies conducted by Alves et al. (2017) and Alsos et al. (2013). According to Alves et al. (2017) women entrepreneurs operate more than a third of all of the companies in the global economy. Despite the number of females involved in world economy they are less likely to be involved in technology ventures. In addition to that, women are seen less innovative compared to their male counterparts (Alsos et al., 2013). One explanation for this discrepancy is that the high technology companies demand high quality education, to which most of the women still have no access in certain regions of the world (Alves et al., 2017). Table 3 supports the claims as it also represents the unexpected gap between the number of male and female that was involved in technology projects.

According to Table 3, even though women operate more than 30% of the companies worldwide, they are 5.9 times less likely to be involved in technology sector in comparison to male entrepreneurs.

Firm age – challenge correlation

Second analysis was between the firm age and challenge variables that aimed at finding the relationship between age of the firm and the most frequent challenge faced during the internationalization process. Company experience in the market is useful factor for exploiting and identifying opportunities efficiently while entering foreign markets. Company experience refers to the capability of employees and founders while making decisions to expand to foreign markets. According to the research conducted by Palacios and Saleh (2018), most of the founders planning to internationalize declared that they had no prior work experience or experiential knowledge before the expansion to the foreign markets. It is also determined that internationalization process of a company could be understood by looking at the personal experience of its founder (Palacios & Saleh, 2018). This particular analysis intends to find if the more experienced companies face the same challenges in contrast to less experienced firms.

Table 4. Firm age – challenge cross-table analysis

	Base	Company age							
		<6 months	6-11 months	1-2 years	3-4 years	5-9 years	10-14 years	15-19 years	>20 years
Base	138	0 (0%)	2 (1.45%)	15 (10.87%)	83 (60.14%)	11 (7.97%)	20 (14.5%)	7 (5.07%)	0 (0%)
Most faced challenge									
Low productivity	3 (2.17%)	0	1 (0.72%)	2 (1.45%)	0	0	0	0	0
Lack of financing	55 (39.86%)	0	1 (0.72%)	7 (5.07%)	29 (21.01%)	7 (5.07%)	7 (5.07%)	4 (2.9%)	0
Heavy regulations	30 (21.74%)	0	0	2 (1.45%)	21 (15.22%)	3 (2.17%)	4 (2.9%)	0	0
Technological challenges	23 (16.66%)	0	0	1 (0.72%)	15 (10.87%)	0	5 (3.62%)	2 (1.45%)	0
High cost of infrastructure	27 (19.57%)	0	0	3 (2.17%)	18 (13.04%)	1 (0.72%)	4 (2.9%)	1 (0.72%)	0
Other	0 (0%)	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0

Source: Author

In the survey 5 of the most specific common challenges faced by firms during the internationalization process is added:

- Low productivity
- Lack of financing

- Heavy regulations
- Technological challenges
- High cost of infrastructure

These particular challenges are generated from research paper focused on challenges arose during internationalization process, specifically (Yener et al., 2014).

Analysis presented valuable information to the research paper. Typical surveyed company age ranged from 6 months to more than 20 years. According to the Table 4, about 60% of the companies involved in the survey are 3 to 4 years old and can be considered as moderately experienced companies. Companies aged between 3 to 4 years old reported the lack of financing as the most faced challenge during the internationalization process. Also, according to Table 4 lack of financing seems to be the most problematic issue for all companies aged from 6 months to 20+ years old.

Second most faced problem during the internationalization process is the heavy regulations imposed by the governments on firms. Heavy regulations may be imposed by countries to increase the tax revenue of the country or to motivate local companies in creating products that are mostly supplied by foreign companies. Companies aged between 5 to 9 years old encountered this problem the most corresponding to the 64% of all the companies participated in the survey. This can be explained by the fact that older companies are exempt from many government benefits compared to nascent companies existing in the market. This factor helps newer companies to obtain competitive advantage in the market against more experienced and resourceful companies.

