

**Kaunas University of Technology**  
School of Economics and Business

**Factors and Development Barriers of Born-Global Companies  
in the Context of High – Tech Firms**

Master's Final Degree Project

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**Kaunas, 2021**



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International Business (6211LX029)

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## **Factors and Development Barriers of Born-Global Companies in the Context of High – Tech Firms**

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### **Summary**

This research study was aimed to analyze born global factors and development barriers in context of high-tech firms. In the first part, high-tech sector, globalization processes and emergency of born global firms were analyzed. For this research were used qualitative analysis in order to gain deeper understanding and knowledge about Lithuanian based born global high-tech companies. In the second part, extensive scientific research data, theoretical analysis, national and international data were used to gain better understanding of research topic and formulating research design and questions. After extensive theoretical analysis several core elements of born global formation factors were found and categorized under internal organizational level factors, external factors and entrepreneurial related factors. Internal and external development barriers were another core part of born global companies.

For gaining deeper understanding about research topic internationalization business theories, entry modes and financial tools of born global high-tech sector were included and analyzed. In third part of this project, empirical research was made by using qualitative semi structured in-depth interview. Interviewers were executive company members, consisted of founders, co-founders, CEO and product directors. Results of conducted interviews helped to identify major factors and development barriers in different companies stages. Interviewed companies as well provided insightful informational about company entry modes, financial sources and target markets, which helped to gain fuller picture of Born Global companies creation and development. From internal development barriers perspective, non-financial resources including informational, knowledge transfer, trust and reputation, lack of skilled human resources barriers were among main ones. Cultural distance, effect of COVID-19 pandemic, political and legal were among most important external barriers. Networking and partnerships, professional skills and experience, superior technological products was found as most important internal and entrepreneurial factors of Born global companies. Too small local market size and demand was major external factor for formation of interviewed Born Global companies. Risk diversification across multiple markets was another external factor determined early internationalization of born global companies. High-tech IT service based companies tend to use bootstrapping method, where high-tech hardware based companies used much more diversified financial sources, such as risk capital, angel investors, governmental funding, crowdfunding and bank loans. Majority of interviewed companies selected mixed entry method consisting of direct export and export thought distributors channels. By closing interview, companies shared their future goals and directions in order to have full time spectrum of interviewed companies.

The total length of the master thesis is 62 pages excluding the annexes. Eight figures and even tables were created in the thesis. For qualitative semi – structured interview were used 9 open-ended questions including unplanned supplementary questions for specific company case. The total of 6 annexes were added in the thesis which contains the results of from empirical study conducted.

Tautvydas Musteika. Gimusių globaliomis įmonių vystymosi veiksniai ir barjerai aukštųjų technologijų įmonių kontekste / Magistro baigiamasis projektas / vadovė prof. dr. Rimgailė Vaitkienė; Kauno technologijos universitetas, Ekonomikos ir verslo fakultetas.

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Kaunas, 2021. Puslapių sk. 62.

## Santrauka

Šio tyrimo tikslas buvo išanalizuoti globaliomis gimusių įmonių formavimosi veiksniais ir plėtros kliūtis aukštųjų technologijų įmonių kontekste. Pirmoje dalyje buvo analizuojama aukštųjų technologijų sektorius, globalizacijos veiksniai ir gimusių globaliomis įmonių atsiradimo priežastys. Šiam tyrimui buvo naudojama kokybinė analizė, siekiant įgyti gilesnį supratimą ir žinias apie Lietuvoje įsikūrusias aukštųjų technologijų įmones. Antroje dalyje buvo naudojami išsamūs mokslinių tyrimų duomenys, teorinė analizė, nacionaliniai ir tarptautiniai duomenys, siekiant geriau suprasti tyrimo temą ir suformuluoti tyrimo planą ir klausimus. Atlikus išsamią teorinę analizę, buvo rasti keli pagrindiniai gimusių globaliomis formavimosi veiksniai, kurie buvo suskirstyti į vidinius organizacinio lygio veiksniais, išorinius veiksniais ir individualaus verslumo susijusius veiksniais. Vidinės ir išorinės kliūtys plėtrai, buvo kita esminė gimusių globaliomis kompanijų veiksnys.

Tam, kad geriau suprasti tyrimo tematiką, teorijos analizėje buvo įtrauktos internacionalizacijos verslo teorijos, įėjimo į užsienio rinkas metodai ir finansiniai įrankiai. Trečioje šio projekto dalyje buvo atlikti empiriniai tyrimai, naudojant kokybinį pusiau struktūruotą interviu. Apklaunami asmenys buvo vykdomieji įmonės nariai, sudaryti iš steigėjų, bendra įkūrėjo, generalinio direktoriaus ir produkto direktoriaus. Atliktų interviu rezultatai padėjo nustatyti pagrindinius veiksniais ir plėtros kliūtis įvairiose įmonių evoliucijos stadijose. Apklaustos įmonės taip pat suteikė svarbias įžvalgas ir informacijos apie įėjimo į užsienio rinką būdus, finansinius šaltinius ir tikslines rinkas, o tai padėjo sudaryti išsamesnį vaizdą apie gimusių globaliomis įmonių kūrimą ir plėtrą. Žvelgiant iš vidaus plėtros barjerų perspektyvos, nefinansiniai išteklių, įskaitant informacinius, žinių perdavimo, pasitikėjimo ir reputacijos, kvalifikuotų žmoniškųjų išteklių barjerai buvo vieni iš pagrindinių minimų interviu metu. Kultūriniai skirtumai, COVID-19 pandemijos poveikis, politiniai ir teisiniai barjerai buvo vieni iš svarbiausių išorinių kliūčių. Tinklų kūrimas ir partnerystė, profesiniai įgūdžiai ir patirtis, produktų technologinis pranašumas buvo nustatyti kaip svarbiausi gimusių globaliomis kompanijų vidiniai ir asmeninio verslumo veiksniai. Pernelyg mažas vietinės rinkos dydis ir per maža paklausa buvo pagrindinis išorinis veiksnys, lemiantis gimusių globaliomis įmonių atsiradimą. Rizikos diversifikavimas skirtingose rinkose buvo dar vienas išorinis veiksnys lėmęs gimusių globaliomis įmonių ankstyvąją įmonės internacionalizaciją. Aukštųjų informacinių technologijų paslaugų įmonės dažniau naudojo asmeninio kapitalo finansavimo metodą, tuo tarpu aukštųjų technologijų techninės produktų įrangos įmonės ieškojo skirtingų finansavimo šaltinių įtraukiant rizikos kapitalą, verslo angelus, vyriausybinių ir sutelktinių finansavimą, banko paskolas. Dauguma apklaustų bendrovių pasirinko mišrų tiesioginio eksporto ir eksporto per tarpininkus ir distributorius

modelį. Baigdami interviu, įmonės pasidalijo savo ateities tikslais ir kryptimis taip leisdami įvertinti visą įmonės vystymosi raidą laiko kontekste.

Viso darbo apimtis 62 puslapiai neįtraukiant priedus. Keturi paveikslėliai ir vienuolika lentelių buvo sukurtos ir naudojamos tezėje. Pusiau struktūrizuotame kokybiniame interviu buvo panaudoti 9 atviri klausimai, neįtraukiant papildomus klausimus, kurie buvo panaudoti specifiniu įmonės atveju. Iš viso projekte buvo papildyti šeši priedai, kurie buvo atlikti ir gauti empirinio tyrimo metu.

## Table of contents

List of Figures .....	9
List of Tables.....	10
List of abbreviations .....	11
Introduction .....	12
1. Problem analysis of born globals in context of high-tech companies .....	14
1.1. Overview of High-tech and ICT sectors in Lithuania .....	14
1.2. Globalization and emergence of born global firms .....	16
1.3. Internationalization challenges of Born global firms .....	17
2. Theoretical aspects of born global high-tech companies .....	19
2.1. Internationalization business theories .....	19
2.2. Different market entry modes to enter in foreign markets .....	21
2.3. Finance strategies of rapidly growing born global companies .....	21
2.4. The emergence of BCs and INVs as early internationalization firms .....	22
2.5. Definition of Born Global companies .....	23
2.5. External and internal factors forming a globally born company .....	25
2.5.1. Entrepreneurial related factors forming a born global firms .....	25
2.5.2. External industry factors forming a born global firms.....	26
2.5.3. Internal organizational level factors forming a born global firms .....	26
2.6. Barriers of BGs internationalization.....	27
2.6.1. Internal barriers for internationalization of BG's.....	29
2.6.2. External barriers of internationalization of BG's.....	30
2.7. Summary of theoretical part of born global high-tech companies .....	30
3. Empirical research methodology of born global development factors and barriers in context of high-tech firms .....	32
3.1. Research aim and tasks .....	32
3.2. Research design and methods .....	32
3.3. Research instruments .....	33
3.5. Data collection process .....	34
3.4. Ethics and limitations of qualitative research .....	36
5. Analysis of the empirical research results.....	38
4.1. Entry methods and interview results .....	38
4.2. Funding sources and interview results .....	39
4.3. Internal factors of the Born Global firms and interview results.....	40
4.4. External factors of Born Global firms and interview results .....	43
4.5. Entrepreneurial level factors of Born Global high-tech firms .....	44
4.6. Internal development barriers of Born Global firms and interview results .....	45
4.6.1. Non – financial resources .....	46



4.6.2. Organization and management barriers .....	49
4.6.3. Product .....	50
4.6.4. Finance and physical resources .....	50
4.6.5. Marketing and promotion .....	51
4.7. External development barriers of Born Global high-tech companies .....	51
4.8. Interrelationships between research categories .....	54
4.9. Summary of the results analysis of born global high-tech companies .....	54
4.10. Key Findings and Discussion for Future Research .....	57
Conclusions .....	59
List of references.....	60
List of information sources.....	63
Annex 1. Results from the Empirical Research of Company 1 .....	64
Annex 2. Results from the Empirical Research of Company 2 .....	67
Annex 3. Results from the Empirical Research of Company 3 .....	71
Annex 4. Results from the Empirical Research of Company 4 .....	75
Annex 5. Results from the Empirical Research of Company 5 .....	80
Annex 6. Results from the empirical research of Company 6 .....	84

## List of Figures

Figure 1. Sales of ICT service enterprises .....	15
Figure 2. Foreign direct investment Performance in Lithuania between 2010 – 2018 .....	15
Figure 3. Number of offices and employees of different business sector .....	16
Figure 4. Finance process model enabling global growth (Gabrielson et.al, 2004).....	22
Figure 5. Theoretical framework influencing speed of internationalization .....	24
Figure 6. Major factors influencing to become a born global firm made by Author .....	25
Figure 7. Entry methods to foreign markets of born global high-tech companies.....	38
Figure 8. Company funding sources by funding type .....	40
Figure 9. Internal organizational level factors forming born global high-tech company.....	40
Figure 10. Individual entrepreneurial factors forming born global high-tech company .....	44
Figure 11. Internal development barriers of high-tech Born Global firms.....	46
Figure 12. External development barriers of high-tech Born Global firms.....	52
Figure 13. Factors and development barriers model of Born Global Companies made by Author...	57

## List of Tables

Table 1. International business theories made by Author.....	20
Table 2. A classification of barriers to export (Mithat Uner et al. 2013).....	28
Table 3. Interview instrument for born global knowledge intensive high-tech companies.....	33
Table 4. Characteristics of the companies in the sample.....	35
Table 5. Interviewers statement on importance of Networking and Partnerships made by Author ..	41
Table 6. Interviewer statements on importance of superior technological products made by Author .....	42
Table 7. Interviewer statement on local market size made by Author .....	43
Table 8. Interviewer statement on informational barriers of Born Global firms made by Author ....	47
Table 9. Interviewer statement on trust and reputation barriers of Born Global firms made by Author .....	48
Table 10. Interviewer statements on cultural barriers Born Global firms made by Author .....	52

## **List of abbreviations**

### **Abbreviations:**

Prof. dr. – professor doctor

Assoc. prof. – associate professor;

BG – born global;

High-tech – high technology;

FDI – foreign direct investment;

ICT – information and communication technology;

ROI – return of investment;

R&D – research and development;

IT – information technology;

EV – electric vehicles.

AI – artificial intelligence

B2B – business to business

B2C – business to customers

## Introduction

**Relevance of the topic.** The internationalization in early company life cycle has become important phenomenon and attracted much attention from researchers, governments and private sectors. Due to active globalization processes and increased national and international competitiveness, young companies looking for innovative entry models to internationalize their products and services quicker with fewer financial and tangible resources. Internationalization is one of the major factors to attract new customers, suppliers, improve customization across national boundaries. From the traditional internationalization models as Uppsala method, where firms gradually internationalize their companies, higher number of newly born companies, from inception aim to expand to foreign markets. These firms are mostly technology and innovation oriented and tend to adopt their global market vision by skipping stages of more traditional internationalization process. Early internationalization of born global companies, requires wide range of previously gained skills starting from entrepreneurial international outlook, foreign experience, cultural background and industry related knowledge, which helps to form globally orientated entrepreneurial vision, to the right national ecosystem, which allows young born global (BG) entrepreneurs to access technological knowledge, experienced people and suitable contacts for funding. According to the Rastollo-Horrillo and Martin-Armanio (2019) born globals are the fastest growing segment of exports in majority of countries. (1).

Based on multiple scientific research of born global phenomenon and incrementally growing strategy between newly born exporters, relevance of the study is apparent. Topic gaining extra weight as study is specified with high-tech Lithuanian based companies, which is narrowing the focus of the study.

**Research problem.** Born global high-tech companies adding significant value for national economies as sector is based on edge technologies and innovation. These type of companies creates value by including scientific research, close business and universities collaboration and by employing highly skilled talents. Despite huge potential, born global high-tech companies facing internationalization barriers, which helped to formulate this research problem of what major factors affecting born global formation and what barriers born global high-tech companies faced during development process .

**Research object** – factors and development barriers of born global companies

**Research aim** – To identify major factors and development barriers of born global high-tech companies.

**Research objectives:**

1. To analyze born global high-tech firms problematic in global context;
2. To analyze theoretical aspects of factors and development barriers of born-global companies in the context of high-tech firms;
3. To prepare and perform research methodology of factors and development barriers of born-global companies in the context of high-tech firms;
4. To prepare and conclude qualitative research findings and formulate recommendations for the companies and further scientific research.

**Research methods.** For empirical research were used scientific research analysis, qualitative semi-structured interview analysis and content analysis methods.

Keywords: Born Global companies, High-tech sector, Internal Factors, External Factors, Internal Barriers, External Barriers

## **1. Problem analysis of born globals in context of high-tech companies**

### **1.1. Overview of High-tech and ICT sectors in Lithuania**

The High Tech industry is one of the major drivers of today economies. Innovated solutions are designed for social challenges in areas of sustainable production, mobility or alternative energy solutions. Demand for such a solutions of measurement and control systems, automatization and production machines is at high rate. According to Spence and Liu (2013) high-tech companies are highly efficient and competitive, they stimulate export growth and raise the overall level of technology in the economy. High-tech businesses generate well-paying opportunities for the highly skilled employees, which boosts domestic demand and encourages saving. Cooperation with science is an important component of those companies' operations, as it helps to accelerate the commercialization of scientific research and technical expertise (Hung et al., 2011). High-tech companies employs latest edge technologies, advance marketing and management strategies. The advancement of technologies that falls under the “high-technology” category helps to improve employment rates among highly skilled young people (Rostek and Skala, 2014). High – tech also refers to areas of manufacturing and products which are highly science-intensive, i.e are characterized by a high level of R&D intensity (Mohr et al., 2005). Looking from local market perspective, Lithuanian high technology sector is understood as the following areas: biotechnology and pharmaceuticals, information technology, telecommunications and laser technology, electronics and mechatronics (Ambrusevič, 2010).

After global financial crisis in 2008 Lithuania was recovering and growing steadily by step and step growing high-tech, ICT sectors to increase competitiveness with other tech leading world economies. With high scalability and global reach, low variable costs, high-tech companies appeared to be attractive investment for both public and private sectors. According to ‘*Invest Lithuania*’ non-profit government agency, Lithuania is a spot where international technology based companies can enhance their innovations at large scale. Advance talent pool, modern research in collaboration with high scientific output universities, lower taxes on R&D and governmental support for innovations gives additional stimulus to expand innovative business in this country (Invest Lithuania, 2018). Lithuania is number one country in Central and Eastern Europe (CEE) by university-business collaboration in R&D and around quarter of the students enroll in Science, Mathematics, Computing and Engineering studies. This country have 31.500 Information technology (IT) specialists, 18.100 software developers (Invest Lithuania, 2018). Proximity to university, technical studies orientation, research and development centers and incubation parks, helps to create proximity to highly qualified labor and technologically advance economy.

In short review, the information and communication sector accounts for about 4.9 percent of the country's GDP. Around 27.2 thousand people were working in the sector at the start of 2020, accounting for 2.8 percent of total jobs. At the start of 2020, there were 2679 businesses in the industry, with 99.4% of them being small and medium-sized enterprises (SMEs) employing 1-249 people. Since 2011, sales in the ICT service sector have been gradually increasing and in 2019 they totaled 2.4 billion euros, up 14% from 2018. (Enterprise Lithuania, 2020).

Indicator	2015	2016	2017	2018	2019
Sales of ICT service enterprises (VAT excluded, million EUR)	1,467.4	1,570.5	1,983.7	2,078.3	2,368.8
Export of services (million EUR)	240.8	298.5	488.9	554.9	675.2

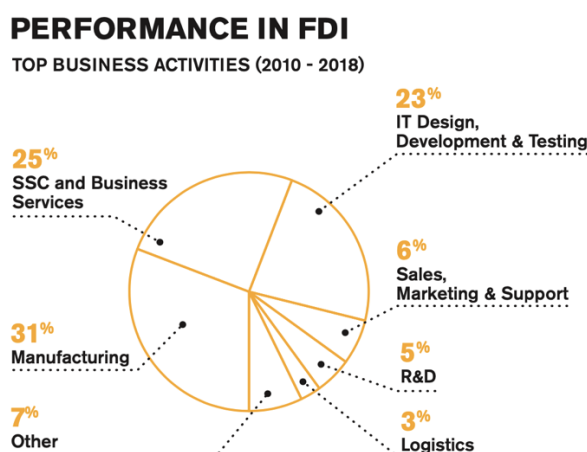
Source: Statistics Lithuania; Bank of Lithuania.

**Figure 1.** Sales of ICT service enterprises

(Source: <https://www.enterpriselithuania.com/wp-content/uploads/2021/01/Lithuanian-ICT-Sector-Overview.pdf>.)

Exports of ICT services in 2019 were dominated by computer science, accounting for 84.6 percent of total export value. The growth of computer services, especially computer software services, contributed to the increase in ICT service exports in 2019. The value of computer services in 2019 rose by 116.2 million euros (or 25.5%) and reached 571,1 million euros (Enterprise Lithuania, 2020).

By looking at performance of foreign direct investment (FDI) top investments were in manufacturing 31%, SSC and business services 25%, IT design, development & testing 23%. Top investing countries for these investments were United states 15%, United Kingdom 12%, Denmark 9%, Germany, Norway, Sweden 8%.



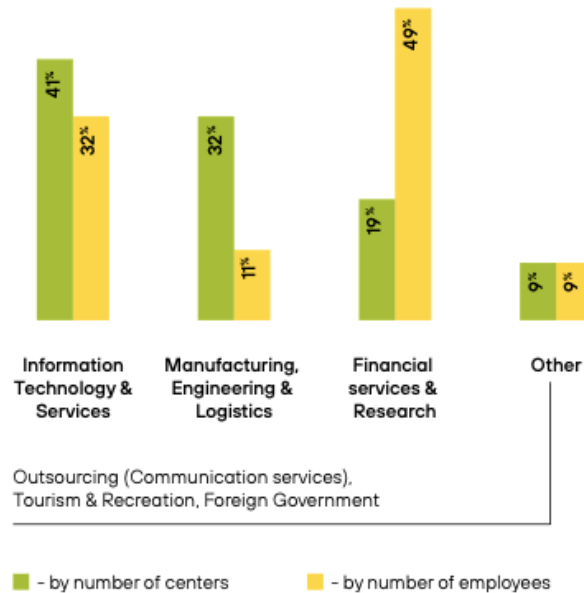
**Figure 2.** Foreign direct investment Performance in Lithuania between 2010 – 2018 (Invest Lithuania, 2017)

(Source: <https://investlithuania.com/wp-content/uploads/2017/12/General-factsheet.pdf>)

As manufacturing and business services usually requires high financial resources, IT and innovation are more knowledge based, which allows Lithuanian based companies to gain competitive edge as we have highly qualified and skilled young talents. On the other hand, high-tech manufacturing companies have additional access to governmental support, business and universities collaboration, which gives high value to national economy.

Based on “*Invest Lithuania*” research report made in 2020 consisted of 66 companies, compared to previous years, the ICT sector experienced higher growth in terms of both centers and employees (9). Number of centers and employees for informational technology & services increased 41 and 32 percent and in manufacturing, engineering & logistics 32 and 11 percent accordingly.





**Figure 3.** Number of offices and employees of different business sector

(Source: <https://investlithuania.com/gbs-report-2020/#:~:text=Lithuania's%20business%20services%20report%202020,are%20offered%20in%2035%20languages.>)

Previous national economic data helped to evaluate current situation, where high-tech and ICT sectors is closely related of having tremendous potential to support national economy, employ highly skilled talents, export high value products and overall help to become highly advance technological country. Exponentially growing digital economies changes public and private sectors landscape of how we communicating and making decisions. Latest challenges of COVID-19 even more accelerate the processes of digitization as remote work took place.

## 1.2. Globalization and emergence of born global firms

Intense globalization processes, advanced information and communication technologies, logistics systems determined active companies internationalization and export activities in foreign countries. From macroeconomic perspective national export activity development and internationalization allows country to create new work places, improve salaries and to become more competitive in global stage. From the firm perspective it allows to gain new markets, partnerships, suppliers or to improve company profitability.

As different national economies opened to the world and international trade took its place, multiple barriers were reduced, such as high import-export tariffs, transportation costs, ability to reach international networks, more accessible financial support and outsourcing services in various countries. All previously mentioned factors allowed to emerge new type of companies in global markets. From traditional gradual internationalization models as Uppsala method, which mostly focus on multinational corporations to born global has created new demand and new approaches to internationalization.

