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Entrepreneurial journey of technology startups and effects of entrepreneurial ecosystem on
this journey

Master Thesis

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I have written this Master Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

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Abstract

The objective of this study is to find out the main features of entrepreneurs in their technology startups journey and the effect of the entrepreneurial ecosystem on this journey in Estonia. For that purpose, interviews were conducted with seven different co-founders/founders of technology startups that are based in Estonia. By analyzing the responses it came up that how technology startups are important to society. The key findings are that the main feature for entrepreneurs in their journey of a technology startup is having social skills mainly communication and understanding the problem. In addition, universities and startup environments have a big effect on the entrepreneurial journey and they are the main elements in the entrepreneurial ecosystem.

Keywords: entrepreneurs; entrepreneurship; entrepreneurial ecosystem; technology startups; journey

Abstraktne

Selle uuringu eesmärgiks on välja selgitada ettevõtjate peamised iseärasused nende tehnoloogia-idufirmade teekonnal ning ettevõtluse ökosüsteemi mõju sellele teekonnale Eestis. Selleks viidi läbi intervjuud seitsme erineva Eestis asuva tehnoloogia-idufirma kaasasutaja/asutajaga. Vastuseid analüüsid selgus, et tehnoloogia idufirmad on ühiskonnale olulised. Peamised järeldused on, et ettevõtjate jaoks on nende tehnoloogiaalgatuse teekonnal põhiomadused sotsiaalsed, peamiselt suhtlemisoskused ja probleemi mõistmine. Lisaks on ülikoolidel ja startup-keskkondadel suur mõju ettevõtluse teekonnale ning need on ettevõtluse ökosüsteemi peamised elemendid.

Märksõnad: edukad ettevõtjad; ettevõtlikkus; ettevõtluse ökosüsteem; tehnoloogia idufirmad; teekond

Introduction

Year by year, the number of startups is increasing worldwide. This tendency is also applicable to Estonia. Now Estonia is home to more than 1300 startups and ten unicorns (according to the date of April 2022). Also, tech startups are more popular than other startups (*Startup Estonia*, n.d.).

On the other hand, entrepreneurs play a vital role in society as they are the founder of some startups. Entrepreneurs are people who want to develop a product or service for which they believe there is a demand.

It is an important topic as technology-based startups are a significant driver of the economic growth of countries as well as tech startups give potential to local and foreign people by offering new jobs and by providing new services or products. It is good to mention that bringing a brand new product or service to market is difficult as it requires many resources, vision, and determination. Entrepreneurs put lots of pressure to make that startup successful, and however resources can be limited.

In general, startups are the future. They are like small companies but with big ideas. However, it doesn't end with big ideas. Recent research showed that robust features of entrepreneurs make tech startups more successful. So, entrepreneurs have a significant role in developing an idea and the general progress of the startup. Especially the creators who start new businesses with the dream of creating a new product or service.

There are some articles about the entrepreneurial strategies for tech startups or the main characteristics of entrepreneurs of technology startups. As well as the entrepreneurial features there are articles about the elements of the entrepreneurship ecosystem and its effect on this journey. Also, while I was reviewing some articles I came across that most of the authors are focused on the features of entrepreneurs and the entrepreneurship ecosystem in general where they considered all countries and a little amount of them were specifically for some countries. However, there is a gap to define the main features of entrepreneurs in their technology startups journey and how the entrepreneurial ecosystem effect this journey specifically in Estonia. There was so fewer research about the journey of entrepreneurs of Estonian technology startups. But there is still a lack of research on key features of entrepreneurs and ecosystem elements of Estonia. So, there is an increasing interest in startups especially technology ones in Estonia. For example, in February 2022 there were around 1000 startups and seven of them was a unicorn while in April this number increased to 1300 startups and ten unicorns respectively (*Startup Estonia*, n.d.).

In this report, my aim was to gain an understanding of the main features of entrepreneurs on their journey to technology startups and the effects of the entrepreneurial ecosystem on this journey in Estonia. The effect of different features and entrepreneurship ecosystem on the entrepreneurial journey was investigated.