Table 4 also demonstrates that a lack of productivity was the least occurred problem during the process and only 3 of the companies aged 6 to 11 months and 1 to 2 years reported that in the survey. We can conclude that companies which reported low productivity as the challenge are considerably newer and more nascent compared to other companies in the survey. This can mainly originate from the inconsistent communication and leadership which are very common in newly founded companies and startups. More experienced companies also employ more organized strategies to enter foreign market therefore do not face such challenges in the process (Yip et al., 2000).

The other two challenges reported in the survey are technological challenges and high cost of infrastructure. Technological challenges may include information security, compliance, artificial intelligence, etc. Technological challenges are serious issue for technology companies as they are more dependent on that compared to traditional businesses. These challenges are interrelated to the heavy regulations imposed by governments because issues such as compliance and information security can lead countries to impose more policies in order to regulate and protect the rights of their citizens. Although, some heavy regulations seem to be affecting foreign companies negatively, it influences local companies positively as it aims to promote local production among local producers.

High cost of infrastructure is proportional to the state of infrastructure already existing in the region or country company is trying to enter. For example, it may be more complicated to enter the African market compared to European market due to the low state of infrastructure such as electric systems, communication networks, etc. existing in the market and creating this infrastructure in Africa will cost company considerably more in comparison to Europe as it needs to be created from the beginning. Other than that, high cost of infrastructure can also include the charging of high fees by European countries for high-speed internet. For example, countries with fiber optic internet tend to charge more than countries with slower internet speed. This is due to the high cost of research and development that was incurred during the development of that technology.

Table 4 represents that companies encountered challenges related to the high cost of infrastructure more frequently in comparison to technological problems. Table 5 below shows the regions companies aimed to expand in order to complement the results obtained from the Table 4.

Table 5. Number of companies expanded to different regions

Region	Number of firms
Europe	83
North America	22
South America	9

Africa	14
Asia	5
Other (more specific)	5

Source: Author

Table 5 demonstrates that majority of the companies targeted Europe as a region for the expansion followed by North America, Africa, South America, Asia respectively. Other than that, 5 company representatives mentioned more specific regions of which 2 were Middle East, and 3 other inputs included countries in Southeast Asia.

Internationalization process length – motives correlation

Third analysis is aimed at determining the relationship between the length and motives of the internationalization process. This analysis gives clear viewpoint on whether a particular internationalization motive takes longer than others to achieve. According to Czinkota et al. (2004), company motivators for internationalization can be divided into two parts: proactive and reactive motivations. Hollensen (2008) mentions that proactive motives initiating the entry to the markets abroad are technological skills, profit and growth objectives, foreign market opportunities, product uniqueness, market data, tax benefits and regulations on tax benefits. On the contrary, reactive motivations occur with the emergence of the environmental changes and pressures which include over-production, domestic sales, etc. (Czinkota et al., 2004).

Table 6. Internationalization process length – motives cross-table analysis

	Base	Length of the process						
		0-6 months	6-12 months	12-18 months	18-24 months	24-36 months	36-48 months	48-60 months
Base	138	3	9	7	17	53	30	19
Motives								
Increasing sales/revenue	87	2	5	3	12	35	18	12
Diversification	11	0	0	0	3	4	1	3
Market exploration	13	1	3	0	0	7	0	2
Low competition	8	0	1	0	0	4	1	2
Foreign market demand	10	0	0	4	1	1	4	0
Other	9	0	0	0	1	2	6	0

Source: Author

Table 6 demonstrates that roughly 74% of all the firms participated in this survey declared that overall internationalization process took more than 2 years. Increase in sales and revenue seems to be the leading motivating factor for internationalization decision by company and its managerial body. Competitive strength of company is reflected by increased market share and its effectiveness can be characterized with acquisition of share in the market and by sales increase (Czinkota et al., 2004). Also, according to Root (1994), entire internationalization process time is between three to five years, which is considered to be the average timeline to achieve sustainable market performance in the foreign market for most companies.

Firms aiming to diversify their operations by entering foreign markets seems to have spent more time in foreign markets compared to companies with different motives. Although proactive motivators take more time to achieve in the market companies with these motivations tend to be more aggressive and successful in foreign market entry process.