According to the Mandl and Esser, Eurofound (2012) by using global data, born global contains 18% of newly born companies or 1.06% of the total number of enterprises. Data shows, that almost fifth of the total young enterprises choosing born global pathway, which is significant amount from global economic view. Born global companies are more likely to appear in small, but open economies and pose higher risk, because they have very limited potential to start at their domestic market. This aspect gives push factor for young enterprises to go international.

One of the many reasons why companies choosing to internationalize early is that domestic market saturation gives limited potential to reach sufficient growth and financial returns. Another important factor for early internationalization is that firms have low availability of private equity finance in their home country and motivate entrepreneurs to look opportunity to move in another countries to get additional funding. However, internationalization is difficult for them since they face a number of internal and external obstacles that limits their ability to grow internationally (Uner et al., 2013). Based on Cahen et al. (2016) young firms that successfully get over these challenges are able to do business internationally, while those that do not are forced to remain and compete in their home market.

Researches describing born global phenomenon tend to focus on high-technology sectors, high-value added or high-design sectors and explain that born global most common among technological companies. These enterprises tend to internationalize quickly and deliver high quality, unique design products. Some studies shows, that born global firms can also be found to more traditional industries. The distribution of the born global firms in 2012 study for France market shows, that the highest shares of born global were in wholesale and retail sector (36%), second place went to professional, scientific and technical activities (22%), third to information and communication (10%) (Eurofound, 2012).

### **1.3. Internationalization challenges of Born global firms**

Domestic companies often faces barrier where management inertia becomes obstacle for internationalization. Fear of product acceptance in foreign markets, difficulties in raising initial investment for exports, a lack of knowledge on political and legal barriers, a lack of information on exporting procedures, insufficient international personnel and a lack of qualified human resources pushes young firm to stay at home market (Pinho and Martins, 2010).

Despite the various possible challenges, there are few scholarly publications devoted to the issues facing newly formed born global companies. It may be linked to the fact that overconfidence and irrational optimism tend to be common characteristics among starting entrepreneurs (Liesh et al., 2011). Other challenges including limited managerial experience, marketing knowledge, limited network circle should be taken in consideration of developing born global firms. It is also important to mention, that not only which barriers influencing born global firms, but which barriers gaining extra importance during particular development stage. By looking from international perspective, large amount of rapidly expanding new ventures are not fully conscious and lacking international knowledge how to use resources properly in order to achieve sustainable competitive advantage.

Born Global firms represents important growing force in export activities globally. Large amounts of scientific evidence show, that even with fewer scarce resources, they are able successfully establishing their products and services internationally. By previously mentioned reasons, focus of this research is to look closer and identify, what major factors determines born global firms to expand

internationally from its inception and which development barriers firms faces during internationalization.

Summarizing scientific research findings it can be stated, that Lithuania have strong potential for high-tech and ICT sector. Manufacturing and Informational technologies attracts biggest foreign direct investment (FDI) share as country have large pool of highly skilled young talents, friendly business environment and reliable infrastructure. These country-based factors creates favorable conditions to emerge born global high-tech companies and to increase share of national exports. Although globalization and global processes reduces international barriers and availability of the international networks creates suitable conditions for early internationalization, multiple challenges appears of how to manage internal and external barriers of technology based companies. Taking in account these considerations, scientific research problem appears: *what factors and development barriers affects born global high companies?*

## 2. Theoretical aspects of born global high-tech companies

### 2.1. Internationalization business theories

In this theoretical part addresses the main aspects of international business theories on internationalization of SMEs as where are very few studies which tried to explain (BGs) or (INVs) from conceptual ground. It's important to describe different type of internationalization paths of small and medium enterprises to get better understanding and conceptual boundaries of this research study.

***The Uppsala method.*** The Uppsala method emphasizes the gradual acquisition, incorporation and application of information and knowledge about international markets. Uppsala method incrementally increasing commitments to foreign markets (Johanson and Vahlne, 1977). Typically, firms start exporting to a country via an agent, later establish a sales subsidiary, and eventually, in some cases, begin production in the host country (Johanson and Vahlne, 1977).

The U-model explained incremental adaptation to environmental conditions, by emphasizing *psychic distance* between the home and import/host country. The psychic is defined as the sum of factors preventing the flow of information from and to the market. Examples are differences in language, education, business practices, culture, and industrial development (Johanson and Vahlne, 1977). Psychic distance in many cases makes it difficult for a enterprise to understand a market and operate there. One of the strategic firm choices, that they choose to internationalize gradually to closer psychic distance countries to more distant ones.

By using this model, firms typically using entry modes which requires little investment, low risk level and later firms choose more committing modes to better exploit the market potential.

Regardless of Uppsala model was used to explain the process of internationalization in the context of SMEs, this method does not fully explain the internationalization of today small firms in global market.

***Resource-Based view.*** According to the Baum and Dobbin (2000), the resource-based view is a theoretical paradigm in the field of strategic management that has internal company focus and is used to explain the firm specific resources and capabilities as the main driver for competitive advantage and long-term sustainability after some time. Firm unique set of resources is one of determinants, why companies looking expand to international markets. All the resources are divided by tangible and intangible resources where tangible consist of the material, buildings, land and financial resources while intangible resources includes know-how, relationships, capabilities, reputation.

***Knowledge-Based view.*** The knowledge-based view focuses on theoretical support for the international new ventures or born global firms in the knowledge-based perspective. Young and small companies faces their limitless in regard of lack of resources, difficulty of attracting skilled workforce and only strong resource they have is knowledge. According to the Leonard and Sensiper (1998) knowledge can be described as information that is applicable, action oriented and based on personal or group experience. Knowledge is an intangible resource, which arrives from experience, know-how and competencies.

The social complexity and other circumstances can give rise to the uniqueness of a firm regarding the nature and extent of specialized knowledge held by managers or embedded in the firm (Leonard and Sensiper, 2004). For competitors is much easier to imitate physical and tangible resources, but is

much harder to copy intangible knowledge processes, which gives certain strategies, product offering or marketing modes. This is very important aspect for born global firms as they accumulate and transfer knowledge more rapidly than another type of firms.

**Network theory.** According to the Coviello and Munro (1995), network theory creates strong ties between different stakeholders, including customers, suppliers and competitors. These relationships supports firms to make a decisions when and where to go abroad. For companies may be essential certain amount of networking to growth nationally and internationally. Networking and partners can support to reduce costs of operations, ease up a market entry through market specific knowledge and help to create new products. The network is considered crucial source of knowledge, resources and information about foreign markets when companies don't have any relationship with other markets by themselves. It would take much longer time to develop such a resources and knowledge by their own.

The researches on born global firms confirms that the internationalization process of SMEs differs significantly from multinational enterprises since small firms lacks tangible and intangible resources and power in the market. For these reasons, SME rely heavily on their network relationships as they try to internationalize (Coviello and Munro, 1997).

**International entrepreneurship theory.** According to the Oviatt and McDougall (2000), international entrepreneurship is a mixture of proactive, technology and innovation oriented, risk-seeking practice that goes across multiple markets and creates value for the company. The international entrepreneurship theory challenges small and highly entrepreneurial ventures to be able to compete globally from start.

**Table 1. International business theories made by Author**

<b>Theory</b>	<b>Keywords</b>	<b>Theory summary</b>	<b>Relation to Born Globals</b>
Uppsala	Internationalization process Gradual evolution Export	Internationalization is a slow incremental process gained through experiential learning with gradual engagement activities in terms of foreign sales, investment and positioning.	The model were applied for both MNE and SMEs, but with less application for BG and INV.
Resource-based view	Tangible resource Intangible resource Capabilities	The resource-based view focus is firm-specific resources and capabilities as the main driven for competitive advantage. All the resources divided in tangible and intangible resources.	This theory explains how born global firms adapts unique recourses (knowledge-based, technology-based) to produce high quality products.
Knowledge-based Theory	Intangible resource Specialized knowledge	Knowledge is intangible resource, which comes from experience, know-how and formed competencies.	Despite lack of tangible resources, compare with MNEs, born globals have their main resource – knowledge on which this theory is based on.
Networking Theory	Network Internationalization Opportunities	.Business networks has an influence of acquiring new external resources and helping to develop and launch new	Networking is associated with networks and relationships, where company have opportunity to acquire new

		products. Networks helps to enter in foreign markets by giving necessary information about the market. It's great tool to build strategic alliances.	knowledge, clients, suppliers. These factors is extremely important for born global firms.
International Entrepreneurship theory	Uncertainty Innovation Risk-seeking	This theory combines innovative, proactive and risk seeking behavior of early internationalization. It focuses on small and highly entrepreneurial ventures.	International Entrepreneurship is one of the main theories explaining born global firms

## 2.2. Different market entry modes to enter in foreign markets

In previous section were explained, how different business theories forms and benefits rapidly growing born global firms. In this section focus goes on what specific entry modes born global companies uses for their internationalization. Knowledge and network based, international entrepreneurship theories tells about importance of intangible assets such as human capital, know-how, global connections and entrepreneurial ambition as main drivers for born global firms. As company don't have large financial resources to set-up wholly owned subsidiaries or making large foreign direct investments, they looking for less expensive ways for establishing connection with foreign markets. The strategy of using exports as an entry mode seems to be most appropriate solution. In this section two export method types will be discussed direct export and export through distributors.

### Direct export

Every company who is producing high value products seeks to reach international markets as wider markets opens additional demand for company produced products. As volumes increased production, logistics, marketing, R&D tend to decrease. Direct export method allows companies to maintain full control over their exports, without using external intermediaries. Company usually have their own sales force teams.

### Export through distributors

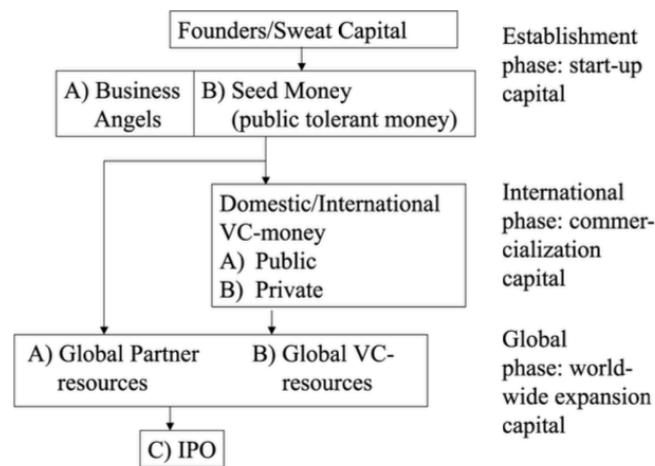
Exports through distributors are common entry method as companies very often facing informational and knowledge barrier of foreign markets. According to McNaughton (2001) Companies who hire distributors or sales agents do so because they have local market experience, the ability to target geographically diverse markets. Alliances were formed because they allowed firms to enter markets quickly, lent credibility in the market (especially when the partner was a large multinational firm), overcame legal requirements (such as the bid and performance bonds required of out-of-state bidders on state contracts in the USA), or synergies with hardware firms. Many Lithuanian based high-tech born global companies have their representatives and distributors abroad, because it is helping to accelerate time of entry, first company sales and helps to know better customers by themselves.

## 2.3. Finance strategies of rapidly growing born global companies

From start-up idea to multinational enterprise different financial instruments are used for proper company functioning and further development. From early start, born global companies tend to use

between own internal investments and external financing. According to the Gabrielson (2004), for young, rapidly growing technology-based firms, private equity funding with payment form of dividends is more suitable. Furthermore, government seed money and incubator business funding are often available to Born Global companies. Venture capitalists frequently invests in high-risk businesses, expecting high return of investment (ROI).

As rapidly growing firms reach internationalization phase not only domestic venture capital is available, but also companies can receive money from global venture capital firms. As a final target, majority of Born global companies seeks to be listed on stock exchange, where company can sell their shares to public audience. The summary of finance sequence provided in Figure 4 below.



**Figure 4.** Finance process model enabling global growth (Gabrielson et.al, 2004)

In Figure 4 finance process model didn't include another important financial tool for born global companies such as crowdfunding. According to the Shneor and Flaten (2016), crowdfunding platform is described as an internet application that connects project owners and crowd investors, as well as facilitating exchanges between them, based on a variety of business models. This method allowed fundraisers to attract investment from large pool of people, who is contributing with relatively small amounts.

#### 2.4. The emergence of BCs and INVs as early internationalization firms

Large number of small and young companies have sought opportunities to enter in foreign markets. Born global companies from inception have aimed to gain notable competitive advantage by using rare intangible resources and the sales of products in multiple countries (Oviatt et al., 1994). Traditional ideas that internationalization is only for big, developed, and resource-rich firms are challenged by the rapid internationalization of young and small businesses. According to traditional theories on firm internationalization, scale economies and tangible resources, such as financial resources is necessary to be able to internationalize, where small companies don't have such resources. (Johanson and Vahlne, 1977). All previously mentioned theories were denied by increased homogenous worldwide demand, efficient less costly logistics, advance technologies and widening strategic alliances. All these factors reduce the importance of scale economies and recourses. Nowadays, technological solutions makes young innovative companies with limited resources to carry out tasks that before needed to be done by number of people. Born global companies have

ability to use internet based solutions, management systems, international logistics companies and to convert this support to efficient communication, marketing, logistics and knowledge management. Increased importance of social capital, which is build up through networks, online collaborations helps young, quickly growing companies to attract new recourses and opportunities.

Some of emerging theories indicate, that 'born global' industry dynamism associate with rapid innovation drive and internationalization. According to the Cavusgil and Knight (2015) size and age importance is reduced by including niche and strategic partnership strategies. Small size technology based firms, faces high industry dynamics characterized by frequent changes in technology, competition structure and customer needs. The lifecycle of product offering in these industries matters in months or even weeks, instead of years compare with more traditional industries.

By explaining factors, which allows born global firms to internationalize early is advances in communication technologies, which allows young and small firms to overcome knowledge recourses quickly. Digitalized world allows to access information rapidly and efficiently. Another important aspect, that industry dynamism increased firms ability to deploy new innovate initiatives and new products in the market. Lastly, the born global theories suggest, that niche and strategic partnerships will allows too decrease the importance of size and age of the company and promoting young firms to internationalize early (Qian et al., 2017). Niche strategy allows to concentrate on particular customer group with a high degree of competence and superior capabilities of particular products or services.

## **2.5. Definition of Born Global companies**

Born Global phenomenon, where young firms starts their international business instantly or close to their founding to create new market value, absorb and develop unique information and knowledge to create new goods or services is attracting high attention from many researchers. Without high resources, born global firms shows ability to achieve substantial amount of revenue from early stage of their development. These firms rely on technological and scientific knowledge which creates competitive advantage to transfer these capabilities in global market. A born global firm by definition is a business organization, which seeks superior international business performance based on their knowledge-based recourses to maximize performance in multiple countries.

By analyzing Born Global firms, researchers integrates both international entrepreneurship and knowledge and network theories. According to the Oviatt and McDougall (2005), international entrepreneurship is described as the ideas creation, evaluation and execution of opportunities to produce new products and services across national borders. The dynamic capabilities theory, knowledge management, organizational learning as well as network theories, describe the whole behavior of the Born Global company (Dlugoborskyte and Petraite, 2013).

Characterizing Born Global company, some specific characteristics appears. According to the Knight and Cavusgil (1996) the term "born global" refers to companies that began their international operations within the first three years of their existence and generated at least 25% of their revenue from sources other than their home market within those three years. By looking deeper to this study, internal and external factors of born global company formation should be discussed.

## **Influencing factors of born global companies**



Theoretical conceptual framework Figure 5 proposed by Oviatt and McDougall (2005) shows the factors that affect the pace at which companies internationalize. According to the author, technology enables speed, encourage by competition, mediated by the entrepreneur personal knowledge and managed by the knowledge intensity of the market opportunity and a company international networks.

Figure 5 shows, that *international entrepreneur experience* is one of the main factors forming born global company. Factors such as international experience, studies abroad, prior work experience in the same sector have, international commitment have high effect on building born global company.

*Home country condition* author presents is another factor, where author grouped them in two main categories: market and industrial and innovation system. The first group includes the market size, competition and private equity financing. Based on Cannone and Ughetto (2014) when a company's domestic market is considered to be too limited, it is compelled to internationalize early in its existence. Local competition is another major factor companies looking to overcome by internationalizing early. The third reason is that young born global companies have harder time to attract local private investments and company founders tend to look these investments abroad.

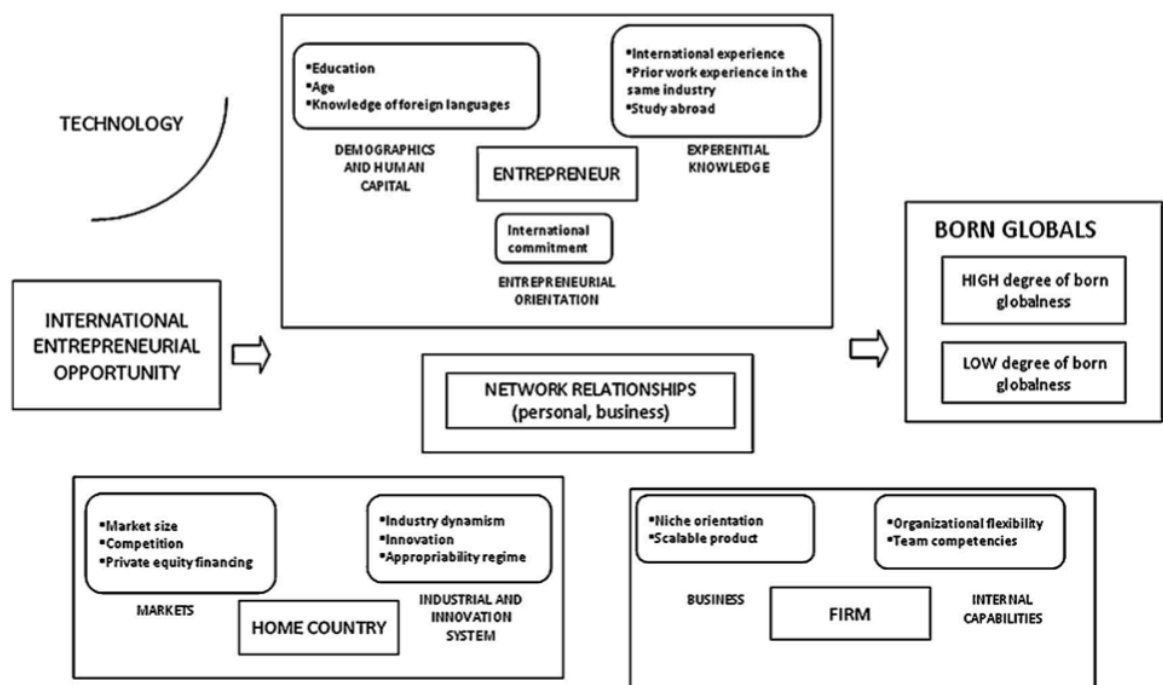


Fig. 1. Theoretical framework.

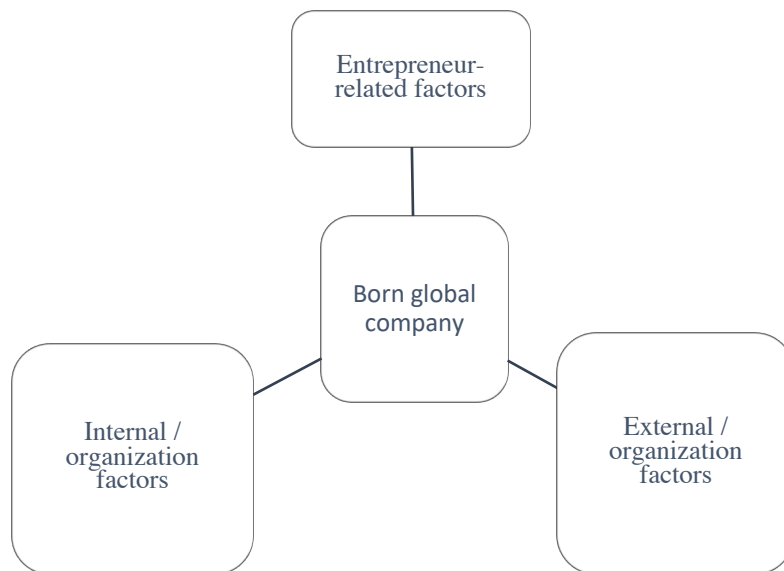
Figure 5. Theoretical framework influencing speed of internationalization

*Firm attributes.* Other elements connected to born global formation was business strategy and internal capabilities. Scalable products and niche orientation reduce international boundaries for expanding business internationally. As local market don't sufficient demand for niche products, international business activities helps to fulfill demand for these products. According to Westhead and et. al. (2001) the organizational flexibility and ability to adapt is the highest priority to guarantee the successful execution of potential market opportunities, the success of an internationalization strategy and the speed of internationalization.

## 2.5. External and internal factors forming a globally born company

A combination of external and internal factors, as well as factors related to the entrepreneur, are identified in the scientific literature as deciding if a business can become a born global (Eurofound, 2012). There are several major external factors affecting if the company will become a born global. One of them, company is located in region there export performance is highly developed, where internationalization is natural evolutionary process of the firms. Firms can collaborate and mutually use each other resources by producing innovative products and reducing costs.

To understand better major factors we can divide by three main segments: entrepreneur related factors, external industry factors and internal organization factors (Figure 1).



**Figure 6.** Major factors influencing to become a born global firm made by Author

### 2.5.1. Entrepreneurial related factors forming a born global firms

The international opportunity from the early ideation stage is recognized, formed and exploited by the entrepreneur, based on his personal characteristics. The entrepreneur leverage his international experience, educational background and his natural ability to execute. Innovativeness, risk-taking, and proactiveness considered as three characteristics of entrepreneurial orientation (Cass and Weerawardena, 2009). Innovativeness promotes organization to create new ideas, processes and initiate changes. It helps to release creativity and experimentation by delivering new products or services to the market. Risk-taking behavior initiating commitment by making time, effort, financial investments to new ventures, even then exists high level of uncertainty and potential failure. Proactivity is the entrepreneurial trait of anticipating potential business opportunities and needs and taking the leading position of pursuing new markets ahead of the competition.