Table 4. Proactive and reactive motivators for internationalization decisions

Proactive motivations	Reactive motivations
Profit advantage	Competitive pressures

Unique products	Overproduction
Technological advantage	Declining sales in domestic market
Tax benefit	Proximity to customers
Exclusive information	Excess capacity

Source: Czinkota (2004)

Least reported motivating factor for tech companies is low competition in foreign market. Low competition refers to the opportunities emerged in foreign markets by the lack of domestic companies. As Caves (1971) suggested, companies with higher research and development level are more inclined to be successful in foreign market in contrast to the domestic firms with minimal research and development level.

The other motives for internationalization decisions include increased competition in domestic market and networking. Companies facing aggressive competition in their domestic market may look towards more hospitable environments abroad.

3.2. The importance and role of internationalization for tech firms

Technology firms are much more dependent on internationalization compared to other companies operating in more traditional industries. Early technology companies lack appropriate resources and experiential knowledge that is needed in order to enter and retain in the foreign markets for an extended period of time. Increasing competition in the local markets made internationalization process the only way to survive for early technology companies. Although, technology companies face the obstacles during the internationalization they also have several advantages over other companies during the process. First of all, technology companies are highly scalable in comparison to more traditional industries. For example, we should look at the supermarket and online grocery delivering service. In order to extend their operations to different foreign markets, supermarket, must rent new buildings, and find local distributors which are time consuming and cost-intensive procedures.

However, this is not the case for online grocery delivering service. If this service plans to enter foreign markets the only procedure, they should follow is to open new servers for the region. This demonstrates new questions to be answered, such as the existing state of infrastructure and the cost of buying servers in that market. These two elements are inversely proportional. Technology companies are also less labour-intensive in comparison to other industries. This particular factor increases the likelihood of success of the companies in the foreign markets while internationalizing as it reduces the operating costs considerably.

As technologies became more advanced, internationalization became more crucial for technology-based companies as it was considered to be the only way to survive local market competition and increase revenue. Internationalization is a very broad term and has pre-determined aims and objectives that will affect the decision process of the company for internationalization. Root (1994) has stated 5 steps for international market entry mode:

1. Choosing the target market
2. Setting goals in the market
3. Determining strategy to enter foreign market
4. Creating marketing plan to implement in the market
5. Establishing control system to observe routine in the market

These steps demonstrates that internationalization cannot be seen as a single plan, but rather seen as the combination of several objectives and marketing plans.

Nascent technology companies encounter many challenges during the internationalization process. These challenges lead many companies to failure. The two major drivers of these particular challenges are the lack of experience and resources. These two factors substantially limit the capability of the company to deal with unexpected difficulties throughout the process (Yip et al., 2000). On the other hand, larger companies are able to offer significantly more resources and experience to the market. These companies also implement more organized strategies whereas recently internationalizing firms use unsystematic approaches. Despite the previously mentioned facts, recent changes in technology and global economy have made internationalization strategies much easier and less resource-intensive for small companies to follow (Aspelund & Moen, 2001; Knight & Cavusgil, 1996; Stray et al., 2001).

Technology also contributes to the reduction in communication barriers that usually appears in organizations that are widely spread around different regions. Advanced information systems before were considered as large expense for small companies compared to cheaper advanced systems of today which is available for almost all of the companies in the market. The reduced price for two decades has led to the increase in the number of technology companies available in the market. This fact is interrelated with the finding on the challenges faced by companies during the process. According to the findings, high cost of infrastructure is the third most faced challenge among technology companies participated in the survey.

According to the findings above there are some suggestions that needs to be taken into account while entering foreign markets:

- Before creating full marketing and individual plan to enter foreign markets, it is better to launch experimental campaigns in the market that the technology firm is trying to internationalize. Experimental campaigns refer to the slow entry to the foreign market in order to get some knowledge on local market and the behavior of the people in that market. This suits technology companies well, as they lack the resource to aggressively enter the foreign market and retain there for long periods of time.
- Deciding the type of internationalization suitable for the business before entering international markets may prevent unnecessary failure for tech companies during the internationalization process. Some of the internationalization types are multinational company, transnational company, export, strategic partnership, and global company (distribution). In case of technology-based ventures global company type is the best solution as it suggests entering market whenever demand is rising.
- Employing local employees in the market can be beneficial in raising barriers between potential userbase and the company. This suggestion can be generalized for every company operating in all types of industries.

CONCLUSION

This paper aims to examine the internationalization process of technology firms, especially software-oriented companies, determine the key elements that affect the internationalization process, and find the best strategy used for technology companies during internationalization process. Quantitative research in the form of online survey is conducted in order to collect relevant data for this research. Collected data is organized in cross-tables in order to easily conduct an analysis on the determined variables. Findings from the conducted online survey and also cross-table analysis of this survey grants us to draw conclusion based on the achieved results. Also, the research questions concerning the motives behind internationalization and benefits reached by that process are answered by the conducted analysis. In addition to the survey, other sources such as research papers, statistical information were used in order to increase the accuracy of the drawn conclusion.

This paper is based upon four research questions:

1. What internationalization strategies are used by technology-based ventures?
2. What are the drivers for the internationalization of tech-based companies and obstacles evolved from this process?
3. What benefits did company receive during internationalization process?
4. What is the correlation between the internationalization process and the performance of a company?

First question attempts to find the strategies employed by technology-based companies. Although, many internationalization theories are mentioned in previous chapters, only some of them are relevant for technology companies. Absolute cost advantage theory, and resource-based approach (RBV) are the most relevant theories for technology companies.

Absolute cost advantage theory proposes to produce larger quantity of goods and products without changing the amount of resources allocated. This theory is relevant for technology companies as they are more scalable compared to other industries as highly scalable companies tend to grow larger with less expenses incurred while internationalizing abroad. Resource-based model states that companies' ability to defend its position in profitable markets mostly depends on its capability to hold and achieve

beneficial positions with respect to the proper resources critical to the firm (Conner, 1991). This is the most relevant theory for technology companies due to the fact that it considers the existing resources available in the company and acts based on that information. According to the Table 4, most faced challenge during the internationalization is the lack of financing, which can also be known as lack of resources. For that reason, considering the available resources in the company may decrease the chances of failure in the foreign markets.

Main issue for technology companies to take into consideration while planning internationalization is scalability. Tech-oriented companies usually face this problem when entering new and unfamiliar markets. For these particular reasons, Uppsala Internationalization Model may not be the best strategy for technology companies as it suggests companies to take small, incremental steps to enter foreign markets.

Second question aims to find the motives and obstacles faced while internationalizing abroad. Table 6 demonstrates the motives for internationalization reported by technology companies. Increasing revenue and sales is the most frequently reported motive behind the internationalization decision of the company. This is followed by market exploration, as companies reported to explore markets to learn the situation and gain experiential knowledge in foreign markets. Companies also reportedly internationalized for diversification purposes in order to hedge the risks involved in the local market.

Table 4 contains comprehensive data on the most faced challenges by the companies abroad. Lack of financing seems to be most faced problem by companies. Younger companies reported the lack of productivity as one of the most faced issues in the foreign market along with lack of financing. Whereas older companies reportedly have encountered heavy regulations in the country that prevented them from being as efficient as possible.

Analysis found that the main motives for internationalization are foreign demand for company products, diversification, increase in sales and rising competition in domestic market (Lea et al., 2014). Based on the research, online survey concluded that the most motivating factor for technology-based ventures for internationalization is increasing sales and revenue of the firm followed by, market exploration, diversification, foreign demand, and low competition, respectively. Other than that,

cross-table analysis of motives and length of the internationalization process demonstrates that the entering low competition market and diversifying operations are the most time intensive motivators of the internationalization process.