The founder of early internationalizing firm is characterized as open-minded person with strong personality features, intentional self-regulation skills. Entrepreneur should be able to make decisions and cope with stressful situations.

Other entrepreneur related factors: personal international networks, managerial experience and ability to recognize international opportunities.

### **2.5.2. External industry factors forming a born global firms**

*Saturation and smallness of domestic market* . High saturation and competition in domestic market is one of the major factors of early internationalization. The competition from larger and more established companies leads young companies to step in to international markets early. Limited amount of potential customers together with large competition sharply increase costs for positioning in domestic market, which makes extremely difficult young companies to survive.

*Product customization and specialization*. Niche markets for specific products could be sustained only by entering to multiple markets to reach sufficient sales volume and demand. Specific products with specific customer preferences with help of marketing targeting tools could help to reach physically close and far countries.

*Low availability to financial capital in domestic market*. Limited access to financial capital makes very difficult for small and young companies to compete in domestic and international markets. To get external funding is extremely important for born global firms to expand globally. Low availability of private equity finance (e.g. network of angel investors and venture capitalist) promoting entrepreneurs to move in other countries and internationalize early to have a change to receive necessary financing.

*National export and innovation driven culture*. Strong internationalization culture in a certain sectors promotes born global firms to internationalize early. Joint product development, business and universities collaboration, technical schools, research and development centers, qualified specialist, promotes young companies to go global. Increased fixed costs for product development, technological competitive advantage, international partnerships is another reason why companies cannot compete in domestic market.

*International trade incentives*. Regulatory framework may help to support research and development activities, reduce taxes for innovative and highly potential companies in order to promote companies to go international. Beneficial conditions from particular countries incentives global expansion strategy early.

*Foreign trade facilitators*. Low transporting costs, advanced communication and information technologies helps to increase international marketing capabilities and coordination of international distribution.

*Global and governmental networks*. Another early internationalization factor is the emergence of global value chains, global networks, the growth of knowledge and enterprise clusters where open innovation and public-private research and development cooperation are supported (Eurofound, 2012). According to Chang et al. (2017), the importance of government and industry networks in providing vital information, expertise, and networking opportunities to international entrepreneurs is very important part.

### **2.5.3. Internal organizational level factors forming a born global firms**

Internal factors forming born global companies associated is associated with global orientation, where specific and rare resources are available. For innovative born global companies intangible resources such as human resources and experience, know-how, technological resources, patents, networks gives

opportunity to internationalize companies activities from beginning. Very often niche strategy is applied which is narrowing market segment and fulfils specific market needs.

*Experienced management.* Management and executive team members have extensive international experience and specific professional skills which allows to reach international contacts, have better understanding of foreign markets culture and customer behavior. Professional skills allows to get trust from partners, company employees and clients, where trust element appears. Entrepreneurial international orientation orientates management team members to focus on larger scale and choosing to operate internationally as a result.

*Higher quality obtainable resources in foreign markets.* Superior technological solutions to create high value products with lower costs or easier way to obtain talented workers could be additional factors, why companies choosing early internationalization.

*Professional Networking.* According to Evers (2010), company acquire strong partnerships abroad. Professional networking can be defined as the links between a firm and the wide networks of suppliers, clients, and partners and in case of born global firm's investors. Professional networks are considered to be acquired after the founding of a firm. With professional networks born global companies can create strategic alliances with suppliers or clients to be able to acquire better knowledge about the markets and reduce uncertainty and risks associated with these markets.

*Superior technically advance products.* Providing superior technically advance products gives competitive advantage against other competitors. Company can leverage product advantages and superior value against other companies proposals. Patents, certifications could be extra tool for maintaining competitive advantage and winning larger market share in particular market segment.

*Knowledge intensity.* Knowledge intensity allows company to gain knowledge through their experience in foreign markets. Company can get this knowledge from their partners, clients, suppliers and integrate feedback to improve their international business strategy. Company continuous learning orientation helps to absorb knowledge from their foreign partners and adapt these knowledge for marketing localization and product preferences by particular market.

## **2.6. Barriers of BGs internationalization**

In previous section we describe major factors, which encourage born global companies to start their early internationalization activities. In this section, we will focus BGs barriers to internationalization. By analyzing literature we can find, that researches looked deeper at SMEs internationalization barriers, compare with born global firms. In this research comes hypotheses, that SME and born global firms facing similar barriers in regard of internationalization.

According to Danik and Kowalic (2015), despite the various possible challenges, there are few scholarly publications focused on the challenges to the growth of newly formed born global companies. According to some reports, overconfidence and unreasonable optimism are common factors for starting young companies. According to the other studies, the most important management problem is associated with the use of external partners of handling complex networks (Loustarinen and Gabrielson, 2006). The author as barriers emphasized managerial challenges, R&D challenges, sales and marketing challenges and financial challenges. Managerial challenges were related with

insufficient time to accumulate financial resources to cover global marketing expenses as company expands, lacking financials to hire experience top managers, young age and limited founder knowledge on the global management. Born global vision planning, strategic planning, operating planning could be affected, because of previously mentioned factors.

In literature we can find multiple barriers companies facing during internationalization process. Barriers to exporting could be the reason of the firm's failure in foreign ventures, generating financial loss and negative attitudes towards international activity (Leonidou, 2006).

By describing major barriers for internationalization we will split them to internal and external barriers. We will use similar categorical analysis as we previously characterized internationalization factors of born global firms.

In table 2, we overview major internal and external export barriers and splitting them in subcategories, which later we will explain in details.

**Table 2.** A classification of barriers to export (Mithat Uner et al. 2013)

Internal barriers	Informational	<i>Limited in formation to locate/analyze market</i> <i>Problematic international market data</i> <i>Identify foreign business opportunities</i> <i>Inability to contact foreign customers</i>
	Functional	<i>Inadequate / untrained personal for exporting</i> <i>Lack of excess capacity for export</i> <i>Shortage of working capital to finance exports</i>
	Marketing	<i>Developing new product for foreign markets</i>
	Product	<i>Adopting export product design/style</i> <i>Meeting export product quality standards</i> <i>Meeting export packaging/labeling requirements</i> <i>Offering technical/after sales services</i>
	Price	<i>Offering satisfactory price to customers</i> <i>Difficulty in matching competitors' price</i> <i>Granting credit services to foreign customers</i>
	Distribution	<i>Accessing foreign distribution channels</i> <i>Obtaining reliable foreign representing</i> <i>Maintain control over foreign middlemen</i> <i>Difficulty in supplying inventory abroad</i>
	Logistics	<i>Unavailability of warehousing facilities abroad</i> <i>Excessive transportation / insurance cost</i>
	Promotion	<i>Adjusting export promotion activities</i>
	External barriers	Procedural
Governmental		<i>Lack of home government assistance / incentives</i> <i>Unfavorable home rules and regulations</i> <i>Different foreign customer habits / attitudes</i> <i>Keen competition in foreign markets</i>
Economical		<i>Poor / deterioration economic conditions abroad</i> <i>Foreign currency exchange risks</i>

	Political-legal	<i>Political instability in foreign markets</i> <i>Strict foreign rules and regulation</i> <i>High tariff and non-tariff barriers</i> <i>Unfamiliar foreign business practice</i>
	Sociocultural	<i>Different sociocultural traits</i> <i>Verbal / nonverbal language differences</i>

Classification of barriers provided above helps better to identify potential internal and external barriers of born global companies could be facing. Each of the challenge should be discussed more in details to have better understanding of how these barriers affects these types of companies.

### **2.6.1. Internal barriers for internationalization of BG's**

Internal barriers are those that are intrinsic to the firm and associated with resources available within the firm or their approach to export marketing. The internal problems can be broken down into informational, functional and marketing.

*Informational barriers.* Information is vital factor to reduce uncertainty for young companies by entering in foreign markets. Not having access to information might slow down internationalization. For analyzing domestic and international data very often young, less experienced companies don't have clear understanding, which information is essential for analysis and as a result exporting becomes too risky based on managerial intuition, rather than systematic research based results.

*Functional barriers.* According to the Vozikis and Mescon (1985) In terms of exporting, functional barriers refer to inefficiencies in various business functions such as human resources, manufacturing, and finance. One of the constrains small enterprises have is limited personnel, who can handle export operations appropriately and as well lacking specialized knowledge to deal with export related tasks as communication with customers, logistics and documentation handling. Additionally, personnel can have issues, because of language barrier to handle export operations abroad. Insufficient production capacity can be another functional issue as company enter to new markets. As company expand their export operations, production capacity can be miscalculated with unexpected high demand. Finally, engagement in international export operational requires expenditure for researching foreign markets, visiting partners abroad, updating production facilities.

*Product barriers.* Product quality could be big issue as company for example in high-tech sector, creating more and more technically sophisticated variations of their products could not reach to damaged immedately. As company start selling their products internationally and volumes increases, technical support is high priority to gain reputation and trust from foreign customers.

*Distribution barriers.* To find right distribution channels for foreign markets is big challenge for newly born companies. By optimizing sales channels companies will need to search and experiment different channels to be able to find right combination which suits company goals. Another challenge is to find right representors, distributors in foreign markets, because that directly affecting company expansion and sales goals per certain time period.

*Marketing barriers.* Marketing strategy is essential part to be able to succeed company internationalization. To adapt separate marketing elements of product, pricing, promotion and distribution, company should pay attention on multiple external forces to be able to implement marketing strategy. Developing new products for foreign market, company very often looks at cost

of production, product margin instead of developing the products for specific foreign market needs. Problem becomes even bigger, when company starts to export in multiple countries and complexity of preferences, becomes even higher. Firm can also struggle with the price they offer for their international customers, because of additional costs which could arise, because of modification of the product, higher administrative and logistical costs, extra taxes to host countries, marketing and another related costs. Finally, distributors play important role for successful export activities, but some distribution channels could be occupied by the competitors. In some countries distributors can hold large power of various entry levels to the marketplace.

### **2.6.2. External barriers of internationalization of BG's**

External barriers are those that are stemming from either domestic or foreign market in which the firm operate. In this section we will look closer at three separate external barriers for internationalization.

*Procedural barriers.* The operational aspects of transactions with international customers abroad are the subject of procedural barriers (Leonidou, 2004). Because of the broad geographical and psychological differences between sellers and buyers in international markets, contact is often not frequent, which as consequence not building strong ties between both parties (Leonidou, 2004). Procedural barriers are also caused by slow payments collections from foreign customers, because of central bank currency restrictions.

*Governmental barriers.* Governmental barriers could happen, because local governments could have limited interest and incentives for assisting export operations in foreign countries. It also could have some additional restrictions on export management practices. High tariff in foreign country could barrier could be another challenge for entry.

*Environmental barriers.* This final indicator can be affected from barriers associated with an economical and regulatory nature. Exporters may find foreign markets unattractive due to weak or worsening economic conditions. High inflation rates, foreign debt, unemployment encourages foreign customers to choose more budgetary products. Unstable exchange rates is another barrier, which leads to volatility for export prices. Third, high tariffs for imported products could be serious issue for export companies.

*Global pandemic barrier.* From 2019 companies faced unseen challenge of COVID-19 global pandemic. It gave strong remainder, that rare catastrophes could happen. According to the Potter (2001), pandemics may appear in every 10 – 50 years as a result of new virus subtypes emerging from virus re-assortment. Social distancing, lockdowns around the globe change traditional people lifestyle, buying habits. Mental wellbeing were affected as well, where feeling of loneliness could negatively affect cognitive performance, sensitivity and depression (Donthu et al., 2020). Many businesses in various industries faced bankruptcy, because of global pandemic effect.

### **2.7. Summary of theoretical part of born global high-tech companies**

Summarizing theoretical parts of main business theories, entry methods and financial sources, factors and development barriers of born global companies, large pool of information were generated and categorized in separate parts. Main business theories surrounding born-global company included resource-based view, knowledge-based theory, networking and international entrepreneurship theory.

These theories allowed to distinguish features of born globals functioning and behavior in the market. Secondly, based on scientific literature was identified main entry methods of born-global companies. Most of these companies used direct export or export through distributors method. Entry methods theoretical analysis were included as it highly correlates with main research questions of born global factors and development barriers. Thirdly, financial sources of born-global companies was identified, where combination of own investment or so called “bootstrapping” and external investment was used. According to Gabrielson et.al., (2004) financial model, three stages of finance process of global growth appears: establishment phase, international phase and global phase. Main external financing sources included business angels, private equity firms, governmental support, venture capital and crowdfunding. In fourth- and fifth-part main research questions of factors and development barriers were analyzed. Based on theoretical findings, factors forming born global high-tech company were spitted to three main parts: entrepreneurial related factors, external industry factors and internal organizational level factors. Lastly, internal and external born-global barriers were explained.



### **3. Empirical research methodology of born global development factors and barriers in context of high-tech firms**

#### **3.1. Research aim and tasks**

**Research aim** – to prepare and perform empirical research of factors and barriers affecting born global high-tech companies.

**Research tasks:**

1. To perform semi-structured interviews of born global high-tech firms to identify factors and development barriers;
2. To analyze additional elements of entry methods and funding sources associated with born global high-tech companies;
3. To identify interrelations between factors and barriers of born global high-tech companies during internationalization;
4. Formulate recommendations for companies and further scientific research.

**Research logical scheme.**

*I stage.* Preparation for the research: to prepare scientific research theoretical base of born global firms emergence factors and development barriers.

*II stage.* Research organization: to choose research methods, samples, formulation of research questions.

*III stage.* Collect data: by using qualitative research method to plan structured interviews from selected born global high-tech companies.

*IV stage.* Data analysis: from collected interview data to code and classify received information

*V stage.* Conclude results: to provide summarized born global knowledge intensive high-tech companies results and formulate recommendations for further research.

#### **3.2. Research design and methods**

For empiric research was selected individualized semi-structured interview to obtain profound knowledge of the factors and development barriers of the born global Lithuanian based firms. Qualitative method selection will allow to gather rich insights directly from founding or executive company members. Qualitative interviews enable researchers to look deeper into unique interviewees experiences, providing insights into how various phenomena of interest are viewed and interpreted (McGrath et al., 2019). Such a research technique had been used by Rialp et al. (2005) to study the born global companies.

To conduct qualitative research were used individual semi-structured interviews with 9 open-ended questions and supplemented with more deep questions for discovering new insights on specific case. The questions were divided to 5 major parts of general informational about the company, major factors of born global company, entry methods and funding sources, major development barrier and company future plans and direction. Additional questions were provided for deeper exploration of specific case.

**Interview selection process and guide.** Printed qualitative research questions and interview instruction process were sent by email to multiple high-tech Lithuanian based companies. Prepared qualitative semi-structured interview instruction information provided by email allowed potential interviewers to get full overview of research aim and data collection process. The date and time for interview were planned in advance. Online platform and telephone call was used for recording interviews. Additional general information about the company such as number of employees, yearly revenue, number of markets was extracted from secondary sources and confirmed during interview.

**Research question:**

- What major factors determines formation of born global high-tech companies?
- What development barriers affecting born global high-tech companies?
- What are the main advantages of early internationalization of born global technology firms?
- What is the role of networks in launching and growing born global technological firms? How these networks promotes the speed of internationalization?

**Samples**

Our samples will be born global high-tech companies.

**3.3. Research instruments**

**Interview instrument.** Semi-structured interview instrument was used for born global companies, who already exporting their products, services internationally. Interview consists of 9 open-ended questions in 5 separate blocks which explains: what are the major factors born global companies faces while starting their international activities and what are major development barriers of born global high-tech companies. Supplementary questions were used including company entry methods and financial sources to be able better understand main research questions.

**Table 3.** Interview instrument for born global high-tech companies

Questions group	Research elements	Question content
1. General information about the company and interviewee	<p><i>Company characteristics.</i> Identification of the company age, industry profile, number of employees, number of countries company sells their products or services, foreign sales percentage.</p> <p><i>Interviewee characteristics.</i> Role inside the company, gender, age</p>	<p>Information are collected from public sources and confirmed during the interview.</p> <p>Information about interviewee clarified during interview.</p>

2. Major factors for early internationalization of born global companies	<i>Major Factors.</i> To analyze born global companies' factors for early internationalization	1. What are the major factors why company choose early internationalization? What motives determined this decision? 2. What are internal, organizational level factors which pushed company to choose 'Born Global' pathway? 3. Does founder/manager's specific experience, personal networks, education influence company decision to internationalize early?
3. Entry methods and funding sources	<i>Internationalization methods, funding sources.</i> To analyze company internationalization methods, target markets, financial tools	4. What was entry methods, strategy company selected to enter in international markets? 5. How company selected their target markets? What factors determined this decision? 6. Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?
4. Major development barriers of born global company	<i>Major barriers.</i> To analyze major internationalization barriers company faced during its expansion	7. What was the major barriers company faced during internationalization? 8. Did company faced internal (informational, functional, marketing, distribution, logistics ) challenges during internationalization?
5. Company future plans and direction	<i>Future direction.</i> To analyze company future plans, goals, challenges from internationalization perspective	9. What is the company future plans, goals, challenges from internationalization perspective?

### 3.5. Data collection process

**Research size.** To conduct qualitative analysis was selected born global high-tech companies which already performed international activities in multiple markets. This research aimed to evaluate born global type of companies. For this reason were applied specific sample criteria's: born global companies that started their international activities within 3 years from inception, at least 25% company revenue comes from foreign markets and company match high-tech sector. Selected companies represented different categories products and services in order to obtain broader information about main research questions. Research didn't accentuate the size of the company as it didn't have big influence of describing research results.

**Data collection process.** Qualitative research sample size consist of 6 born global high-tech companies based in Lithuania, which were identified as (C1, C2, C3, C4, C5, C6) for maintaining confidentiality of the companies. Managerial team members (Founders, CEO, product directors) were asked to participate in interviews. During interview provided interview data were transcribed and converted to the text. After transcription data was coded and classified to categories by using MAXQDA qualitative analysis program. The analysis was showing the frequencies of coded

statements under related categories and for more precise information subcategories were added. Importance of the categories were categorized based on repetition of statements and frequency of words expression describing specific interest and preoccupations of the interviewees. The results were summarized and recommendations provided for companies and further scientific research.

**Table 4.** Characteristics of the companies

Company. code	Year of establishment	Number of countries	Sub-sector/ Products	Number of workers	Yearly turnover (m. Eur)	Interviewee position inside the company
C1	2019	25	Alternative energetics / e-mobility	17	1-2	CEO
C2	2005	Worldwide	IT / software engineering prod., IT services	233	10-20	Founder
C3	2015	40	Alternative energetics / electronics	5	0.4	Founder and CEO
C4	2014	32	Industrial equipment / Integrated optical devices, control electronics	39	1-2	Co-founder and CEO
C5	2015	Worldwide	IT / software prod., IT services	183	5-10	Product director
C6	2009	10+	Robotics / automation	15	0.5-1	Founder and CEO

*Company 1* established in 2018. Main company activity – alternative energetics, where company focuses on electric vehicles (EV) charging systems and charging stations. Also company provides the EV accessories such as: charge cables, adaptors, controllers, home chargers. Company serving B2B and B2C customers and delivers their products in 25 different countries. In the company working 17 employees.

*Company 2* founded in 2005. Main company activity - company providing product engineering services including artificial intelligence (AI), data-science, mobile app development services. B2B customers ranges from small start-ups to large enterprises. Company delivering their services worldwide. Currently in the company working 233 employees.

*Company 3* as independent company started at the end of 2015. Main company activity – company makes electric bike motors, expandable modular batteries, wireless software application to make driving experience more comfortable. Company selling their products for B2C segment customers. Currently company have 14 distribution partners and end-customers in 40 countries. Currently inside the company working 5 employees.

*Company 4* established in 2014. Main company activity – lasers, which is mostly for material research and they are not only applicable to scientific labs, but also medical labs, pharmaceutical labs or some industrial labs as well. Company delivering they products in 32 countries and export 99% from total revenue to international markets. Company mainly serving B2B customers. In the company working 39 employees.

*Company 5* established in 2015. Main company activity - the main product is external data gathering, external data gathering for competitive intelligence, marketing intelligence, pricing intelligence or product enhancements companies are collecting data such as e-commerce sites collecting pricing data, comparing pricing offers, travelling, ticketing prices to compare, ticketing fairs. So our main product, which we have currently and leading the market is proxies, so proxies servers and proxy IP addresses are necessary to scrape and gather data from external sources. Company provides their products and services for B2B segment. Company delivering their products and services worldwide. Currently in the company working 183 employees.

*Company 6* established in 2009. Main company activity – company developing unmanned missioning and computer vision solutions for industrial applications. The company provides hardware, software, and services to support the production and development of self-driving vehicles. Company delivering their services only to B2B customers. With the help of company, customer selected vehicle platforms can be converted into robotic system. Currently in the company working 15 employees.

**Research process and data collection.** For the qualitative process, semi-structured interview were performed from 20<sup>th</sup> of April to 7<sup>th</sup> of May.

*Qualitative research* data were collected by pre-planned interviews by recording interviews through ZOOM platform and telephone phone calls. Only for one interview was used telephone call and for remaining interviews were used ZOOM platform. Interviews were conducted: 20<sup>th</sup>, 21<sup>th</sup>, 26<sup>th</sup>, 28<sup>th</sup> of April and 7<sup>th</sup> of May. Interview time: up-to 1 hour. Companies for interviews were selected by sending them e-mail and contacting directly by phone. For qualitative data analysis were used MAXQDA program.

During qualitative research process were maintained principles of ethics, by confirming confidentiality for sensitive information.

### **3.4. Ethics and limitations of qualitative research**

The purpose of qualitative studies is to describe a phenomenon from the participants' points of view through interviews and observations. According to the Ciuk and Latusek (2017), the aim of the researcher is to listen to the voice of interviewees or observe them in their natural surroundings. To conduct qualitative research ethical principles must be followed by respecting participant rights of keeping confidentiality of sensitive company or personal identity data. According to the Orb et al., (2000) interview is usually equated with confidentiality, informed consent, and privacy, but also by recurrence of “old wounds” and sharing of secrets.

To avoid any potential harm and maintain ethical code, research will follow full anonymity including name of the company, interviewees' names who shared company information about the company. The purpose of this empirical research is gain informational and understand factors and development barriers of born global companies. The results of empirical research is used for educational purposes only.