Third question examines the benefits obtained by the result of the process. To get specific results, author added open-ended question in the survey asking the benefits firms achieved from this particular process. Most frequent answer declared by the participants were increased userbase and revenue of the firm. Participants also mentioned networking opportunities, better workforce, highly competitive environment, etc. Better workforce refers to the countries with better work quality and ethics which benefits the quality of the product business produces for the market, but this also has implications such as high cost of the labour increasing the price of the service or product offered. The benefits reported by technology companies are listed below:

- Increased revenue and sales
- Increasing userbase
- Networking opportunities
- Better workforce
- Highly competitive environment

Most of the respondents reported increased revenue and sales as the attained benefit from this particular process. Other two benefits include increasing userbase and networking opportunities. Overall, By the result of the survey, we can conclude that the most probable outcome of internationalization process is the increased sales of the firm.

Last question tries to find the relation between the internationalization process and the performance of the company. Companies during this process tend to perform better in order to decrease the time retained in foreign markets and achieving benefits much faster.

Rising technological advancements made internationalization process more important than ever and based on that fact companies started to aim for international markets, especially neighbouring countries. As internationalization became increasingly important companies started to employ various internationalization strategies in order to enter foreign markets more successfully and retain in those

markets for a long period of time. Also motives for internationalization is a crucial element in deciding what strategies must be employed in foreign markets. Choosing correct strategies for internationalization can be difficult task as several factors need to be considered for the process. These factors include cultural, behavioural, economic, ethnic etc. elements of the country and nation. Uppsala Internationalization Model was the first model to clearly state those elements and consider for internationalization process by suggesting that companies should enter neighbouring countries initially, as they are closer to them by culture, needs and economic behaviours.

This paper has its own limitations, as only 138 technology companies were surveyed, and the generalization of the conclusions cannot be comprehensive due to the relatively low number of participants in the survey. A larger sample would be beneficial on overcoming this particular limitation and drawing more general information on the topic. Paper also predominantly focuses on companies located in Europe and North America; hence, the results are centered on the cultures of these regions and these results may not be applicable to companies in other regions. Also, language barrier can be another limitation for this paper as the survey was conducted in English and it can be difficult for countries with native language other than English such as France, Italy, etc.

According to the findings above there are some suggestions that needs to be taken into account while entering foreign markets:

- Before creating full marketing and individual plan to enter foreign markets, it is better to launch experimental campaigns in the market that the technology firm is trying to internationalize. Experimental campaigns refer to the slow entry to the foreign market in order to get some knowledge on local market and the behavior of the people in that market. This suits technology companies well, as they lack the resource to aggressively enter the foreign market and retain there for long periods of time.
- Deciding the type of internationalization suitable for the business before entering international markets may prevent unnecessary failure for tech companies during the internationalization process. Some of the internationalization types are multinational company, transnational company, export, strategic partnership, and global company (distribution). In case of technology-based ventures global company type is the best solution as it suggests entering market whenever demand is rising.

- Employing local employees in the market can be beneficial in raising barriers between potential userbase and the company. This suggestion can be generalized for every company operating in all types of industries.

LIST OF REFERENCES

- Alsos, G., Ljunggren, E., & Hytti, U. (2013). Gender and Innovation: State of the Art and a Research Agenda. *International Journal of Gender and Entrepreneurship*.
- Alves, M., Galina, S., Macini, N., Carvalho, L., & Costa, M. (2017). Internationalization and Innovation in Nascent Companies: Does Gender Matter? *Journal of Small Business and Enterprise Development*.
- Andersen, O. (1993). On the Internationalization Process of Firms: A Critical Analysis. *Journal of International Business Studies*.
- Arvidsson, H., & Arvidsson, R. (2019). The Uppsala Model of internationalization and beyond.
- Aspelund, A., & Moen, Ø. (2001). A Generation Perspective on Small Firm Internationalization: from Traditional Exporters and Flexible Specialists to Born Globals. *Advances in International Marketing*.
- Aspelund, A., & Moen, Ø. (2004). Internationalization of Small High-Tech Firms: The Role of Information Technology. *Journal of Eeromarketing*.
- Oviatt, B. M., & Patricia, P. M. (1997). Challenges for Internationalization Process Theory: The Case of International New Ventures, *MIR: Management International Review*, 37, 85-99.
- Buckley, P. J., & Casson, M. (1993). Economics as an Imperialist Social Science. *Human Relations*.
- Buckley, P. J., & Casson, M. (1976). *The Future of the Multinational Enterprise*. Macmillan, London.
- Caves, R. E. (1971). *International Corporations: The Industrial Economics of Foreign Investment*. *Economica*.
- Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools Thought Within Industrial Organization Economics: Do We Have a New Theory of The Firm? *Journal of Management*.