**Limitation of the study.** For qualitative semi-structured interview was included 6 Lithuanian based high-tech companies, which is relatively small amount of samples for this research questions. For further research mixed approach of qualitative and quantitative method should be applied in order to get additional, more statistics based data findings. Secondly, for future research focus should be more

on internal and external barriers emphasizing separate company development stages as it gives better sense of which barriers have higher importance in different company stages. Thirdly, research results was covering Lithuanian born global high-tech companies. Future research should include different European markets which are in similar economical position as Lithuania as it gives broader perspective of what differentiation factors and development barriers exists of born global high-tech companies.

## 5. Analysis of the empirical research results

### Description of the qualitative research

For qualitative research were conducted six semi-structured interviews. Selected companies were producing different categories products and services, but all matched criteria's of born global high-tech companies. All interviewed companies were Lithuania based. By performing this qualitative research study emerges ability to explore deeper research elements such as: internal and external factors, development barriers, entry methods and financial sources. In the first part of interview research results and findings, company entry methods and funding sources (entry method type, target markets, financial tools) will be analyzed in order to be able better understand main research questions. In second part of results analysis, main research questions, which are factors and development barriers of born global high-tech companies will be discussed and analyzed.

#### 4.1. Entry methods and interview results

By looking at selected high-tech born global companies, all of them had similar entry methods for internationalizing their activities, which are direct export activities and export by using foreign distributors or sales agents. Only Company 2 by making greenfield foreign direct investment (FDI) opened offices in San Francisco, USA and Zurich, Switzerland, but as we looking more closely on initial companies stages, greenfield investment becomes less relevant for this study. Some of the reasons why companies choosing direct export through distributors or through direct sales, is that they have limited amount of financial resources to be able to invest in foreign markets. Figure 5 represents major entry methods of born global high-tech companies.

Code System	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	SUM
Entry methods to foreign markets							0
Export through distributors			1	1		1	3
Direct export	1	1			1	1	4
SUM	1	1	1	1	1	2	7

**Figure 7.** Entry methods to foreign markets of born global high-tech companies

Analyzing of how companies were selecting target markets, multiple strategies appeared. *Company 1* named it as natural flow and as well product suitability to specific markets: “*In our case was I would say natural flow, it means we were selling in markets or customers who showed interest in us, but at the same time I should tell, that products had its limits or standards, which are suitable for some markets and not necessary suitable for other markets, so we as a company focusing more on EU markets, so our product is built for European markets, even so our product is suitable for other markets, we for example selling our products to Israel, but at this moment we are not selling to United States, which have different standards and yes we are moving towards there to this market, but we are not present at this moment yet*”. *Company 2* highlighted importance of participation in international trade fairs, international network platforms and being close to innovation ecosystem spots. These steps helped (C2) to gain majority of sales and recommendations for new clientele.

*Company 3* as top priority by selecting their target markets accentuated economically capable countries, which are physically closest to them as it makes much simpler process to acquire customers: “*Well we always try to reach lower hanging fruits, the markets that are closest to us and that have economical capability of purchasing these device, we taking about France, Germany, Italy,*

*Spain those markets which are in European Union, so the paperwork is much easier and is quite easy to reach those customers in these countries using different social media channels, distribution networks and yes these are the markets we are targeting the most, the closest European markets which are physically closest to us”.*

*Company 4* specializing as high-tech manufacturer of very compact laser. In this company the way they were targeting the markets, was basically through finding and giving full trust for distributors, while company internal staff was focusing on product development and technological capabilities: *“It’s mainly distributors, because knew the market, they knew which product modifications are needed and we as a young company must focus on product development and we didn’t have time to build extensive sales networks or establish subsidiaries or to hire a lot of local sales people and we didn’t know which market is effective in which territory, so we just signed the contracts with distributors and trusted, that they have the right people, the right marketing strategies and the right customer database”* .

*Company 5* was simply looking at total addressable markets in regards of company’s profiles, for example company distinctive features, company size, business type, technical team. Company would find the decision makers and contact with them.

#### **4.2. Funding sources and interview results**

Ways for internationalizing and expanding company visibility in foreign markets is highly dependant on financial resources. By looking at Lithuanian based high-tech born global companies, we can distinguish three main company groups: high-tech IT service based (C2, C5) companies, high-tech manufacturing based (C1, C3, C4) companies and mixed product line company (C6) who provide both high-tech services and high-tech manufacturing solutions by working closely with scientific researchers community.

These companies who are high-tech IT based service companies are more likely to use bootstrapping method, where they are using their own finances by reinvesting their revenue to R&D and expansion, as (C2) mentioned their funding sources: *“It was straightforward way to do so called bootstrapping, where was no external investment to the company only the invoice from the customer, the only money you get and then you are providing high-tech engineering services, that have demand of its own then it’s much more easier to basically to fund yourself”*. Worth to mention, that (C2) IT high-tech engineering service company only during later stage used strategic partners for their further development, but during initial development stage used their own finances. These type of companies often have rapid growth, because of very high demand for IT services, no logistics costs and because of that companies have sufficient amount of financial resources, but lacking human resources and talents to support this rapid growth. Figure 2 represents summary of financial sources interviewed companies used.



Code System	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	SUM
Company financing sources							0
Risk capital						1	1
Crowdfunding			1				1
Bank loans	1						1
Strategic investment	1	1	1				3
Angel investors			1	1			2
Venture capital			1	1			2
Governmental financing			1	1		1	3
Bootstrapping		1			1	1	3
Σ SUM	2	2	5	3	1	3	16

**Figure 8.** Company funding sources by funding type

On the other hand, companies who are more hardware based (C1, C3, C4, C6), they used more versatile approach for funding their company development and grow. Hardware based companies, have much more expenses for developing, commercializing and distributing hardware products compare with IT services and lack of external funding is just impossible task for healthy company development: *“It is impossible to create hardware product, launch production of it and distribute in so many different markets without using external cash”*. Funding sources includes strategic investments (C1, C2, C3), venture capital (C3, C4), governmental financing (C3, C4), angel investors (C3, C4), bank loans (C1), crowdfunding (C3), risk capital (C6).

#### 4.3. Internal factors of the Born Global firms and interview results

Internal factors found to be significant elements forming born global company. Internal factors were found including networking and international partnerships, superior technological products, knowledge intensity, top level talents and team orientation for exports. To be able better understand each factor separately in the next parts detailed analysis were performed.

Code System	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	SUM
Internal organizational level factors							0
Networking and international partn		1	1	1		1	5
Product							0
Superior technological product:			1	1	1		3
Knowledge intensity		1					2
Top level talents inside the organiz			1				1
Management		1					1
Team orientation for exports	1						1
Σ SUM	1	4	3	3	1	1	13

**Figure 9.** Internal organizational level factors forming born global high-tech company

#### Networks and partnerships

For internal, organizational level factors interviewed companies (C2, C3, C4, C6) indicated international networking and partnerships. Networking was established by participating in different exhibitions, technology hotspot places, international associations for making contacts and using them in the future even in some interview cases, when the products was not yet commercially sellable. As some of the interviewed companies was looking for the first clients, others was making connections with first sales agents and distributors.

**Table 5.** Interviewers statement on importance of Networking and Partnerships made by Author

Category	Company	Statement
Networking and partnerships	C2	“Recommendations and reputation is the cheapest and only good way how you can expand in one market or another so as I mentioned we started with United Kingdom back in 2003 and all large corporations had their exporters or large telecommunication offices in United Kingdom such as Motorola, e-mobile, many of them had exporters in that region and we just saw an opportunity and instantly moving ahead and this is why we attended to smartphone shows, so basically we addressed these companies”
	C3	“Even before we had our product ready, before it was commercially sellable device, we were visiting quite a lot of bicycle shows here in Europe, in Germany, Euro bike. Even when we didn’t have the product we attended to these shows and making connections, saying hello to everybody, trying to introduce to as many people as possible and started to build the network even before the product was ready. So in that way we build quite a lot of partners of the networks and when the product was really we just send all information to whom we knew”
	C4	“Another thing is about that we found in 2013 or 2014 an sales agent in the Western Europe, who helped us to build the distributor network, so it was single guy who had list of contacts or he knew how to approach people in this market and he found us first five distributors and we paid him royalties for the next several years, related to the sales in these countries, so he was motivated to find good partners and he got part of the turnover.”
	C6	“So we started from the networks we already had, then also we used exhibitions, LinkedIn to meet new people. Participating in associations not only in Lithuania, but as well members of European robotics association, medical fields. This is network opportunities and we use less email, phones calls like other businesses, where we no need quantity, but we need right contacts.”

Networks helped companies to gain visibility and reputation, which was crucial point for gaining trust from first clients and getting recommendations for attracting new customers. Another important fact was the quality of the contacts, which for example in case of Company 4 where one sales agent helped to build distribution networks and open doors for rapid company expansion. The similar view for qualitative networks had founder of Company 6 who claimed, that quality matters much more than quantity.

### **Superior technological products**

Superior technology helps companies to get competitive advantage against competitors and its very important to invest time and capital in R&D and product engineering processes to build superior value. Interviewed companies (C3, C4, C5) named, that they had specific product advantages, which allowed them to reach unique market position by introducing their products to their potential clients. In case of company 4, their main product advantage was laser size, which helped them to save costs on materials, reducing storing and shipping space. Company 3 claimed, that they had overall new technology in e-bike market, which was extremely important factor to promote their products at maximum capacity to gain larger market share in multiple European markets.

**Table 6.** Interviewer statements on importance of superior technological products made by Author

Category	Company	Statement
Superior technological products	C3	"...the experience we had allowed to create wireless e-bike, that the world never seen before, then you create the product like that well you cannot to keep in one market only."
	C4	"From very beginning we designed our lasers to be extremely compact and since 2014, when we sold our first lasers, they are still remaining as world smallest lasers for that category, so following the size factor of the laser, it comes cost advantage, because you use less materials, you no need so much space for storing or shipping or servicing the laser, so it is all about the saving everything what is related, but another side is that you should invest a lot in your instruments, manufacturing capabilities and technology, which allows you to miniaturize the product and where was no such equipment in the market, so we needed to develop by ourselves."
	C6	"As we provide firstly from our core services, which are proxy pool, which have largest and most advance pool, let not be cocky about the competition, but one of the most advance between biggest ones, so we have one competitor who by size could be compare with us."

Product newness itself not guaranteeing success in the market without right marketing strategy and distribution networks. Identifying market needs, product – market match is extremely important to exploit technological advantages of company products.

### **Knowledge intensity**

Knowledge and know- how is one of the major intangible resources of high – tech and innovation based companies. By going to international markets you constantly developing and gaining extra knowledge of how to improve internal company processes, developing products, adapting communication channels to different markets. Company 2 emphasize that company who focuses on product engineering must continuously seek new professional skills, innovation, knowledge to be able to compete in the market .

### **Top level talents**

Every high-tech organization seeks to attract top level talents to be able to produce high value innovate products. Company 3 pointed out, that highest level professional skills allowed company to develop unique high-end technologies: *"I think it also comes to the fact, that our engineers are capable of creating very high-end technologies, that are not limited with local markets, the technological aspect, the experience we had allowed to create wireless e-bike, that the world never seen before, then you create the product like that well you cannot to keep in one market only."*

### **Team orientation to exports**

Before Company 1 became independent born global company, rudiments of company products was started by another company group. As initial company group was functioning in similar technological

products industry, but didn't continue product development of they made investment in (C1) and also shared their export team to help with international (C1) activities: *"In our case we were building company already on exports, so it means, that the majority of the team was invited to join company, which already doing exports. We are exporters from day one. If we looking further, we can say from very beginning we in mind we are exporters, so our sales team naturally became international sales team"*.

#### 4.4. External factors of Born Global firms and interview results

##### Too small local market size

One of the major factors why companies simply start to internationalize early is because of the market size and demand for their products. Delivering highly sophisticated, innovated and expensive technologies, countries should hold strong economical position. From risk management perspective, expanding your product in different markets, helps to reduce risk in case some countries experiencing political or economic instability. All the interviewed companies directly or indirectly agreed, that instant internationalization was necessary, because products or services they are producing requires larger markets, richer economies or global reach. Interviewer statements confirming the reasons of why they internationalize from their start.

**Table 7. Interviewer statement on local market size made by Author**

Category	Company	Statement
Too small market size	C1	"...another factor is the size of the local market so Lithuania is a small country doesn't matter what you are selling, but especially for the equipment we're selling it's just small country, small market so it's another factor."
	C3	"We started to developing the product, where was not big enough market in Lithuania to make it economically feasible to sell only in Lithuania. From the very beginning we had the dream bigger and to go to different markets."
	C4	"We sell mostly to integrators, which are basically device manufacturers, for example microscope producers or some analytical device producers in 2012 when we started, where was simply none customers, no OEM customers, who could buy quantities of our lasers, just single scientist in the universities, so we understood where is no market in Lithuania and we should put all our efforts in to the export."

##### Online based business model

Online based business model was another external factor for Company 5, which eliminated the importance of gradual internationalization method: *"From the day one company start to think globally"*. The company searching their clients worldwide, based on specific search keywords, target audiences. IT based high-tech companies have almost none physical logistics and distribution costs

and are knowledge intensive companies compare with hardware based high-tech companies where logistics, inventories and distribution is major core for business day-to-day operations. Flexibility gives opportunity to look at different markets simultaneously and change entry strategy if necessary

#### 4.5. Entrepreneurial level factors of Born Global high-tech firms

Entrepreneurial level factors was another forming characteristic of born global high-tech companies. As majority of interviewers were founders and executive company members, insightful and comprehensive information about their international experience, personal networks, international education was provided. Global vision more as consequence of international experience and education were mentioned as well.

Code System	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6	SUM
Individual entrepreneurial level factors				1			1
Professional skills and experience					1	1	2
Personal networks		1	1				2
International education		1	1				2
Global vision			1	1	1	1	4
<b>SUM</b>	0	3	3	1	1	2	10

**Figure 10.** Individual entrepreneurial factors forming born global high-tech company

#### Professional skills and experience

Founders professional experience and skills played crucial role for founding and developing the company. Founding company members in (C2, C3, C4, C5, C6) had long term experiences in their domains, which allowed them to develop different products and services.

In company 2 case, interviewed company founder formed his professional international experience by studying and working abroad, where he gained necessary skills and found the niche for IT engineering services: *“I went to study to Copenhagen, I was very interested to study abroad, so I had opportunity to study in Denmark, back in 2002-2003 they did opened this opportunity and I was excited about that and this is why in 2003 I went back to Copenhagen to basically to decide what to study and what to do, so I was introduced to studies related with navigation, smartphones, technical services, which I really liked it and it was cutting edge technology and then I joined new concept of recruitment, it was open door day, open door day in Denmark allowed to visit any company you want, you can check out what they are doing and if you like you will apply for the job. This is what I have done, I joined one company in Copenhagen, this company had new ideas about smartphone location based services and this was exactly what I wanted to study and work.”*

Company 6 founder had long-term experience in his business core domain, which helped him to attack big project and execute project by the highest standards: *“Project management and founders including me, we had quite huge experience, I introduced project management and system creation processes to the companies in Germany, before in Lithuania and other countries according to the standards, so understanding processes, standards, software development and project management, experience was and we created quite robust processes which complied with some specific medical device development standards.”*

#### Personal networks

Personal networks is very important factor for starting international business venture and active early preparation could be strong initial push to get first customers and sales. Company 3 founder was actively engage in promoting company products, even before product was commercially available:

*“Even before we had our product ready, before it was commercially sellable device, we were visiting quite a lot of bicycle shows here in Europe, in Germany, Euro bike. Even when we didn’t have the product we attended to these shows and making connections, saying hello to everybody, trying to introduce to as many people as possible and started to build the network even before the product was ready. So, in that way we build quite a lot of partners of the networks and when the product was really we just send all information to whom we knew.”* Active networking helped company to acquire new partners early and ensure opportunity to expand company faster with available networks.

### **International education**

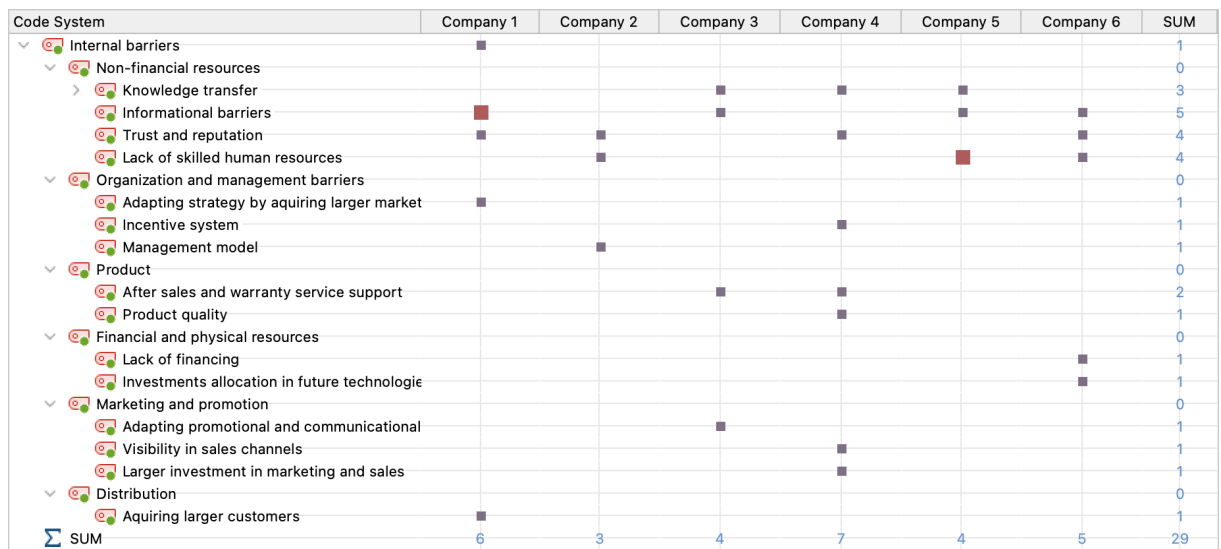
International education was one more entrepreneurial factor, which was shared between (C2, C3) and positively impacted appearance of born global companies. International education helps to access multicultural environment and have better sense of global mindset, cultural preferences: *“Myself I also studied in Denmark, in the very early beginnings of the (C3) product I was in Denmark studying Mechatronics, so I saw how big the market can be for the device like what, from the firsthand experience I knew that we are on something and we need to develop commercially viable product, so it was also based on experience.”*

### **Global vision**

Founder of Company 3 pinpoint global vision and global ambition as additional ingredient forming born global high-tech company: *“So, the ambition and the need to expand is self-initiated, so you even not thinking to keep in one single market. Intangible assets are the ones, which allow us moving forward.”* Company had full chain of intangible resources including talented and highly skilled engineers, founder international education and specialized product related skills and individual entrepreneur ambition to seek international markets.

## **4.6. Internal development barriers of Born Global firms and interview results**

Any type of companies facing multiple development barriers during their internationalization process, so it is very important to look at which major challenges companies facing in different development stage in order to correct strategy and make adjustments. As interviewed companies was facing different internal, organizational level barriers, it was necessary to split them to main categories, which was non-financial resources, organization and management barriers, marketing, distribution, promotion, product, financial and physical resources.



**Figure 11.** Internal development barriers of high-tech Born Global firms

Figure 3 represents multiple internal development barriers interviewed companies faced during by entering to foreign markets. Although companies met Born Global criteria, their industry profile, products, client segments was different. In any case some of the main barriers were different and some of them were the same. Looking further, development barriers must be discussed in more detail, to understand better these challenges.

#### 4.6.1. Non – financial resources

Non – financial resource barriers was most common trait between interviewed companies as their activities was highly based on knowledge intensity, experience and know – how. Among the challenges was mentioned *knowledge transfer, informational barriers, trust and reputation, lack of skilled human resources.*

##### Knowledge transfer

Creating of highly innovative and technologically sophisticated products, some of the companies facing development barriers of how to transfer knowledge through middlemen, sales agents and distributors. Although there are multiple ways of transferring knowledge as documentations, manuals, video materials, where still challenge to give sufficient amount of knowledge about technical specifications of the products, quick support, explaining product strengths. Company 3 who is producing hardware B2C products identified, that knowledge transfer is quite a challenging task even you have all tool to do it *“Most partners, that are selling the device, I personally met them and showed them device, how it works and explain everything and we continuously provide information for our partners if they need it, but yes transfer of the knowledge from our company as creators and then to distributor and then to customer to transfer the knowledge of that chain is quite challenging...”*

Another development challenge (C4, C5) mention was the simplification of the complex products, where clients could understand products easily: *“Yes it’s totally the case, we are complex market this is not the tool that is easily understandable, like new software, regular marketing and sales technologies, we are in data information market, so basically to transfer this complexity in core*

*understanding is very hard task...*". As company 5 emphasized, complicated product simplification is very hard task to accomplish, but at the same time very important thing to do, to be able easier navigate with existing customers.

### Informational barriers

Informational barriers comes in many different forms when entering to new markets. Almost all interviewed companies express informational barrier as one of the major development barriers, where lack of information causes difficulties in positioning of target markets, meeting national requirements, selecting correct communication and marketing channels. In the Table 9 major informational challenges were represented.

**Table 8.** Interviewer statement on informational barriers of Born Global firms made by Author

Category	Company	Statement
Informational barriers	C1	"If we trying to focus only on international challenges, very often where are uncertainty or unknown facts, unknown requirements, so you can find them only when you meet them and in your local market you can be among who influence the standards, the decision makers, but in the distance markets your significance is much lower closer to zero, you are relying on your partners or google or exhibitions, whatever you can get an information, so these are the challenges, where you sometimes are developing certain products or certain certification of the products and only at some point you find out, that we needed to have this or what and we didn't know that, or we knew but it slightly different and even then standards are written, sometimes unwritten rules..."
	C3	"If we going to enter in the new market we never been to, we have to put a of trust to our partners, the distributors, the lack of personal knowledge about the market and how it works is quite a big barrier as well, we have to do a lot of research, but doing research online is nothing, compare to then you living in the market..."
	C5	"External barriers is more about localization question, like getting to know the legal situation, positioning, culture it was always be like this, we were quite familiar with European Western world, Eastern world is new for us in regards of digital channels, communication channels, cultural things, so hardest part was and is to understand the China, for the business our main language is English, we never faced such an issue, because of language barriers, but with China case everything freeze there."
	C6	"You need to understand how to behave in every country, mentalities is different even in European countries, yes for example to work with Germany we participate in training of how to sell and how to make partnerships in Germany, we used different training programs and then trying and getting feedback and experience."

Company 1 noted, that unknown requirements for their products by entering to new markets was big issue. During interview given example about United States market very well represents informational barrier, where company produced EV chargers was not applicable as a standard of 4 cables, but instead 2 or 3 cables, which made confusion and company needed to repeat whole cycle again. This lesson shows, that lack of informational and not fully clear picture causes a lot of unnecessary pains.

Company 3 made emphasis on trust of distribution networks, because company are lacking personal knowledge about the foreign markets. Also the company founder see the big gap between market



research and actual actions inside the specific markets. Close relationship by keeping control over the supply of products helped company to manage this barrier and as company quite young and still accumulating knowledge about their target markets with time this knowledge barrier gap hopefully will reduce.

Company 5 distinguished informational barrier between European markets, western world markets and Eastern markets such as China. Knowledge about western markets didn't cause them so much trouble compare with Eastern markets where language barrier, cultural differences makes company very hard to entry in these type of countries.

Company 6 who are producing robotization and automation solutions looks at markets at much deeper level as they are looking for large and long-term projects.

### Trust and reputation

Another big challenge interviewed companies faced was gaining reputation and trust from their very first customers. Newly established companies have always facing these barriers, where they should prove to the market, that their products and services have high value compared with other competitor proposals. It is very hard to get initial traction, where you as unknown company have to find ways to attract very first customers.

**Table 9.** Interviewer statement on trust and reputation barriers of Born Global firms made by Author

Category	Company	Statement
Trust and reputation	C1	“As every young company meets, which are trust so if are unknown it must be certain customers who trust you and that has to do with your personal activities, which are sales team, how warm and responsive they are, that’s one thing are I guess.”
	C2	“In the service industry, whatever you sell is your knowledge and your know-how, big barrier and obstacle is trust between you and your customers and this trust is actually multilayers, whatever you provide some services you are competing other service providers and some other service providers can be totally from different market for example India and whatever we joined with new service oriented company we automatically were compared to other proposals and basically is always difficult to convince and to prove the value that are you going to bring for your customers...”
	C4	“what is your reach of new customers and what is your reputation, because with your reputation you can go to bigger and bigger customers, so initially you are serving only scientific customers, when you start to get first integrators and then you go up with size of integrators, so basically reputation is always important, it’s hard to call them barriers, when you start it’s of course a barrier, but when you work through it always question of your reputation.“
	C6	“So you don’t have any name, any history to show your track records of what you achieved, so it’s very hard to persuade bigger companies, that you offer some value, so again it’s big restriction.”

From Table 10 interviewers statements helps to better understand why its crucial to establish trust and reputation from early days and how gradually to can gain trust from largest customers. As you starting your company without any name and tract records your focus on customers must be one of the highest priorities if you want to stay connected with current customers and get recommendations for new customers.

## **Lack of skilled human resources**

For high-tech sector, where latest technological solutions take place, companies looking for creative and skilled talents to help company build high value products, services and maintain grow. Company 2 stated, that industry demand for IT services is huge and demand is not an issue, the issue is to get qualified IT engineers to be able to build additional workforce to meet this demand. Company 5 facing similar challenges: *“So the hardest internal part now is talent acquisition, because we cannot control three parts in our life: time, resources and results and we not shy to expect very ambitious results within limited time, so we need resources and we in great position regards revenue, but at the same time people is the resource that are really hard to scale, to find talent, it takes time.”*

Company 6 pointed out, that they ready to outsource talents from foreign countries, because they couldn't find computer vision specialists in Lithuania: *“Today, current problem is to find skilled resources meaning human capital, it was already IT specialists, robotics, computer vision was scared resources in Lithuania, but right now situation is quite bad, so again we looking where to outsource.”*

To summarize, talent acquisition for Lithuania high-tech quickly scaling companies is another big challenge. Closer collaboration between universities and private business sector could help to reduce this gap by incorporation young specialist preparation strategy for different high-tech professions.

### **4.6.2. Organization and management barriers**

Company 1 pointed out, that in every step from the first sale of your product in foreign market to hundreds or thousands of product sales, you will face the same challenges to adapt strategy for this growth, it's never ending process. To gain 1 percent in market share is totally different than to gain 10 percent of market share.

Company 2 founder and CEO expressed importance of culturally adapted and developed management model and coordination within the company. Currently company using empowerment model, non-hierarchical flat organization for delivering cross technology engineering services. As company founder described: *“Every single technology is like a little separate company and every separate technology has their own team leader who is making sure that we have best specialist in that particular technology”*. For the long time company had big barrier of who should report to whom, who is responsible for what, who is executive and who is project manager. This challenge was eliminated step by step by integrated previously mentioned management style.

Company 4 co-founder and interviewer one of the development barriers mentioned the organization internal conflict of incentive system between company employees and distributors in foreign countries: *“One more internal barriers which is motivation system and culture, which you build inside your company, where is risk that motivation strategy itself becomes barrier for expansion. We had such a situation when internal sales team, one or two sales engineers and we did let's say motivation strategy which was encouraging them to sabotage distributor activities. We set motivational strategy that our sales people get let say 5% through distributor and 10% if they do direct sale. This eventually turn into a battle between sales engineers and distributors and they always say “why we pay so much commission to them and they want to sell directly”, but it wasn't good strategy to sell directly, it was opposite better to release sales engineers and work only with distributors”*. This example gives good lesson and shows of how important is to choose sales force, which is not creating conflict of interest between different channels.

### **4.6.3. Product**

#### **Warranty and technical service**

Company 3 emphasized, that warranty and technical service was one of the biggest internal barrier company is facing: *“Because we developing and selling hardware products, customer support and warranty service is one of the biggest issues in foreign markets, how to arrange warranty service and good customer support. It is the highest priority what we should think about.”* As company serving B2C large customers pool with highly technical product, large amount of work is to sustain product functionality and reliability to all customers.

Company 4 faced as well similar issue as they added more complicated product configurations: *“From time to time we had challenges in terms of product quality and technical support and basically it was, that we were going to more and more sophisticated configurations of the product and each of those configurations were raising for the requirements of the platform of the products, so every time we offered more sophisticated configurations we saw, that our platform not robust enough to sustain this configuration and in several years we 4 times changed manufacturing principles and manufacturing technology we were iterating with manufacturing technology in house and managed to produce more sophisticated products.”*

To summarize, complication of technical support raises, when high-tech products are still in development phase by adding new elements to their products.

#### **4.6.4. Finance and physical resources**

To attract sufficient amount of investments was another challenge for Lithuanian high-tech based companies. Company 6 launch their company in 2009 just after global crises. In that period was much harder to attract risk capital or other kind of investments: *“When you start, the major barrier is finances and money, in Lithuania also risk capital investment companies was not very well developed at the beginning and maybe these investors was investing in more mature companies, just to develop them farther, but not us “small companies”, so access to the financing was limited and external risk capital funds like in Silicon Valley or others also was hard to persuade for products from Lithuania.”* Today investments tools and networks are much more multidirectional and is easier to attract right kind of investments, but ten years ago was access to finances was much more limited.

Another issue Company 6 faced was investment allocation to future innovation : *“Project management wasn’t the problem, maybe problem was of how to manage and understand innovation, in what ideas to invest, how to evaluate ideas as we hadn’t much experience in business innovation. If project is clear, scope and goals are clear, that we can define scope and execute the project, so as I said we were strong from the beginning, when we established company we were not young guys without experience, we has good knowledge about the field, but how to control innovation, we made mistakes by investing in some technologies and products, which was very fascinating for us, but were not interesting for customers, we wasted some money.”* It’s really hard to determine which innovative products or technologies will be trendy in the future, which is determining future demand and competitive landscape, unsuccessful predictions could cause large time and financial losses.

#### **4.6.5. Marketing and promotion**

Marketing and promotion is another internal barrier interviewed companies faced. Localization of content, communication style and translation was the barriers Company 3 was facing: *“Other less problematic issue where our partners helping to solve for us, is the content of the local market, some pictures what are used in our own market is not so usable in different markets in France for example. So, we have to adopt our communication, that’s another barrier that we have to translate and adapt our communication material to that local market.”* Without outside help, localize communication channels in main European markets (main Company 3 export countries) is very time consuming and requires deep research and understanding about these markets.

Company 4 as internal barrier mentioned lack of investment in marketing and sales as company were more technology push orientated and was having lower focus on promotional side of their innovative products. Such a barrier could have an influence of slower commercialization processes. As a solution company found single sales agent who presented network of distributors, but at price of revenue share. This is also could cause high dependency on single individual, who have negotiation power and leverage for favorable conditions. However, with the help of sales agent and attracted distribution network, company successfully overcome this challenge: *“...how we calculate the investment, that we were most focusing on what we need on product development and manufacturing and we didn’t raised so much money for sales and expansion to the markets, so this is why we didn’t do so much active promotions or actions by ourselves and we trusted our distributors to do that...”*

#### **Summary of the internal barriers**

Internal development barriers were among most often mentioned elements. Mostly all the interviewed companies faced non-financial barriers including knowledge transfer, informational barriers, trust and reputation and lack of human resources. Knowledge transfer was one of the major issues as young technology based companies have hard time to transfer all the technical details, product functionalities and competitive position in particular product category. Informational challenges were another major issue as relatively young knowledge-based companies didn’t have their wholly owned subsidiaries or offices in foreign markets. Lacking of foreign market understanding was serious issue as companies had to establish their presence there. As solution born global high-tech companies used distributors and sales agents who helped to reduce informational barriers in foreign markets. To gain trust and reputation was third barrier as born global companies were lacking recognition and personal history. Lack of talented human resources, where rapid company grow demands new talents to support company operations. Other internal barriers were mentioned between separate companies.

#### **4.7. External development barriers of Born Global high-tech companies**

External development barriers had significant influence on born global interviewed companies. Cultural differences to closer and more distant countries causing serious issues to companies. More recent barrier associated with COVID-19 pandemic caused another problems including interruption of supply chain, delayed projects, communication and social distancing issues.



**Figure 12.** External development barriers of high-tech Born Global firms

### Cultural barriers

Cultural barriers was the most common external barriers between interview high-tech born global companies. Cultural distance causing difficulties to adopt communication style with clients, choosing correct marketing strategy or overcoming language barrier. Often companies tend to trust more established economies or their own local market to maintain their internal alliances, rather than choosing outside players from developing economies such as Lithuania. Where is also comes trust and reputation factor, what is your record of your achievements, projects you completed or clients you working with. The cultural barriers companies faced during entry to new markets showed in Table 11.

**Table 10.** Interviewer statements on cultural barriers Born Global firms made by Author

Category	Company	Statement
<b>Cultural barriers</b>	C1	“It can be also cultural barriers or cultural distance. For example, French, Spanish markets are those which we find too difficult to come in, because of cultural preferences, therefore we hire French national manager and one more factor, that in particular market where is strong competitor, company which easier to go somewhere else or for a while at least.”
	C2	“So cultural barrier by going to another totally new market, stereotype barrier like proving your trust barrier making the most important one and of course in terms of scaling your business, how scalable your business is, wherever you travel internationally, you do international sales, however all your employees are national and if provide service from one country to have to go and do internal sales if you manage to sell your trust for example in Dubai with your own vision, then you bring that vision in Lithuania to basically country of production and to show that it is not a scam and you will make a good job, energize the delivering teams here and basically make a sale for second time. So, bringing back that culture and adapting it inside your organization that as well a big barrier that you need to overcome. This is why we have employees from 7 different countries inside our company.”
	C6	“Hong Kong and China is very different mentality and we have different approaches to understand and communicate with each other. Also, we had attempt to work with Japanese market, but we didn’t achieve results and process there. Japan is also very closed people and getting their acceptance or trust you need to work...”

## **COVID-19 pandemic situation**

During our last global challenges, COVID-19 pandemic are among main ones. Pandemic situation affected multiple industries, businesses and destabilize global economy. Some of the challenges interviewed companies faced was interruption of the supply chain and logistics, delayed projects and payments, restricted social interactions.

Interviewed companies (C3, C6) pointed out, that supply chain was big challenge for their international operations: *“Right now, the biggest challenge is logistics and the supply chain, because of this pandemic situation everything is out of balance and it’s really hard to produce the device and ship them from warehouse, that is challenge and our biggest mission is to stabilize supply of the goods, but in general more expansion, more customers which is the goal of every company.”* Company 6 statement *“Supply also were interrupted and it is hard to know of what you need, let’s say it’s not reliable currently, some delays are expected.”*

Another important issue associated with COVID -19 pandemic, that (C6) faced delay for projects: *“Yes, delayed of the projects, we cannot always of working remotely as for example we need to develop solutions for logistics, where we need to make automatization, we need to travel to see facilities and due to these restrictions we had delays for all these travels, so project which had to start last year in May, currently we just started here in Lithuania, we hope it opens for travels with new vaccination passports so we will able to implement this project, which had to be implemented one year ago. So not contracts were interrupted, but delays and delays of revenue.”* Such a delays interrupting company revenue grow, which affects reinvestment in R&D and other business development functions.

Social distancing is the last barrier affected by COVID-19 pandemic situation. Interviewed company 5 mentioned, that remote communication causing psychological problems, because in knowledge intensive companies agility and knowledge transfer is crucial: *“Second of course is communication, keeping social connection and everything, it’s the hardest part for myself, simply what I see people become depressive of this no social connection.”*

By summarizing COVID-19 effect for interview companies is clear, that businesses faced unknown situation, where they needed to adapt quickly to be able to continue their business activities.

## **Political and legal barriers**

Political and legal environment could be large barrier as different markets have their own standards and requirements. Company 1 pointed out, what even within European Union zone potential barriers may appear: *“Another thing is that even within EU, where are still some different requirements and some markets are easier to come and sell and suit their standards and some of them have protectionist requirements and is harder to go there”*. By choosing potential markets to entry is very important to look at market special requirements and policies. Certifications is another barrier company 1 emphasized *“Certifications which is very important in High-tech and I guess in food industry as well. So, its certifications requirements, which are among main ones.”*

#### 4.8. Interrelationships between research categories

Interrelationship were found between internal and external organizational level factor, where superior technological products lead company to foreign markets, because demand for product simply was too small: *“I think it also comes to the fact, that our engineers are capable of creating very high-end technologies, that are not limited with local markets, the technological aspect, the experience we had allowed to create wireless e-bike, that the world never seen before, then you create the product like that well you cannot to keep in one market only”*. This statement clearly identifies the interrelationship between insufficient market size and product quality.

By analyzing data, some of the logical interrelationship appeared between internal company and entrepreneurial level factors. Looking at entrepreneurial level factors networks and partnerships were one of the most important factor of forming born global company. The similar factor of networks and partnerships remained under internal organizational level factors. Now only founder were building relationships with potential clients, suppliers or investors, but whole organization were focused to build international networks for faster company expansion.

Between same category of internal organization level factors were top level talents and superior technological products: *“I think it also comes to the fact, that our engineers are capable of creating very high-end technologies, that are not limited with local markets, the technological aspect, the experience we had allowed to create wireless e-bike, that the world never seen before, then you create the product like that well you cannot to keep in one market only.”* Without highly skilled professionals company would not able to create world class products.

#### 4.9. Summary of the results analysis of born global high-tech companies

Summarizing qualitative research results, received information allowed to answer and understand, which internal, external and entrepreneurial related factors and also development barriers affected born global high-tech companies. Supplementary information about entry methods and financial sources allowed to gain better knowledge of how born global high-tech companies were making their decisions by entering to foreign markets and which financial tools helped company to grow and operate internationally.

By summarizing qualitative research interview results was found that:

**Most important internal factors affected interviewed born global high-tech companies** were: *networking and international partnerships, superior technological products*. These factors appeared as most important for majority of interviewed companies. Networks and partnerships allowed born globals to reach first international customers, suppliers and distributors. Networks helped to generate first sales and spread the word within their networks. Superior technological products allowed interviewed companies to gain competitive advantage among others products or services as their introduce more compact or radically new products to the market.

**Most important external factors affected interviewed born global high-tech companies** were: *too small local market size and local demand for company products*. As company was creating and delivering edge technology products, local market simply was too small or there was no demand for these type of products. For this reason interviewed companies was looking to enter in multiple foreign markets to be able to maintain company grow and scale.

**Most important entrepreneurial related factors of born global high-tech companies** were: *professional skills and experience, personal networks and international education*. For the most of the interviewees these factors were closely related. As all of the interviewees were company executives and founders, they had rich insights about founder professional skills and experience, which helped to form born global high-tech company. Company founders personal experience in most cases were high related with current company products and services. International education had big influence on widening global view and gaining valuable international networks.

**Most important internal development barriers affected interviewed born global high-tech companies** were: non-financial barriers associated with *informational barriers, knowledge transfer, trust and reputation, lack of human resource barriers*. Informational barriers were causing uncertainty and unknown facts, where company was lacking knowledge and understanding of how to operate in foreign markets. Certain behavior styles, differences of customer preferences in particular markets were complicating this challenge. Knowledge transfer was another internal development barrier, where born global high-tech companies faced difficulties of transferring knowledge to outside partners and distributors. Product technical specifications, increased product variations, product positioning was the main issues for knowledge transfer. Thirdly, trust and reputation were among most important internal development barriers between B2B born global high-tech companies. As companies didn't have previous history and records of successful projects or recommendations from other clients it was very hard to compete with other proposals from other companies all around the world. Lastly lack of human resource was additional challenge between interviewed companies. Technology based companies requires specific knowledge and skills which is still an issue for rapidly growing firms.

**Most important external development barriers affected interviewed born global high-tech companies** were: *cultural barriers and COVID-19 pandemics*. Globalization processes allowed to collaborate and do businesses between countries, but by looking closer to cultural differences the same challenges remain. Cultural barriers and cultural preferences, stereotypes affect how company able to communicate with foreign customers. Even cultural barriers exist, companies are more familiar with Western world business practices, but Eastern markets are on another level from cultural barriers perspective. Global pandemic shake global economy and multiple businesses felt the effects of it. Interviewed born global high-tech companies mentioned that pandemic interrupted their supply chain, delayed planned projects and payments. Unknown situation and social distance was another issue for interviewed born global high-tech companies.

**Entry methods born global high-tech company** used: *direct export and export through distributors*. By interviewed companies popular choice was direct exports method, which allowed company to maintain full control without using intermediaries. Such a method could safe profits as you as a company are not obliged to share your sales revenue or commission. As well it helps to maintain direct contact with your customers. On another hand it could reduce market potential as you may have less knowledge than local distributors or sales agents. Export through distributors was another popular choice for entry to foreign markets, where distributors was supporting not only attracting potential customers, but also to localize marketing strategy by adjusting communication channels.

**Financial sources of born global high-tech companies.** Companies used mixed financial sources, but more IT based high-tech companies used bootstrapping or self-financing method as these type of companies have huge demand for their services. More hardware based high-tech companies used



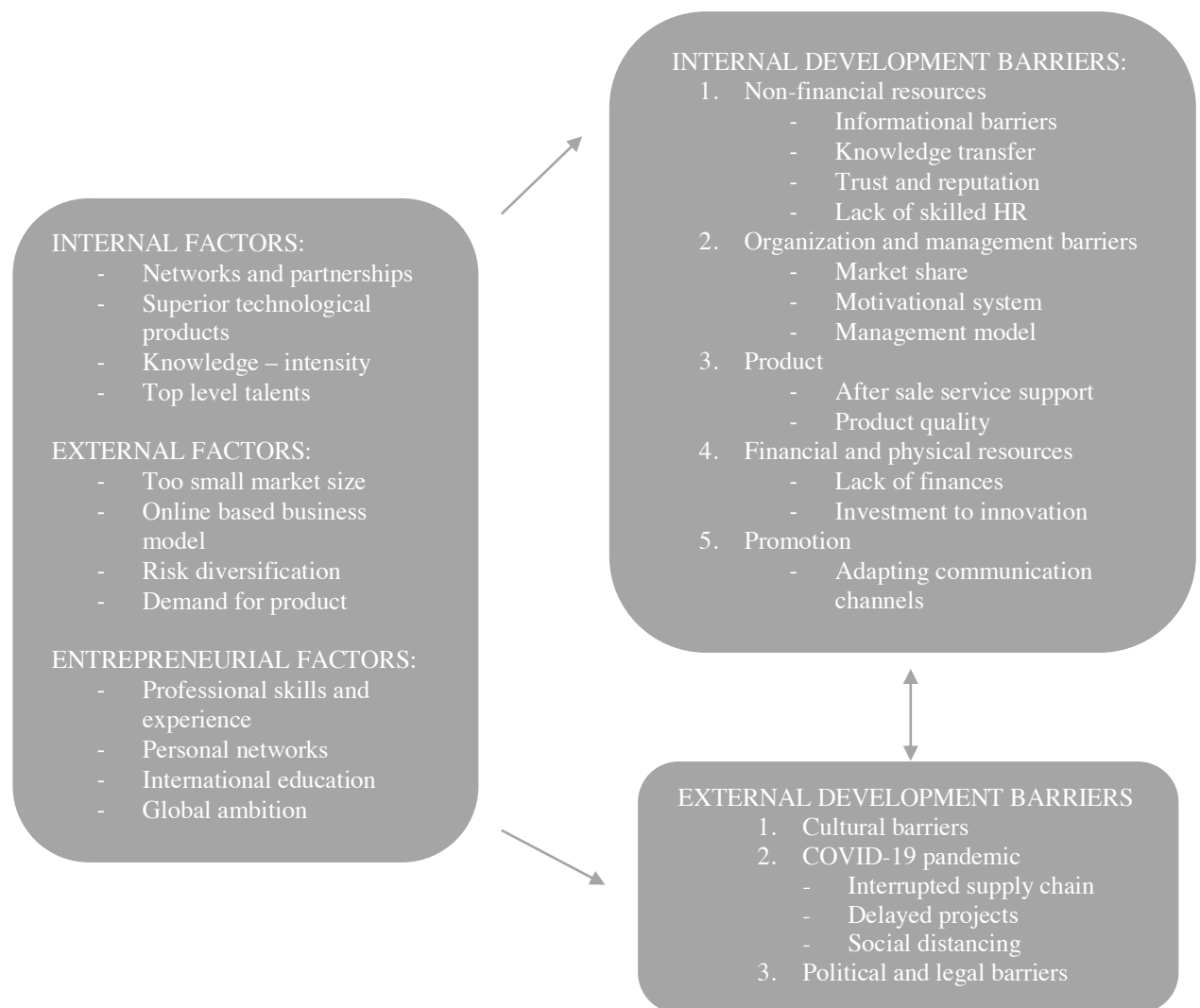
mixture of financing tools including risk capital, crowdfunding, angel investors, venture capital, governmental financing and bank loans. This diversity of investments allowed high-tech hardware based companies to invest in product development and R&D.