- Cumberland, F. (2006). Theory Development Within International Market Entry Mode – An assessment. *The Marketing Review*.
- Cyert, R., & March, J. (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs.
- Czinkota, R. M., Illka, A. R., & Marta, O. (2004). *The Export Marketing Imperative*. South-Western Educational Pub.
- Dunning, J. (1988). The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions. *Journal of International Business Studies*, 19.
- Hollensen, S. (2008). *Essentials of Global Marketing*. Pearson Education. England, Essex.
- Hymer, S. H. (1976). *The International Operations of National Firms: A Study of Direct Foreign Investment*. Cambridge, MIT Press.
- Jae, C. J., & Pratima B. (2009). How Firm Performance Affects Internationalization, *MIR: Management International Review*, 49, 709-732.
- Johanson, J., & Vahlne, J. E. (1977). The Internationalization Process of the Firm – A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*.
- Kim H., Park S. Y., & Joh W. (2019). A Study on Technology Development Performance and Technology Commercialization Performance According to the Technology Development Capability of SMEs Focusing on a Comparative Analysis of Technology Business Groups. *Journal of Open Innovation: Technology, Market, and Complexity*.
- Knight, C. A., & Cavusgil, S. T. (1996). The Born Global Firm: A Challenge to Traditional Internationalization Theory. *Advances in International Marketing*.
- Kubickova L., Votoupalova M., & Toulova M. (2014). Key Motives for Internationalization Process of Small and Medium-sized Enterprises. *Procedia Economics and Finance*, 12, 319-328.
- Leedy, P., & Ormrod, J., (2001). *Practical Research: Planning and Design*. 7th Edition, Merrill Prentice Hall and SAGE Publications, Upper Saddle River, NJ and Thousand Oaks, CA.

- Madsen, T. K., & Servais, P., (1997). The Internationalization of Born Globals: An Evolutionary Process? *International Business Review*.
- Oviatt, B. M., & McDougall, P. P. (1994). Toward a Theory of International New Ventures. *Journal of International Business Studies*.
- Oviatt, B. M., & McDougall, P. P., (1995). Global Start-ups: Entrepreneurs and a Worldwide Stage. *Academy of Management Executive*.
- Palacios A., & Saleh A. (2018). Experiential Knowledge in the Internationalization Process: From a Founder's Personal Experiences Perspective. Studentthesis, Uppsala universitet.
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. John Wiley, New York.
- Reid, S. (1981). The Decision-Maker and Export Entry and Expansion. *Journal of International Business Studies*.
- Ricardo, D. (1817). *On the principles of political economy and taxation*. London: John Murray.
- Root, F. R. (1994) *Entry Strategies for International Markets*. Jossey-Bass, San Francisco.
- Rugman, A. M. (1981). *Inside the Multinationals: The Economics of Internal Markets*, Columbia University Press: New York.
- Ruzzier, M., Hisrich, R. D. and Antoncic, B. (2006). SME Internationalization Research: Past, Present, and Future, *Journal of Small Business and Enterprise Development*, 13, 476-497.
- Smith, A. (2008). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Oxford University Press.
- Stray, S., Bridgewater, S., & Murray, G. (2001). The Internationalization Process of Small, Technology-Based Firms: Market Selection, Mode Choice, and Degree of Internationalization. *Journal of Global Marketing*.
- Sukamolson, S. (2007). *Fundamentals of Quantitative Research*.

- Teece, D. J. (1986). Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy. *Research Policy*.
- Welch, L., & Luostarinen, R. (1988). Internationalization: Evolution of a Concept. *Journal of General Management*.
- Williamson, O. E. (1975). Understanding the Employment Relation: The Analysis of Idiosyncratic Exchange. *Bell Journal of Economics*, 6.
- Yener, M., Dođruođlu, B., & Ergun, S. (2014). Challenges of Internationalization for SMEs and Overcoming these Challenges: A Case Study from Turkey. *Procedia - Social and Behavioral Sciences*.
- Yip, G., Biscarri J. G., Monti, J. A. (2000). The Role of the Internationalization Process in the Performance of Newly Internationalizing Firms. *Journal of International Marketing*.

APPENDICES

Appendix 1. Survey questionnaire

The following survey is conducted for a research paper written on “Internationalization strategies employed by technology-based ventures” by the student at Tallinn University of Technology, Rajab Mammadli. This research paper aims to examine the internationalization process of technology firms, more specifically software-focused companies, and also determine the key elements that affect the internationalization process.

All data gathered in this survey is confidential and will not be shared with 3rd party companies.

Contact information:

Email – ramamm@ttu.ee

Phone - +37253618072

Name of the organization:

What is your age?

- a) Under 18
- b) 18-24
- c) 25-34
- d) 35-44
- e) 45-54
- f) 55-64
- g) 65+

What is your gender?

- a) Male
- b) Female

How long have your company been operating?

- a) Less than 6 months
- b) 6 – 11 months
- c) 1 – 2 years
- d) 3 – 4 years
- e) 5 – 9 years
- f) 10 – 14 years
- g) 15 – 19 years
- h) 20 years or more

What is your organization's primary line of business?

- a) Cybersecurity
- b) SaaS
- c) Cloud Solutions Provider
- d) Hardware
- e) Independent Software Vendors
- f) Value-Added Resellers
- g) Other

What is the size of the organization?

- a) 0 – 9 employees
- b) 10 – 49 employees
- c) 50 – 249 employees
- d) 250 – 999 employees
- e) 1000 – 4999 employees
- f) 5000+ employees

Which regions did company expand to internationalize?

- a) Europe
- b) North America
- c) South America
- d) Africa
- e) Asia
- f) Other (more specific)

How long did the internationalization process take?

- a) 0 – 6 months
- b) 6 – 12 months
- c) 12 – 18 months
- d) 18 – 24 months
- e) 24 – 36 months
- f) 36 – 48 months
- g) 48 – 60 months
- h) Other

What was the most faced challenge during the firm internationalization process?

- a) Low productivity
- b) Lack of financing
- c) Heavy regulations
- d) Technological challenges
- e) High cost of infrastructure
- f) Other

Motives behind internationalization decision:

- a) Increasing sales
- b) Diversifying operations
- c) Knowing customers
- d) Low competition
- e) Foreign demand
- f) Other

Benefits and opportunities emerged as the result of the internationalization process:

Appendix 2. Non-exclusive licence

A non-exclusive licence for reproduction and publication of a graduation thesis¹¹

I, Rajab Mammadli

1. Grant Tallinn University of Technology free licence (non-exclusive licence) for my thesis
Internationalization strategies employed by technology-based ventures

supervised by Basel Hammuda (PhD)

1.1 to be reproduced for the purposes of preservation and electronic publication of the graduation thesis, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright;

1.2 to be published via the web of Tallinn University of Technology, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright.

2. I am aware that the author also retains the rights specified in clause 1 of the non-exclusive licence.

3. I confirm that granting the non-exclusive licence does not infringe other persons' intellectual property rights, the rights arising from the Personal Data Protection Act or rights arising from other legislation.

12.05.2022

¹ *The non-exclusive licence is not valid during the validity of access restriction indicated in the student's application for restriction on access to the graduation thesis that has been signed by the school's dean, except in case of the university's right to reproduce the thesis for preservation purposes only. If a graduation thesis is based on the joint creative activity of two or more persons and the co-author(s) has/have not granted, by the set deadline, the student defending his/her graduation thesis consent to reproduce and publish the graduation thesis in compliance with clauses 1.1 and 1.2 of the non-exclusive licence, the non-exclusive license shall not be valid for the period.*