Main qualitative research findings of factors and development barriers of born global high-tech companies confirms theories of Oviatt and McDougall (2005), Cass and Weerawardena (2009), Evers (2010), Danik and Kowalic (2015), Loustarinen and Gabrielson (2006), Leonidou (2006), Uner et. al., (2013), Vozikis and Mescon (1985).

Research findings delivers rich conclusion of born global phenomenon in high-tech sector. As most of the findings was closely connected with scientific literature, some of them were quite new. From external development barriers perspective, as new unexpected global challenge become COVID-19 pandemic situation, which was found one of the major worldwide problem and at the same time challenges for the most interviewed born-global companies.

#### 4.10. Key Findings and Discussion for Future Research

As a result of the analysis, there were few key findings. Firstly, all the companies faced internal non-financial development barriers by entering to foreign markets. Informational barriers was one of the non-financial internal barriers, where company had little knowledge about foreign markets. The solution for this challenge was to collaborate with partners, distributors in foreign markets, where their knowledge about the market, localized marketing channels helped to promote company products and ensure company sales. Trust and reputation was also among often mentioned non-financial internal barriers, because companies were struggling to get reputation at early stage. Talent acquisition was another major development barrier as high-tech companies was looking for highly skilled talents to support company operations and grow. Secondly, networking and partnerships was one of the most often mentioned internal and entrepreneurial factors why company choose born global pathway. The reason behind was, that in high-tech sector partnerships and networks gives better change to survive at initial company stage as cost for developing product is very high. Lastly, recent global pandemic COVID-19 had effect on born-global high-tech companies, where hardware based companies had challenges on supply chain and delayed projects and IT service based companies suffered from social distancing causing mental health issues.



**Figure 13.** Factors and development barriers model of Born Global Companies made by Author

**Recommendations for companies.** To be able more clearly and realistically understand of what benefits early internationalization and foreign markets provides, is good to step back and critically evaluate internal and external factors and development barriers. Factors and motives helps better to understand skills, knowledge and resources company already have, while development internal and external barriers clarifying potential challenges company may have to overcome in the future. By entering to foreign markets both *factors and barriers* must be considered.

**Recommendations for future research.** This master project filled the gap in the literature and gives researchers better understanding of what forces high-tech companies facing in rapidly changing digital and innovation based economy. The empirical research focused on Lithuania based born global high-tech companies. Selected companies were narrowed by country and sector level, which makes study orientation more focused on specific research questions. However, further research are needed, because qualitative research of 6 samples not sufficient to represent full population. Secondly, future researchers should focus on mixed research method of qualitative and quantitative method to be able better understanding factors and development barriers of high-tech born global companies. Thirdly, future research could focus more on separate stages of development barriers born-global companies faces as they develop.

## Conclusions

1. Qualitative analysis was made to gain in dept understanding of the born global high-tech sector. From interviewed companies multiple factors and barriers were found, which affected born global high-tech Lithuanian based companies.
2. Extensive scientific research data, theoretical analysis, national and international data were used to gain better understanding research subject and formulating research design. Analyzed scientific literature helped to identify major born global factors and development barriers. Based on extensive literature, born global formation factors were splitted to three main categories: internal organizational level factors, external factors and entrepreneurial related factors. Each of these factors helped to form born global company. Internal and external development barriers such as informational, talent acquisition, cultural, COVID-19 pandemic and other barriers were found to have significant challenges to overcome for Born Global companies.
3. Qualitative research methodology helped to explore and analyze the effect of factors and development barriers on Lithuanian high-tech born global companies who already entered to multiple markets. Semi-structured interview was used to collect empirical data. Qualitative semi-structured interview method helped to adapt to specific company case and to get deeper insights. The qualitative research 9 open ended questions were send earlier before the interview. For qualitative research participated six Lithuanian based high-tech born global companies. Five interviews were conducted by ZOOM platform. Only one interview were conducted by phone. Received data were transcribed and coded by using MAXQDA qualitative research program.
4. Theoretical findings allowed to confirm empirical research findings of major factors and development barriers of born global high-tech companies. Based on qualitative data and received results from semi-structured interview major factors and development barriers revised model were created. Model consisted of internal, external and entrepreneurial related factors and external, internal development barriers companies was facing.
5. By using empirical research findings of born global factors and development barriers, recommendations were formulated for companies and further scientific research.

## List of references

1. Ambrusevič N. Sector of high technology in the Baltic states: Comparative analysis. 2010; (2002):311–20.
2. Cahen, Fernanda Ribeiro, Lahiri, Somnath, & Borini, Felipe Mendes. (2016). Managerial perceptions of barriers to internationalization: An examination of Brazil's new technology-based firms. *Journal of Business Research*, 69(6), 1973–1979.
3. Cannone, Giusy, & Ughetto, Elisa. (2014). Born globals: A cross-country survey on high-tech start-ups. *International Business Review*, 23(1), 272–283.
4. Cavusgil, ST, & Knight, G. (2015). The born global firm: An entrepreneurial and capabilities perspective on early and rapid internationalization.
5. Chang FYM, Jack R, Webster CM. Pre and post-entry resource needs for international entrepreneurs: The role of government and industry networks. *J Manag Organ [Internet]*. 2017 Mar 14 [cited 2021 May 13];23(2):186–205.
6. Ciuk S, Latusek D. Ethics in qualitative research. *Qual Methodol Organ Stud*. 2017;1(1994):195–213.
7. Coviello N, Munro H. (1997). Network relationships and the internationalisation process of small software firms. *Int Bus Rev*. Aug 1;6(4):361–86.
8. Coviello NE, Munro HJ. (1995). Growing the entrepreneurial firm. *Eur J Mark*. 1995;29(7):49–61.
9. Danik, Lidia, & Kowalik, Izabela. (2015). Success factors and development barriers perceived by the Polish born global companies. Empirical study results. *Journal for East European Management Studies*, 20(3), 360–390.
10. Dlugoborskyte, Vytaute, & Petraite, Monika. (2013). Systemic Factors for the Formation of a Born Global R&D Intensive Firm. *Socialiniai Mokslai*, 80(2).
11. Donthu, Naveen, & Gustafsson, Anders. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, 117, 284–289. <https://doi.org/10.1016/j.jbusres.2020.06.008>
12. Evers, Natasha. (2010). Factors influencing the internationalisation of new ventures in the Irish aquaculture industry: An exploratory study. *Journal of International Entrepreneurship*, 8(4), 392–416.
13. Firm resources and sustained competitive advantage. (2000). In: Baum JAC, Dobbin F, editors. *Economics Meets Sociology in Strategic Management [Internet]*. Emerald Group Publishing Limited; p. 203–27. (Advances in Strategic Management; vol. 17).
14. Gabrielsson, Mika, Sasi, Viveca, & Darling, John. (2004). Finance strategies of rapidly-growing Finnish SMEs: Born Internationals and Born Globals. *European Business Review*, 16(6), 590–604.
15. Hung, Richard Yu Yuan, Lien, Bella Ya-Hui, Yang, Baiyin, Wu, Chi-Min, & Kuo, Yu-Ming. (2011). Impact of TQM and organizational learning on innovation performance in the high-tech industry. *International Business Review*, 20(2), 213–225.
16. Johanson J, Vahlne J-E (1977). The Internationalization Process of the Firm—A Model of Knowledge Development and Increasing Foreign Market Commitments. *J Int Bus Stud*.; 8(1):23–32.
17. Johanson J, Vahlne. (1977). J-E. The internationalization process of the firm—a model of knowledge development and increasing foreignmarket commitments. *Available from: www.jstor.org*.

18. Knight GA, Cavusgil ST. Innovation, organizational capabilities, and the born-global firm. *J Int Bus Stud.* 2004;35(2):124–41.
19. Knight GA, Cavusgil ST. The born global firm: A challenge to traditional internationalization theory. *Adv Int Mark [Internet].* 1996;8(January 1996):11–26. Available from: <http://books.emeraldinsight.com/display.asp?K=9780762301645>
20. Leonard, Dorothy, & Sensiper, Sylvia. (1998). The Role of Tacit Knowledge in Group Innovation. *California Management Review*, 40(3), 112–132.
21. Leonidou, Leonidas C. (1995). Empirical Research on Export Barriers: Review, Assessment, and Synthesis. *Journal of International Marketing (East Lansing, Mich.)*, 3(1), 29–43.
22. Leonidou, Leonidas C. (2004). An Analysis of the Barriers Hindering Small Business Export Development. *Journal of Small Business Management*, 42(3), 279–302.
23. Liesch, Peter W, Welch, Lawrence S, & Buckley, Peter J. (2011). Risk and Uncertainty in Internationalisation and International Entrepreneurship Studies: Review and Conceptual Development. *Management International Review*, 51(6), 851–873.
24. Luostarinen, Reijo, & Gabrielsson, Mika. (2006). Globalization and marketing strategies of Born Globals in SMOPECs. *Thunderbird International Business Review*, 48(6), 773–801.
25. McDougall, P. P, & Oviatt, B. M. (2000). International Entrepreneurship: The Intersection of Two Research Paths. *Academy of Management Journal*, 43(5), 902–906.
26. McNaughton, Rod B. (2001). The export mode decision-making process in small knowledge-intensive firms. *Marketing Intelligence & Planning*, 19(1), 12–20.
27. Mohr, Jakki. (2002). Marketing of High-Technology Products and Innovations [Review of *Marketing of High-Technology Products and Innovations*]. *Journal of Product Innovation Management*, 19(6), 393. Wiley Subscription Services, Inc.
28. O'Cass, Aron, & Weerawardena, Jay. (2009). Examining the role of international entrepreneurship, innovation and international market performance in SME internationalisation. *European Journal of Marketing*, 43(11/12), 1325–1348.
29. Oviatt BM, Phillips Mcdougall P. TOWARDA THEORY OF INTERNATIONALNEW VENTURES GeorgiaInstituteof Technology [Internet]. [cited 2021 Jan 20]. Available from: [www.jstor.org](http://www.jstor.org)
30. Oviatt, Benjamin M, & McDougall, Patricia P. (2005). Defining International Entrepreneurship and Modeling the Speed of Internationalization. *Entrepreneurship Theory and Practice*, 29(5), 537–554.
31. Pinho, José Carlos, & Martins, Lurdes. (2010). Exporting barriers: Insights from Portuguese small- and medium-sized exporters and non-exporters. *Journal of International Entrepreneurship*, 8(3), 254–272.
32. Potter, C. W. (2001). A history of influenza. *Journal of Applied Microbiology*, 91(4), 572–579.
33. Qian, Gongming, Li, Lee, & Qian, Zhengming. (2018). Interactions Among Factors Driving and Inhibiting the Early Internationalization of Small, Young Technology Enterprises. *Management International Review*, 58(2), 251–280.
34. Rastrollo-Horrillo, María-Ángeles, & Martín-Armario, Julia. (2019). Organisational barriers to nascent born-global growth: Learning from the inside. *Journal of International Entrepreneurship*, 17(3), 454–473.
35. Rialp, Alex, Rialp, Josep, Urbano, David, & Vaillant, Yancy. (2005). The Born-Global Phenomenon: A Comparative Case Study Research. *Journal of International Entrepreneurship*, 3(2), 133–171.

36. Rostek, Katarzyna, & Skala, Agnieszka. (2014). Differentiating Criteria for High-Tech Companies. *Management and Production Engineering Review*, 5(4), 46–52.
37. Sahlgrenska akademien, Institute of Medicine, Göteborgs universitet, Gothenburg University, Sahlgrenska Academy, & Institutionen för medicin. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher*, 41(9), 1002–1006.
38. Shneor R, Flåten BT. Opportunities for Entrepreneurial Development and Growth through Online Communities, Collaboration, and Value Creating and Co-Creating Activities. In: *Entrepreneurial Challenges in the 21st Century: Creating Stakeholder Value Co-Creation* [Internet]. Palgrave Macmillan; 2016 [cited 2021 May 14]. p. 178–99.
39. Spence, Paul, & Liu, Gi-Zen. (2013). Engineering English and the high-tech industry: A case study of an English needs analysis of process integration engineers at a semiconductor manufacturing company in Taiwan. *English for Specific Purposes (New York, N.Y.)*, 32(2), 97–109.
40. Uner, M. Mithat, Kocak, Akin, Cavusgil, Erin, & Cavusgil, Salih Tamer. (2013). Do barriers to export vary for born globals and across stages of internationalization? An empirical inquiry in the emerging market of Turkey. *International Business Review*, 22(5), 800–813.
41. Vozikis, George S, & Mescon, Timothy S. (1985). Small Exporters and Stages of Development: An Empirical Study. *Entrepreneurship Theory and Practice*, 10(1), 49–64.
42. Westhead, Paul, Wright, Mike, & Ucbasaran, Deniz. (2001). The internationalization of new and small firms: A resource-based view. *Journal of Business Venturing*, 16(4), 333–358.

### **List of information sources**

1. Free Economic Zones in Lithuania | Invest Lithuania [Internet]. [cited 2021 Jan 7]. Available from: <https://investlithuania.com/investment-locations/fez/>.
2. Lithuania ' s business services report Table of contents. 2018.
3. Lithuanian ICT sector overview, Enterprise Lithuania (2020);2679.
4. Eurofound. Born global: The potential of job creation in new international businesses Click for contents Authors: Irene Mandl and Funda Celikel-Esser (with contributions from. 2012;84.



## **Annex 1. Results from the Empirical Research of Company 1**

**Q: What is the revenue of the company?**

A: 1-2 Million Euro

**Q: In how many countries company sells its products, services?**

A: Roughly we say around 20 countries, it means that with some markets are more active, some of them are less, but if you are taking a distribution of sales across the countries it's quite well distributed so it means, that we are not dependent on one particular market except maybe Lithuania is still one of the main markets where prices is less let's say 30-40%.

**Q: Could you agree that the company international revenue exceeded 25% of the total revenue in first 3 years?**

A: Yes, definitely it's more than this number.

**Q: The company started international activities in first three years?**

A: International activity before being established so because when it was a unit at „Elinta“ we had already some of the international clients in Sweden and Portugal in Italy.

**Q: Your personal role of your company?**

A: I am CEO / managing director and shareholder “Co-owner”, minor stake in the company.

**Q: What are the major factors by the company why company choose early internationalization and what motives determined this decision?**

A: So basically the market for our e-mobility products is in many of European countries is more matured as a market elsewhere than in Lithuania, but Lithuania let's say on average or slightly below average compared with Europe, so that's one of factor, another factor is the size of the local market so Lithuania is a small country doesn't matter what you are selling, but especially for the equipment we're selling it's just small country, small market so it's another factor and maybe just naturally participating in exhibitions or trying to do sales what the interest you got in early stage from abroad, that is again one of the factors what deliberate let's say thinking of possibilities that we should sell whatever we want, wherever there is demand for it, so from I do believe Company 1, before I joined them, they already doing exports with other products so naturally they thought about this product being suitable for exports as well.

**Q: What are internal, organizational level factors which pushed company to choose ,Born Global' pathway?**

A: So one of the things I already mentioned that Company A as a group was exporting already with other products, so it can be consider as internal factors of Company 1 also to do exports, but taking in consideration just Company 1 I would still stick with the factors I already mentioned, which are not inner factors, its more as a market pool or demand, size in other markets, but differently from other companies, who started with their own local market and then switched to exports, when you can look what inner factors are. In our case we were building company already on exports, so it means, that the majority of the team was invited to join company, which already doing exports. We are exporters from day one. If we looking further, we can say from very beginning we in mind we are exporters, so our sales team naturally became international sales team. We have one British guy, one French girl, American-Lithuanian, but rather consequence than a reason.

**Q: Does founder/manager's specific experience, personal networks, education influence company decision to internationalize early?**

A: I guess you can take in consideration of Company A as a foundation of Company 1 since we are not as usual start-up, co-founders, students or something else, it's more spin-off based build in Company A.

**Q: What was the entry methods, strategy company selected to enter in international markets?**

A: So if I got questions correct we can talk about sales channels or initial sales channels, one of them was exhibitions like international exhibitions I think partly EU governmental support or subsidies for international exhibitions was one of extra reasons to go there, so were was one or the factor „Versli Lietuva“ or „Enterprise Lithuania“ was supporting it as well the network Company 1 already had with other companies.

**Q: How company selected their markets? What factors determined this decision?**

A: In our case was I would say natural flow, it means we were selling in markets or customers who showed interest in us, but at the same time I should tell, that products had its limits or standards, which are suitable for some markets and not necessary suitable for other markets, so we as a company focusing more on EU markets, so our product is built for European markets, even so our product is suitable for other markets, we for example selling our products to Israel, but at this moment we are not selling to United States, which have different standards and yes we are moving towards there to this market, but we are not present at this moment yet. Another thing is that even within EU, where are still some different requirements and some markets are easier to come and sell and suit their standards and some of them have protectionist requirements and is harder to go there or It can be also cultural barriers or cultural distance. For example, French, Spanish markets are those which we find too difficult to come in, because of cultural preferences, therefore we hire French national manager and one more factor, that in particular market where is strong competitor, company which easier to go somewhere else or for a while at least.

**Q: Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: What we call external financing? From the moment of spinoff, where was an investment I previously mentioned, so yes we used external financing, which later it became internal financing, because they became a shareholder. Consider another financing it is bank loans and that's pretty much it. If we take international consultants or agents I would say rather no, than yes. We use very little help which is usually quite expensive for Lithuanian Start-up, so for us is better to work on ourselves and finding partners who helps us to sell, rather than consultants or experts in the markets.

**Q: What are the major barriers company faced during internationalization?**

A: As every young company meets, which are trust so if are unknown it must be certain customers who trust you and that has to do with your personal activities, which are sales team, how warm and responsive they are, that's one thing are I guess. At the same time is funding, is always the barrier for the growth, resources or know-how, but usually know-how comes while you are working and know-how is moving target so know-how today doesn't mean it will be useful tomorrow. Resources such as meaning not only funding, but having well experienced people or to be faster in R&D. Certifications which is very important in High-tech and I guess in food industry as well. So, its certifications requirements, which are among main ones. One more things is, that is not so hard to attract small companies as partners or small customers, but in very beginning is not helping to survive let's say and you always seek to get big customers, but big customers doesn't come right away, so you have to work for a while with small customers and maybe you don't earn enough, but at least for

reference and at least for experience for that particular market your customer is add and only then you can expect, that larger companies will look at you, they will ask what you are sold already, what is your experience in something and that something is your experience with previous or still current small companies, customers or partners.

**Q: Did company faced internal (informational, functional, marketing, distribution, logistics) challenges during internationalization?**

A: Always, where is always challenges and just where is no particular line, this is international and this is not international, we are by nature international, so every challenge more or less are international, but if we trying to focus only on international challenges, very often where are uncertainty or unknown facts, unknown requirements, so you can find them only when you meet them and in your local market you can be among who influence the standards, the decision makers, but in the distance markets your significance is much lower closer to zero, you are relying on your partners or google or exhibitions, whatever you can get an information, so these are the challenges, where you sometimes are developing certain products or certain certification of the products and only at some point you find out, that we needed to have this or what and we didn't know that, or we knew but it slightly different and even then standards are written, sometimes unwritten rules for example today I had discussion with our company CTO and we discussed about expansion to the United States and about standards there and appeared that even you written standards according to the requirements for the charger, where are unwritten rules, which are that installers not using four cables, but instead they are using two or three cables, even then four cables is not the standard, but that making a confusion, but you find it when you talking with partners elsewhere and where you are already in the final stage and you have to repeat whole cycle and the lesson you just learned.

**Q: What is the company future plans, goals, challenges company have?**

A: So the largest goal is to attract second round investment which we are working very actively, so we are working with one of the four big companies and we are working and try to attract Company 2, we try to attract venture funding or private funding. Another goal we trying to achieve with the funding is to become significant in the markets we already present so it basically growth and rapid growth, because in our industry you cannot stay small, because manufacturing is very competitive business and if you remain small it means you will disappear at some point, because of large players. So to go international it doesn't end up when you sold some products abroad in every step is big challenge, it's always big challenge to sell first product abroad, but the same challenge to sell hundred products abroad and then thousand products abroad in one order let say. So it's never end, so it's ok maybe you gain 0,001 % market share in Sweden let's say, but the challenge is to get 1 % of the market, then 10% of the market, so it's always difficult. In some exceptions in some cases if you very local or you very first, you got very good reference, but success comes after the work. So I would say our main goal is to become significant in the market and with the funding we expect to strengthen our presents where we are selling.

## **Annex 2. Results from the Empirical Research of Company 2**

**Q: In how many countries company provide its services?**

A: Company provide their services worldwide, company or buyer can buy company products from any country. However 90% of revenue we are getting from Western Europe, Scandinavia, United Kingdom and United States of America.

**Q: Your role in the company?**

A: Founder, as well as shareholder

**Q: What service company provides?**

A: Company provide IT engineering, product engineering services, we build IT products for people, (C5) is a consulting and product engineering service company, providing high-end bespoke software engineering solutions.

**Q: The first question is what are the major factors by the company why company choose early internationalization and one motives determined this decision?**

A: I would say personal connection, international study, perhaps passion for technology.

**Q: What are internal, organizational level factors which pushed company to choose ,Born Global‘ pathway?**

A: English language, international language, which was spoken inside the company was very important factor, then I would say wherever you work abroad or wherever you have customers abroad, you kind of go outside of the box, you can become better professional, seeking the knowledge, strive for continuous improvement of skills, what would be very important factor and wherever you go to multiple market you get extra stability also you diversify your business model, let say if something happens in one country, customers from that country not able to buy from you for one reason or another, where is another market you can access and continuous to work with. These factors create great stability, stability to your employees, interesting job, stable pay and you feel safe and happy. It is very important to your own success and satisfaction.

**Q: Does founder/manager’s specific experience, personal networks, education influence company decision to internationalize early?**

A: I went to study to Copenhagen, I was very interested to study abroad, so I had opportunity to study in Denmark, back in 2002-2003 they did opened this opportunity and I excited about it and this is why in 2003 I went back to Copenhagen to basically to decide what to study and what to do, so I was introduced to studies related with navigation, smartphones, technical services, which I really liked it and it was cutting edge technology and then I joined new concept of recruitment, it was open door day, open door day in Denmark allowed to visit any company you want, you can check out what they are doing and if you like you will apply for the job. This is what I have done, I joined one company in Copenhagen, this company had new ideas about smartphone location based services and this was exactly what I wanted to study and work. I got recommendations from my family connections and after getting the job in “human air” I spend whole summer by working there. In Autumn I came back to Lithuania, Kaunas to continuous my studies in Kaunas technology university, however they still wanted me on the job and I offered to work remotely and in what time to work remotely and to get pay it was necessary to establish some legal entity to be able to receive payments from abroad and what’s how individual activity company, called (C2) was born. The only fact company was born, that I was needed to come back to Lithuania and I did my job remotely and create that services and later on more services, where appeared more buyers. I needed to hire my flat mates, study mates and my

room mates to join me and work for me, because I was able to receive payments to my individual activity company and yes we started to provide remote development services and it started in from dormitory room to large international business, with offices in Switzerland, San Francisco, with shareholders in Norway, Oslo.

**Q: *What was the entry methods, strategy company selected to enter in international markets?***

A: Mostly how (C2) choose its customers is through perception and technology, as you guess by company name (C2) we are experts in telecom field and mobile technology, so where are international businesses such as London and yes joining these international locations and in that area of businesses, joining international trade fairs, be close to these businesses and technology excel to innovation, we was following these trends and of course we were attending events, such as smartphone shows, Expo London. We started to visit these international network platforms and this is how we made our majority of sales. What is also important, that (C2) is all about responsibility and trust, we delivered more than 440 projects now and all of our customers are happy, loyalty to the customer, dedication to the job of what you do and proving your sales by actual work that you are performing, that I show we are improving and building reputation to ourselves.

**Q: *How company selected their markets? What factors determined this decision?***

A: Recommendations and reputation is the cheapest and only good way how you can expand in one market or another so as I mentioned we started with United Kingdom back in 2003 and all large corporations had their exporters or large telecommunication offices in United Kingdom such as Motorola, e-mobile, many of them had exporters in that region and we just saw an opportunity and instantly moving ahead and this is why we attended to smartphone shows, so basically we addressed these companies. Or course in term of high tech and innovation it is needed everywhere and is easier to use some concentration points like London or Berlin and just get everything is one place. When you get your first client you need to keep the relationships going for the good services and as you know business starts to grow and then business is growing you have to do a good job, maybe some people who worked to the client they are moving to another company, they remember your reputation, remember the good job you have done for them and they come back again, but they are totally new clients. So you need to have reputation and of course marketing is helping, greater visibility is also helping, however in engineering, purely R&D and innovation you have to do the innovation, you have to invest in your knowledge, you have to grow constantly as a professional and a little bit visibility and best of luck in appearing in the right place and the right time.

**Q: *Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?***

A: It was straightforward way to do so called bootstrapping, where was no external investment to the company only the invoice from the customer, the only money you get and then you are providing high-tech engineering services, that have demand of its own then its much more easier to basically to fund yourself. So (C5) had not use any governmental investment at the beginning, later on when we needed an office, we have joined an incubator program of Kaunas Technology University and that was like first funding and great help, because its actually used structure of Lithuania government and European union, we got full discount for rental services for two years. It was very nice office in Kaunas technology university incubator. Later on back in 2012, we have chosen one of our customers, Norwegian company of technology to be our strategic investors and we have agreed, that we will sell some of our shares for that company, 75% to be correct, so our customer Norwegian company working long time with (C5) now, providing the best mobile recording solutions. We are grateful, that we sold some of our shares, we build good engineering team and bring company forward and use these money that we gained through selling our shares.

**Q: What are the major barriers company faced during internationalization?**

A: In the service industry, whatever you sell is your knowledge and your know-how, big barrier and obstacle of trust between you and your customers and this trust is actually multilayers, whatever you provide some services you are competing other service providers and some other service providers can be totally from different market for example India and whatever we joined with new service oriented company we automatically were compared to other proposals and basically is always difficult to convince and to prove the value that you are going to bring for your customers and to change the perception of how you being viewed at, in terms of Lithuania company coming from Eastern European which causing a lot of superstitions and opinions, maybe perform poorly, wrong experiences before and for example take a look at our company from Lithuania as cheap labor service company so we are in totally different scale, we are high-tech industry, very straight value-added services, so still looking at these stereotypes people look at you as cheap labor service providers on this horizon, so this is one of the most serious barrier Lithuania based company had to overcome back in 2003-2005. We just join European union and where was no knowledge about Lithuania, so to sell yourself, to sell to American people for example, who cannot even pronounce your name. So cultural barrier by going to another totally new market, stereotype barrier like proving your trust barrier making the most important one and of course in terms of scaling your business, how scalable your business is, wherever you travel internationally, you do international sales, however all your employees are national and if provide service from one country to have to go and do internal sales if you manage to sell your trust for example in Dubai with your own vision, then you bring that vision in Lithuania to basically country of production and to show that it is not a scam and you will make a good job, energize the delivering teams here and basically make a sale for second time. So, bringing back that culture and adapting it inside your organization that as well a big barrier that you need to overcome. This is why we have employees from 7 different countries inside our company.

**Q: Did company faced internal (informational, functional, marketing, distribution, logistics) challenges during internationalization?**

A: So basically, when you growing you need to maintain sustainable growth and structure and to choose the management model what fits all parts of your organization. For example (C2) has chosen the empowerment model, non-hierarchical flat organization. Where is another company like (C2) which used the similar business style and model, the company called Spotify, providing cross technology services R&D and innovation in technology, many technologies and innovations, what you need to do simultaneously if you want to be successful in the service businesses. This is why (C5) need to have 5G, we need to have good team for IOS, we need to have good team for Android and good team for AI (artificial intelligence) and many other technologies, which is combined in one big innovation. So, every single technology is like a little separate company, because every separate technology has their own team leader, who is making sure that we have best specialist in that particular technology. Whenever we building some product and every product have its own customers, we basically creating a spiritual team members from different platforms and then creating this drive of the knowledge, drive of customer one, drive of customer two, which have their own identity and they coexist together with platform vertical and platform horizontally we have tribes, so this company model, so called tribe model invented by Spotify, so that (C2) adding on top we want four basic things, people to be the best professionals, our engineers to be the best persons, having the great ambitions, money and that they would be happy. We adding the third level on top on tribe model, so called soft leadership, basically making sure, that every person in the platform improving his soft skills like communication, receiving criticism, giving criticism, providing constructive feedback, it's all very all very important for us and as much constructive we will be the more effectively we can communicate not only with our customers, but also with each other. Our teams have been joining together from many different platforms, whatever they join together, we want them immediately work as most effective team for the next 10 years. So, we add the third level on top on tribe, team platform for each technology, we have tribes for each customer and we have third layer

soft leadership on top. That was big challenge and barrier for (C2) to overcome for the long time, it wasn't clear who should report to whom, who is chief executive or who is project manager.

**Q: How long it took to develop the culture inside the company?**

A: Well the culture was created immediately, while I was living in dormitory, however the structure of the company is still forming. I would say it took us 10 years for building more understandable and relatable structure inside the company and is still not over, we still innovating, changing we adding something new, we creating platform teams, we creating new tribes, we soft skills so we move forward every day.

**Q: What is the company future plans, goals, challenges company have?**

A: So we need to grow more, we need to improve more, we need to get more professionals, we need to get more knowledge for example now see seek knowledge of building new products, we created new platform called business incubation of our own, so we was business incubators by ourselves 16 years ago and now see building our own business incubator with all technologies we needed and I believe we will have the most successful business incubator in the world. And of course in terms of service and culture we are going to acquire more international engineers to our company to our culture, we have found new friends, new people, new locations where our company get bigger, we now have people in Poland, Netherlands, Nigeria and what I what I want to do maybe someday to have offices in all these countries where we have our international employees to be able to provide more services, to expand even more. So, the challenge we have now is grow, because IT services demand is way bigger than supply and in order to get these IT engineers we need to train more, we need to grow more, we need to employ more, we need to provide more. Huge demand in IT services and especially new sectors as data science, artificial intelligence, machine learning algorithm, the fusion now is in this field and we need to supply this demand, basically somehow satisfy this global demand by growing your own knowledge, this is the big challenges we are taking right now, but we love challenges, challenges is what we have all the time. It's 17 years as we have these challenges.

### **Annex 3. Results from the Empirical Research of Company 3**

**Q: How long company exist in the market?**

A: So, the company as legal entity started at the end of 2015 and it was a spin-off of the larger group of companies actually, because in the very beginning the product was developed under the wing of the larger corporation and only ones we were ready to commercialize the product we created the spin-off company and established separate entity to do that. So company itself was founded in 2015 and we started selling next generation devices at the end of 2018.

**Q: What is the revenue of the company?**

A: 300-400 Euro, this year will be roughly about 1 million euro

**Q: In how many countries company sells its products, services?**

A: We already have our distribution partners in 14 countries, but we have end-customers in 40 countries. Our distribution network is mainly in Europe (Poland, France, Germany, Lithuania, Latvia, Estonia, Finland, partners in United Kingdom as well, Greece, Czech-Republic, Slovakia and more interesting Australia and New Zealand).

**Q: Does company started their international expansion during first 3 years?**

A: From the very beginning even when we created first versions of the devices back in 2013 actually, we are not as separate entity, we are just like small project, we were selling mostly to other European countries, so our export figures were always over 90% of the total incomes.

**Q: What us your role inside the company?**

A: Founder, inventor

**Q: The first question is what are the major factors by the company why company choose early internationalization and one motives determined this decision?**

A: Well the first and foremost is the size of the local market. We started to developing the product, where was not big enough market in Lithuania to make it economically feasible to sell only in Lithuania, from the very beginning we had the dream bigger and to go to different markets. Second reason was the need for product, technology itself, we developed bigger and greater than in other markets, that's very product specific reasons, because the bike culture and bike use are better established in western European countries than in Lithuania, so we always known that our target audience is going to be Western European, Sought European countries.

**Q: What are internal, organizational level factors which pushed company to choose born global pathway?**

A: Internally I could say it was a cultural thing starving for bigger horizons you know, we want to reach more distance markets and go Global as fast as possible. It was internal motivation and the culture of the employees. Myself I also studied in Denmark, in the very early beginnings of the (C3) product I was in Denmark studying Mechatronics, so I saw how big the market can be for the device like what, from the firsthand experience I knew that we are on something and we need to develop commercially viable product, so it was also based on experience. I think it also comes to the fact, that our engineers are capable of creating very high-end technologies, that are not limited with local markets, the technological aspect, the experience we had allowed to create wireless e-bike, that the world never seen before, then you create the product like that well you cannot to keep in one market only. So, the ambition and the need to expand is self-initiated, so you even not thinking to keep in one single market. Intangible assets are the ones, which allow us moving forward.



**Q: Does founder/manager's specific experience, personal networks, education influence company decision to internationalize early?**

A: Even before we had our product ready, before it was commercially sellable device, we were visiting quite a lot of bicycle shows here in Europe, in Germany, Euro bike. Even when we didn't have the product we attended to these shows and making connections, saying hello to everybody, trying to introduce to as many people as possible and started to build the network even before the product was ready. So in that way we build quite a lot of partners of the networks and when the product was really we just send all information to whom we knew.

**Q: What was the entry methods, strategy company selected to enter in international markets?**

A: The main vehicle from there we tried to introduce the new product in the world was crowdfunding. So both from the first version of device to the second version we launch Kickstarter campaigns, Kickstarter crowdfunding campaigns to introduce the product to international audiences, we also reach out to a lot of media channels, like different newspapers, websites who write about the technologies, different videos who create gadgets and we reach everybody we knew, all the editorial offices of those websites, newspapers, that we could get as many articles, videos, pictures and posts about our product as possible, without paying anybody to do that. We created special media packages, that includes texts, descriptions, stock videos of the device, pictures of the device in one single package and we send these packages to a lot of different journalist and employees of those world-famous websites like Unilab, TechCrunch all those big guys and some of them those articles and made videos about us, which drove our brand knowledge and recognition. We had a lot of f media outlets, interviews all local news stations here in Lithuania.

**Q: How company selected their markets? What factors determined this decision?**

A: Well we always try to reach lower hanging fruits, the markets that are closest to us and that have economical capability of purchasing these device, we taking about France, Germany, Italy, Spain those markets which are in European Union, so the paperwork is much easier and is quite easy to reach those customers in these countries using different social media channels, distribution networks and yes these are the markets we are targeting the most, the closest European markets which are physically closest to us. It's also really depends of the partners we find, if we find nice company that are working in their own local market, they have enough knowledge about electrical vehicles and electrical bikes, so we will give them a chance to distribute the device in their own country how it happened in Australia and New Zealand we just met some of the company owners in Tradeshows in Germany, we started talking and we got to know that these people are serious and they have serious business in that region, specifically in Australia, so we thought we should try to work together and they are selling those devices in Australia and New Zealand. So, it comes into two serious factors, how comfortable market is to us and the trust in the partners we have.

**Q: Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: We had two Kickstarter campaigns one in 2013 and another one in 2018 and it finished in 2019. We have angel investors in the very beginning our umbrella company invested. Also, we had two rounds of external financing, one was Polish venture capital fund which invested and just recently in 2019 we also had additional strategical investment from large Polish company, who produces and sells devices all over the Europe. So, we had quite a few approaches to attract investments and use this money. It is impossible to create hardware product, launch production of it and distribute in so many different markets without using external cash. We had also some governmental support as well,

but it was small amounts for financing some of the shows, finance some of the R&D procedures, but it was not significant, it's like small bonus compare to the amount necessary to the whole project.

Partners come in when we have to localize the product. For us is simple, we just change our charger plug, so they say what type plug they want, they also help with translations, they helped with social media content translations, they also manage their social media in their local markets, they also collect the information of what customers like or don't like about the product and they just give feedback about their own local customers. Hardware localization and localization of the marketing content what we use.

**Q: What are the major barriers company faced during internationalization?**

A: Because we developing and selling hardware products, customer support and warranty service is one of the biggest issues in foreign markets, how to arrange warranty service and good customer support. It is the highest priority what we should think about. Other less problematic issue where our partners helping to solve for us, is the content of the local market, some pictures what are used in our own market is not so usable in different markets in France for example. So, we have to adopt our communication, that's another barrier that we have to translate and adapt our communication material to that local market. Customer support and warranty service is 80 percent of barrier to entry, everything else is quite easy to solve.

**Q: Did company faced internal (informational, functional, marketing, distribution, logistics) challenges during internationalization?**

A: From internal perspective one of the largest issues is the allocation of funds from financial perspective. If we going to enter in the new market we never been to, we have to put a of trust to our partners, the distributors, the lack of personal knowledge about the market and how it works is quite a big barrier as well, we have to do a lot of research, but doing research online is nothing, compare to then you living in the market quite a while you know. We always communicate with partners of how they sell, how much they sell and when they sell. We are a lot of communication with each partner and yes if you let distributors to lose something and you are not asking too many questions of how is going, you are pretty sure he will start to sell in neighbor countries in the lower price, that could start price war between countries, so you really should keep your eye on that and hold them on leash let's say, the distributors.

*Q: Does partners, distributors have sufficient knowledge about the product when transferring the knowledge to the customer?*

A: Most partners, that are selling the device, I personally met them and showed them device, how it works and explain everything and we continuously provide information for our partners if they need it, but yes transfer of the knowledge from our company as creators and then to distributor and then to customer to transfer the knowledge of that chain is quite challenging, but we have quite a lot of manuals, sections, videos that helps to communicate the features and the benefits of the product, but yes from partners questions always arise, when they start to selling the product like that, especially since the product was never seen before, it's such a unique device. I personally meet them and show them all what they need to know.

**Q: What is the company future plans, goals, challenges company have?**

A: Right now, the biggest challenge is logistics and the supply chain, because of this pandemic situation everything is out of balance and it's really hard to produce the device and ship them from warehouse, that is challenge and our biggest mission is to stabilize supply of the goods, but in general more expansion, more customers which is the goal of every company. Now our goal is not so much to expand in new markets, but more saturate the markets we already in, but even ought we have quite a lot of partners in many countries, where is still not many people, that are actually are using our

products, so we are just going deeper to these markets and saturating them, so you can see bicycles riding on the streets around more often.

#### **Annex 4. Results from the Empirical Research of Company 4**

**Q: How long company exists in the market?**

A: We started selling products in 2014.

**Q: *In how many countries company sells its products, services?***

A: Throughout the history 40-42 countries and last year was 32 countries in the course of 1 year from now

**Q: What is percentage of foreign sales in your company?**

A: We export more than 99% of our products

**Q: What products, services company deliver to the market?**

A: Mostly laser is for material research and they are not only applicable to scientific labs, but also medical labs, pharmaceutical labs or some industrial labs as well.

**Q: What us your role inside the company?**

A: CEO

**Q: What are the major factors by the company why company choose early internationalization and what motives determined this decision?**

A: The fact is that in Lithuania we have quite a lot of laser engineers and laser specialist, but almost none or few application engineers, laser application labs, biologist who are able to use lasers directly. We sell mostly to integrators, which are basically device manufacturers, for example microscope producers or some analytical device producers in 2012 when we started, where was simply none customers, no OEM customers, who could buy quantities of our lasers, just single scientist in the universities, so we understood where is no market in Lithuania and we should put all our efforts in to the export.

**Q: Does you have specific competitive advantage by choosing early internationalization?**

From very beginning we designed our lasers to be extremely compact and since 2014, when we sold our first lasers, they are still remaining as world smallest lasers for that category, so following the size factor of the laser, it comes cost advantage, because you use less materials, you no need so much space for storing or shipping or servicing the laser, so it is all about the saving everything what is related, but another side is that you should invest a lot in your instruments, manufacturing capabilities and technology, which allows you to miniaturize the product and where was no such a equipment in the market, so we needed to develop by ourselves.

**Q: What are internal, organizational level factors which pushed company to choose ,Born Global' pathway?**

A: Yeah, maybe the expansion of it, would be, that we had investors and we discussed with investors from very beginning and of course investors are not interested in the local business, they are interested in the global business.

**Q: Does founder/manager's specific experience, personal networks, education influence company decision to internationalize early?**

A: First of all, it was not so fast to commercialize the products, from the very beginning we put a lot of efforts to our website, because we wanted to show, that we are can communicate quite well

technical staff related to our product and another thing is about that we found in 2013 or 2014 an sales agent in the Western Europe, who helped us to build the distributor network, so it was single guy who had list of contacts or he knew how to approach people in this market and he found us first five distributors and we paid him royalties for the next several years, related to the sales in these countries, so he was motivated to find good partners and he got part of the turnover. So basically it was not our contacts, which we have, well I have contacts in Japan and we still work with these distributors in Japan, which came with my contacts, but part of it we made everything from scratch, but we hired the person who introduce us to distributors, but it not necessary should be an agent, you can find the distributors yourself, but sometimes it helps.

**Q: What was the entry methods, strategy comoany selected to enter in international markets?**

A: In fact, we didn't knew markets so well and we were technology push oriented company, so we were just disclosing what we can do, what are our technical capabilities and we generated a lot of product variations to do simply market scan and to see which products attracting more interest and with time we started to figure out, that majority of instrument producers are located in Germany and United States, China, Sought Korea and Japan and maybe some additional companies in France and United Kingdom, Italy and others, but today for example Germany generate 44% of our revenue, which makes obvious this market is very important, we figure out in the course of 5 years, that Germany is the winner.

**Q: Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: From the very beginning we understood, that we have two ways of financing it as we didn't have our own savings, so we went to venture capital and we raised money from business angel and the fund which invests in business angel and another part was R&D project money from European Union. The European and state funding is covering about the 70% of R&D expenses, which is quite a lot and not only R&D and to some extend manufacturing expansion, when it comes to digitalization, modern equipment, maybe its not 70%, more its 40% then it comes to production, but R&D is 70%.

**Q: Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: It's mainly distributors, because knew the market, they knew which product modifications are needed and we as a young company must focus on product development and we didn't have time to build extensive sales networks or establish subsidiaries or to hire a lot of local sales people and we didn't know which market is effective in which territory, so we just signed the contracts with distributors and trusted, that they have the right people, the right marketing strategies and the right customer database.

**Q: Did you have the situation where distributors gained extra leverage, power in long-term, that you could not live without them and they dictate the rules?**

A: In our market it's not big issue, because typically all distributors disclose the end-user, so basically we have data of our end-users and if we would like to change or switch something, establish our own subsidiary in certain markets we immediately could have the names and companies with whom we worked with, because in our market the system integrator who buys laser, they typically buy for 5-10 years and so it's not easy to replace the existing supplier, so basically the end-users are those integrators, they will not be allowed to be left without the component, if we for example would break-up with distributors, the integrators would definitely contact us and ask immediately direct supplier of the laser, we didn't have such a fears. Another market is university sales, where of course the scientist, when they buy the laser once in 1-2 years, they typically are not so loyal and not so tight to

the laser manufacturer, so basically they can choose one laser in one time and after 3 years they can choose another laser from another manufacturer. So yes perhaps we would lose those occasional sales to scientific customers, but recently scientific customers they are making just about 30% of our revenue.

**Q: What are the major barriers company faced during internationalization?**

A: I think the most barriers were internal, like technological barriers or at least in many years we didn't felt safe to expand more rapidly, because we were always in doubt of our product reliability and reliability is related to a lot of decisions, a lot of technical factors, which we solving one by one over many years, even now company is 10 years old, we can see that we can produce and we are profitable with these products, but still then we are going to very big customers, we a little bit shy, because if we currently supplying batches of up to 100 products for one customer, then going to the customer who buys thousands of products is totally another level and the product, manufacturing principles have not been tested for such a high quantities and you can always expect, there will be multiple technical problems, which can come up, when you started to manufacturing in such a high quantities. This is why the barrier is technological and inside the company. There are another smaller barriers like, when you go to exhibitions in United States, Germany as a new company you will not get a good position in exhibition, you will get something in the very far corner and perhaps half of our exhibition visitors even will not come there to see you, so such a positioning will be another barrier and maybe how we calculate the investment, that we were most focusing on what we need on product development and manufacturing and we didn't raised so much money for sales and expansion to the markets, so this is why we didn't do so much active promotions or actions by ourselves and we trusted our distributors to do that, but it's not necessary bad thing, it's good thing as well if you start to spend money or marketing and advertisement you can lose so much money and only then learn what is effective and that is not.

**Q: Does pandemic COVID-19 situation affected your company processes, supply chain or it wasn't a case?**

A: I think it wasn't the issue, where was the minor issues of certain components, perhaps I could say, that our growth last year was mainly from existing customers and new perspective customers they just postpone their product development and they didn't implemented that in total we didn't felt so much, because our manufacturing were growing 32%, so we didn't felt, that we are missing something, or we don't have anything to do or we are unloaded. We never asked people to go on vacation and always had production going.

**Q: Did company faced internal (informational, functional, marketing, distribution, logistics) challenges during internationalization?**

A: From external barriers perspective I don't think he had any serious barriers as difficulties with certification or allowance barriers, mainly how effective is your marketing, what is your reach of new customers and what is your reputation, because with your reputation you can go to bigger and bigger customers, so initially you are serving only scientific customers, when you start to get first integrators and then you go up with size of integrators, so basically reputation is always important, it's hard to call them barriers, when you start it's of course a barrier, but when you work through it always question of your reputation.

**Q: While you had quite a lot of patents for your products, does timeframe you had for acquiring the patent and commercialize was sufficient from financing standpoint?**

A: Patent was thing to do, well I know patents quite a lot, because I am "patent attorney" as well, but when you start the company you want to secure your ideas from the very beginning, but later when you start commercializing, it's not necessary you commercialize those things which you patented and

market will show you new opportunities and maybe it is not very reasonable to be so attached to patented technologies, rather to skipping some market opportunities. We didn't emphasize so much the patent what we had and basically some of them we just let go and didn't even validate in all the countries we intended and some of them which we still think is valuable, we see perspective to develop these products and commercializing we still maintain these patents. So basically, from the products we produce, these are not cover by patents. Only small product substrates, small sensors which are patented and patents are valid, but it is not major product to us.

A short story, that we failed patent of the product, which are quite complicated and launched such a complicated product in the early stage of the company is suicidal. We need to learn how to produce, how to establish the organization, manage the information and only then we can start with more expensive, higher level products. It just happened, that of whose 8 years where we developed the organization, collecting customers, distributors, gaining some reputation and we didn't spoil this reputation by immediately launching a complicated product and then not knowing how to service or not giving any proper feedback, proper support to the customer.

One more internal barriers which is motivation system and culture, which you build inside your company, where is risk that motivation strategy itself becomes barrier for expansion. We had such a situation when internal sales team, one or two sales engineers and we did let's say motivation strategy which was encouraging them to sabotage distributor activities. We set motivational strategy that our sales people get let say 5% through distributor and 10% if they do direct sale. This eventually turn into a battle between sales engineers and distributors and they always say "why we pay so much commission to them and they want to sell directly", but it wasn't good strategy to sell directly, it was opposite is better to release sales engineers and work only with distributors. Currently our company generating about 2 million euros in turnover and it is distributor only strategy, which works for us. In the future, when we reach 5-10 million euro turnover, we will start to thinking more intensive about direct sales, active sale or even subsidiary.

**Q: Did you face challenges from customer support and warranty perspective?**

A: From time to time we had challenges in terms of product quality and technical support and basically it was, that we were going to more and more sophisticated configurations of the product and each of those configurations were raising for the requirements of the platform of the products, so every time we offered more sophisticated configurations we saw, that our platform not robust enough to sustain this configuration and in several years we 4 times changed manufacturing principles and manufacturing technology we were iterating with manufacturing technology in house and managed to produce more sophisticated products. During that time our technical support and after warranty support was very important and in fact we didn't lose any big customers, it tells what technical problems is not something exceptional and everybody have technical problems, but the thing is how you solve it, how fast you solve it and how reliably to solve it and promise that the next product iteration will be reliable and "It will be".

**Q: What is the company future plans, goals, challenges company have?**

A: At least to me it looks like is getting much more effective over time and our team stopped growing in head count, but we are still maintaining about 30% grow of income so this is our main goal, mission is to not necessary grow by head count, but rather in turnover and maybe another goal of the company is further promote standardization of lasers and application of such sales channels like e-commerce, maybe it sounds stupid, but in our industry e-commerce not popular at all and nobody offering the lasers from stock or from e-commerce, because those configurations are really discussible and customers and supplier always discussing what he needs and it's very difficult to standardized the product. So, what we are doing, maybe you checked our website, we have more than two hundred configurations, which is standardized. In fact, standardized thing is manufacturing workflow, with this manufacturing workflow we can produce many different configurations and basically, we are

going to the path, that we allow our customers to choose, make configuration online, order the product and have predictable lead time for such product. As you understood is not that easy as with other regular e-commerce, but I believe the company which make it happen will have a lot of advantages in the market. All configuration things increasing cost a lot, if you take simple laser pointer it cost maybe 10 euros, then you take our product which has extra components cost 1000 euro and goes till 10.000 euros, it's not components what it raises the price of the product, but the fast that you should meet with customer requirements so much in terms of specifications and all this process of configurate the laser it takes so much time and efforts, that why it is becoming so much expensive. So our goal is to standardize everything, use e-commerce and we already launch e-commerce and we have first sale, but we must do a lot of work to promote it, to make it as marketing tool, that laser is not what scary and not that sophisticated to choose.



## **Annex 5. Results from the Empirical Research of Company 5**

### **Q: How long company in the market?**

A: The main growth of the company is in the last 5 years, we launched the product, which had totally different from packaging and positioning, we went to data catering market and positioning in 2014 approximately with our company brand.

### **Q: What products, services your company provides?**

A: The main product is external data gathering, external data gathering for competitive intelligence, marketing intelligence, pricing intelligence or product enhancements companies are collecting data such as e-commerce sites collecting pricing data, comparing pricing offers, travelling, ticketing prices to compare, ticketing fairs. So our main product, which we have currently and leading the market is proxies, so proxies servers and proxy IP addresses are necessary to scrape and gather data from external sources. Why? Because simply the fact, that most realistic information you have a lot of dynamic operations in the market geolocations, content, different targeting and everything that company are using, so collecting necessary information you need IP from all over around the world and then different IP sources are necessary, just also to collect different data from mobile devices, everything what represent the right content. So yes proxies, but we moving slowly with mission and vision into overall data gathering services, so we launch our own crawlers, tools for the everything customer finally to get the necessary data not going to all shenanigans of the development, their own resources and scrips.

### **Q: In how many countries company provides its services?**

A: It's worldwide, our number one reach is United States, next would be United Kingdom, Germany, but the next most important market could be China.

### ***Q: Does the company start to internationalize early?***

A: From the day one company start to think globally. Initial first client was Germany based and then we scaled up everything globally, specifically we don't have any localization policies, only now being developed content for China, Russian markets, Spanish speaking markets.

### ***Q: Your personal position in the company?***

A: Product director responsible for business unit developing e-commerce and self-services solutions, so basically my goal with product I have full around teams, marketing, sales, development, support, so basically we developing the product line, that have self-service experience, basically on that we targeting smaller customer base, because to penetrate the market, we understood that we cannot only focus on big corporate enterprise customers, which we already have from Fortune 500 companies, we need to expand total addressable market, lower our expectation on company size and to go on small individual company size level.

### ***Q: The first question is what are the major factors by the company why comoany choose early internationalization and one motives determined this decision?***

A: We are online based technically complex product service, what solves problems, so we focus on the problem. So we are looking for company for whom to solve the problem, so we don't care from where they are coming from, we care about how we targeting our marketing channels around some specific keywords, we are looking to target our target audience, so we start all our journey by defining who is our target audience, what their use case, what the problem they have and we develop the service around. And the factor of localization like global thing is totally like 60 line down portfolio,

so we never face this question, we have decision makers who have this problem and we solve this problem, that is the logic.

**Q: What is your competitive advantage compare with competition in your industry?**

A: As we provide firstly from our core services, which are proxy pool, which have largest and most advance pool, let not be cocky about the competition, but one of the most advance between biggest ones, so we have one competitor who by size could be compare with us. This is one of our unique benefits, but at the same time we keep everything around our customer experience, so at first we value our product, but the product cannot be used by the full capacity if we would not support from account management, support, so we invest a lot in this experience, helping our customers to grow as a business, that allowing us to grow together, so yes we are focusing on these two areas. Third, we hire R&D investing in researching, so in any revenue streams any profitability we invest back in R&D, just to find new ways, new solutions. So this helps us to be totally in front of the market with our solutions, 2-3 years ahead.

**Q: Does founder/manager's specific experience, personal networks, education influence company decision to internationalize early?**

A: Founder impacted this a lot, let say he was working with specific services before in the specific packaging which we have now, but basically do by his connections simply building other products and everything, some requests started to come in regards of cybersecurity and VPN market, so some request came, that they need not VPN, but they need IP addresses, so we understood, that we can deliver those IP addresses and there we are now after 5 years. Basically founder in pivotal moment, he was in very important moment, because in first 100 time, he was in every sales call, in every negotiation in the majority first clients here, so he was involved heavily.

**Q: What was the entry methods, strategy company selected to enter in international markets?**

A: So basically, we are looking to total addressable markets in regard of our company profiles, for example we filter the company distinctive features, what are looking at company size, the business they have, technical team, we find a decision maker and we make an assumption that they gathering external data, so based on the size of the market we could have we prioritize these markets. We always focused on US and then step by step we are looking for other markets to use this specific target.

**Q: Does company decided to use their own finances for internationalization or it used external financial tools?**

A: Totally bootstrapped, bootstrapped means we are growing totally from our own revenue, so we never had any external investments for growth.

**Q: Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: For marketing purposes, case by case we are using consulting or some specific agency area related to some specific consulting or services or from marketing perspective agencies, but it is more related to legal set-ups, if we need resources we hire consultants and more legal structures, but we do a lot of locally, who is specializing in specific regions and consults us, so I think that would be a priorities and now we are working on building partnership networks, like reseller cases, so just now we started negotiated with few of them of how we can trust and delegate all selling process to someone else, because we cannot scale at the capacity what we want to grow pace, but just now we started to do this process.

**Q: What are the major barriers company faced during internationalization?**

A: External barriers is more about localization question, like getting to know the legal situation, positioning, culture it was always be like this, we were quite familiar with European Western world, Eastern world is new for us in regards of digital channels, communication channels, cultural things, so hardest part was and is to understand the China, for the business our main language is English, we never faced such a issue, because of language barriers, but with China case everything freeze there. From internal part is the talent who support us in regards to go where we want. During current Covid-19 situation we are remote, but at the end of the day remote at Lithuania, so 100% of our employees are Lithuania based, we have international team members, but they are Lithuanian based and living in Lithuania. So the hardest internal part now is talent acquisition, because we cannot control three parts in our life: time, resources and result and we not shy to expect very ambitious results within limited time, so we need resources and we in great position regards revenue, but at the same time people is the resource that are really hard to scale, to find a talent, so it takes time.

**Q: By looking from coordination perspective what challenges company face between departments?**

A: Company architecture and development side is also the game of how to stay lean, agile to not overcomplicate staff and bureaucracy, so to having both mixture of flat organization and having clear communication channels I think it's challenging all the time for us, from last three years we grew from 50 to 300 people now, so just by keeping everyone on the same page, same goals is quite tricky. Internal communication, organizational structure, operation, that the most tricky part, where we don't have all the answers and now we are looking for the talents who can assist us.

**Q: We can call that the company is knowledge-based?**

A: We only have our laptops and our heads, all the infrastructure is cloud, we don't own any infrastructure there, everything we are renting, we work with servers sites, proxy sites. We renting everything and everything is digitalized.

**Q: Does pandemic situation affected your company?**

A: Yes for sure, I think the most tricky one, is to have clear position of where we work, or the work remote or from home, so as we don't have control over it, government decides whether we remote or not, so theoretically our positioning doesn't change about keeping this organization or offices and everything. Personally I don't believe in fully remote companies, especially when we are globalized, we don't have international colleagues, everything is here in Lithuania in Vilnius, it doesn't sense when you have 10 minutes to go to office commute time, so yes stay at your position and choose the model which fits your organization, employees, motivate them, that is the tricky part and I don't believe, that for upcoming year we will have an answer, it will take experiments we decided, that we will do lets call IP tests, after half year we decide we want this or not and after we again evaluating this decision, because a lot of things is changing. Some of the biggest tech companies stated, that we are fully remote now, but something they released new note, that you have to be within one hour of commute, it means if somebody calls you, you should be within one hour in the office. A lot of companies stated its value, but actually it is so much restrictive, so we want to put our position where we are not putting ourselves in such a wild way, but its taking time to develop. Second of course is communication, keeping social connection and everything, it's the hardest part for myself, simply what I see people become depressive of this no social connection.

**Q: What about knowledge transfer to outside partners, resellers? Does company satisfied of the results outside partners delivering?**

A: Yes it's totally the case, we are complex market this is not the tool that is easily understandable, like notion or new software, regular marketing and sales technologies, we are in data information

market, so basically to transfer this complexity in core understanding is very hard task, because what we have at the same time our customers uses our own resources to gathering data, so we have a lot of know-how, how everything works, why this is successful and why this is not and for the companies internally to develop this information is very hard core on the other hand we have world class know-how information here, then we packaging this in products and we do our best to transfer this to the customers. So basically transferring complex information, that part is tricky as well and we don't see any good results yet, because the product is very complex to educate others.

Basically we need resources, that supports these activities which we don't have yet and these resources are human power, so if you want to do good things you need people to do them. Our mindset is better to do it now but poorly, than later but good. That whole logic behind. Sometimes we make like experiment and we see if we can make traction and we invest in more people who taking over and scaling through the operations.

**Q: What is the company future plans, goals, challenges company have?**

A: As I said in the beginning, our goal is to help companies get most precise data on large scale, so overall, so what we do a lot now, we working with machine learning, artificial intelligence, train and develop technologies who can train and support them, so all our mission is to make this complex market as simply as possible with our own solutions, this is our whole 5-year plan. So we started with only having resources, we give them resources to gather the data and where we move we give them data.

***Q: So basically you are planning to not creating new product line, but instead to strengthening the current products?***

A: It's a mix of both, strengthening the core, but sometimes we find we solutions and eager spend on different brands, so we not necessary focus on one revenue stream, but maybe we can focus on another revenue stream and see what happens.

## **Annex 6. Results from the empirical research of Company 6**

**Q: In how many countries company sells its products, services?**

A: In Europe, Germany, United Kingdom, United States, Hong Kong, China, Netherlands.

**Q: Does company started their international expansion during first 3 years?**

A: Yes, definitely, from beginning we started to providing services and creating products only for foreign markets, it was medical devices, for Lithuania it was not interesting to anybody, so we also started sales natively, but in first 3 years we used only export.

Q: How many employees inside the company?

A: 20

**Q: The first question is what are the major factors by the company why company choose early internationalization and one motives determined this decision?**

A: Vision was to creating company, which provide services for medical device development, medical device robotic technology. Computer vision was mine personal experience and together with my partner we established company. It was also opportunity to work in Germany or to work in Lithuania by using relationship and using experience try to work on my own, so the vision was start my own company, but already some circumstances such a services due to the price was only important for Western Europe countries, not in Lithuania. In that moment, when we created company was crises in Lithuania and it was no demand for such a service. Later after 3 years we decided to create our own products in material handling industry, again industry for such a products was in richer countries, currently Lithuania already, attitude to robotization is already different and 10 years ago many industries companies was afraid to try to be fast, to be innovative in robotics, automation, not only automation as industrial robots, but logistically like mobile robots it was quite new at that time and in Lithuania was no market actually, today situation is already changing digital innovation, were created Lithuanian robotics association to promote these opportunities for industries, but yes it's started from foreign markets, richer countries than Lithuania, demand was different and not such a hesitation to invest in some unknown, less mature technologies.

**Q: What are internal, organizational level factors which pushed company to choose born global pathway?**

A: I told already most of the factors, founder experiences abroad and creating similar products in medical field, actually founders defined the direction.

**Q: What was the entry methods, strategy company selected to enter in international markets?**

A: It is business to business market, such a demanding industries as medical device manufacturers we highly developing reputation with suppliers, so persuade to work with you, you naturally need personal meetings, good understanding and knowledge of what you are going to present, capabilities. So we started from the networks we already had, then also we used exhibitions, LinkedIn to meet new people. Participating in associations not only in Lithuania, but as well members of European robotics association, medical fields. This is network opportunities and we use less email, phones calls like other businesses, where we no need quantity, but we need right contacts.

**Q: Basically main exports markets are European markets?**

A: We also used opportunities of "Versli Lietuva" of financing and getting exacts salesmen in US, also participating in exhibition together in though them we made contacts in US market. We use different approaches, different opportunities provided in Lithuania, like "Versli Lietuva", entire

export import capabilities to participate. As well buyer like German market, contracts which helped us to work in this market, publishing in magazines of robotics devices, so promote our products, our services. This is our approaches, and yes, we had partner and distributor in China, partner in Hong Kong, different suppliers in India, but yes European market is currently most known for us, easier to travel. Hong Kong and China is very different mentality and we have different approaches to understand and communicate with each other. Also, we had attempt to work with Japanese market, but we didn't achieve results and process there. Japan is also very closed people and getting their acceptance or trust you need to work, but already we are talking with very serious people there and maybe we will start to work there, but yes European market is main one (Germany, Denmark, Scandinavia countries) we are talking about it.

**Q: So direct selling was less used compare with by selling through distributors and contractors?**

A: For services, for big solutions only direct sales, but for products like our product "Viper" we have distributors in United Kingdom, China, Spain who distributing our products already, but this is on bigger scale. For services and solutions which requires longer time to implement, then it is direct contacts and presentation. To get more trust you need more time and to right people you have to talk.

**Q: How company selected their markets? What factors determined this decision?**

A: Mixed tools actually, our own earned money, then European funds and other opportunities, government investments programs, external investors like risk capital. Many financial tools combined.

**Q: Does company decided to use their own finances for internationalization or it used external financial tools? Does international networks, partners were included into internationalization process? If yes, what role they had?**

A: When you start, the major barrier is finances and money, in Lithuania also risk capital investment companies was not very well developed at the beginning and maybe like "BaltiCap", "LitCapital" was investing in more mature companies, just to develop them farther, but not us "small companies", so access to the financing was limited and external risk capital funds like in Silicon Valley or others also was hard to persuade for products from Lithuania. Today Lithuania is better known in context of Europe and United States, but when we started it was very wrong name, we consider an opportunity to establish company in Denmark to get better visibility and presentation. So you don't have any name, any history to show your tract records of what you achieved, so it's very hard to persuade bigger companies, that you offer some value, so it is again some big restriction. Today, current problem is to find skilled resources meaning human capital, it was already IT specialists, robotics, computer vision was scared resources in Lithuania, but right now situation is quite bad, so again we looking where to outsource. We have contacts with companies in Ukraine, in Belarus, but there is the problem.

**Q: Does pandemic situation affected company performance?**

A: Yes, delayed of the projects, we cannot always of working remotely as for example we need to develop solutions for logistics, where we need to make automatization, we need to travel to see facilities and due to these restrictions we had delays for all these travels, so project which had to start last year in May, currently we just started here in Lithuania, we hope it opens for travels with new vaccination passports so we will able to implement this project, which had to be implemented one year ago. So not contracts were interrupted, but delays and delays of revenue. Supply also were interrupted and it is hard to know of what you need, let's say its not reliable currently, some delays are expected. So we organize our work remotely form home and some impact definitely was, but not major issue.

**Q: What external (governmental. Legal) barriers company faced when entering to new markets?**

A: No, not much. We worked with some interesting countries like Iran or Russia, but even with China they have different standards to certificate your products, like in United States for medical devices is FDA, but its normal.

**Q: Did company faced informational barriers (know-how)?**

A: Yes, You need to understand how to behave in every country, mentalities is different even in European countries, yes for example to work with Germany we participate in training of how to sell and how to make partnerships in Germany, we used different training programs and then trying and getting feedback and experience. We got more information from Hong Kong and China, quite different behavior and sometimes it's hard to understand each other, you have different opinions and different views. Here is different, here we are moving with our own experience. Yes, also we try to use some experienced people from these countries, who helps to arrange sales or just giving some advices, in different countries we try to find some advisors for us, in Japan, in Holland native people who understands, who introduce us which is more fast and less mistakes we are making by ourselves.

**Q: Does company faced internal managerial issues for executing projects?**

A: To deliver projects and projects management we didn't have much troubles. Project management and founders including me, we had quite huge experience, I introduced project management and system creation processes to the companies in Germany, before in Lithuania and other countries according to the standards, so understanding processes, standards, software development and project management, experience was and we created quite robust processes which complied with some specific medical device development standards. Project management wasn't the problem, maybe problem was of how to manage and understand innovation, in what ideas to invest, how to evaluate ideas as we hadn't much experience in business innovation. If project is clear, scope and goals are clear, that we can define scope and execute the project, so as I said we were strong from the beginning, when we established company we were not young guys without experience, we has good knowledge about the field, but how to control innovation, we made mistakes by investing in some technologies and products, which was very fascinating for us, but were not interesting for customers, we wasted some money. When here robotics company in Denmark helped us to define this innovation process, how to evaluate, how to access risk, opportunities and value in different ideas and how to select from many ideas of where to go by much more structured approach. So this point was very new processes for us.

**Q: What is the company future plans, goals, challenges company have?**

A: I don't want currently to mention the company, but currently we have opportunity to work with big player in logistics, they are interested in automation processes with mobile robots and with this opportunity we want to expand our business significantly with our networks in logistics and for this we want to raise next round of investment, now we making preparation, finalizing product and then for scaling we need money and if we will succeed it will be big movement for grow of the company. This is definitely will be worldwide already and instead of going to one client and another, we will have big player which have networks around the world and then we can scale our business also.