This research contributes to supplying a better understanding of the effect of features and entrepreneurship ecosystem in the journey of technology startups. The article will identify the main characteristics of entrepreneurs and elements of the entrepreneurship ecosystem as well as it will suggest how entrepreneurs can be affected by aspects of the ecosystem and entrepreneurial features.

So, for that purpose, the following research questions (R.Q.) were formed:

R.Q.1. What are the main features of entrepreneurs in their journey to tech startups?

R.Q.2. What elements are needed in the entrepreneurial ecosystem?

To answer to above questions, the following tasks were set:

- Clarify entrepreneurship and entrepreneurship ecosystem;
- Identify the elements of the entrepreneurship ecosystem;
- Clarify the profile of a successful entrepreneur and their features;
- Discuss some famous entrepreneurs' journeys;
- Observe the nature of tech-based startups and their features;
- Taking interviews with the founders/co-founders of Estonian based tech startups
- Examine the answers of the founders/co-founders
- Give an output of empirical results

To reach the goal, qualitative data was selected in the method section. Data were collected by conducting interviews with various founders/co-founders of technology startups that are based in Estonia.

After the introduction section, the background and related work part starts, which is also the first chapter of the thesis. There the main elements of the article were mentioned. Then it continues with the methodology and data part and concludes with the conclusion, list of references, appendices, and Estonian summary. In the appendices section, the responses from founders/co-founders of startups can be found.

Research classification codes (CERCS): S190 - Management of enterprises.

1. Background and Related Work

This chapter is the theoretical part of the thesis. Where I discussed entrepreneurship, the entrepreneurial ecosystem and its elements, entrepreneurs, and technology startups which were cited by different scholars.

1.1 What is entrepreneurship?

Entrepreneurship has changed the world a lot. Every year new companies start to operate in different cities all around the world while they are providing new jobs to society. Moreover, entrepreneurial enterprises can also impact markets by developing new goods, services, or processes. While the companies output the products or any services, in return, companies earn from selling them as well the government earns from the taxes of those goods taxes and income taxes of people, which is a great support to the country's economy. In addition, entrepreneurship not only helps to increase the country's economy but also helps solve the poverty and educational problems in society. As a result, fledgling business performance is critical for economic health, innovation, and social riches, impacting a country's, region's, or city's competitiveness.

Apart from the above-mentioned, it is important to talk about entrepreneurship as there is a strong relationship with startups. Because entrepreneurship refers to any kind of business including self-employment or startups (Sethi, 2014).

Before starting to point out what is entrepreneurship it is good to know the word meaning. There are about as many explanations of entrepreneurship as there are authors who have written about it. Entrepreneur literally translates to "one who undertakes" in French. A doer is an entrepreneur (Dollinger, 2008, p. 7).

From the 1980s, a plethora of theoretical concepts and structures have been added to the subject of entrepreneurship study, with numerous efforts made to conceive and truly comprehend entrepreneurship as an activity. However, not many attempts were successful, and only a few of them have been undertaken within the area of entrepreneurship to define the corpus of research in the form of contextual concepts to offer an overview of the philosophy of science foundations of previous and contemporary studies on the entrepreneurial process (Nielsen & Lassen, 2012, pp. 35–36).

“What is entrepreneurship?” is a very controversial question. But it has a simple definition: building a business while trying to make a profit from it. Also, some entrepreneurs have explained the meaning in their way. One of them is the founder of NicholeNicole, Altimese Nichole. She said that there are many people who are very thrilled to start a

business. However, they get disappointed when they face some challenges on their journeys. So those people shouldn't be out of track and run their dreams. Also, for Altimese Nichole, entrepreneurship entails keeping focused on your objectives despite your initial excitement. Then the founder and CEO of NeuroFlow, Christopher Molaro, also shared his opinions about entrepreneurship: Entrepreneurship is taking a risk and working hard enough to sacrifice everything else in your life in the name of addressing problems since no one else is competent or has the willingness to do so. In general, entrepreneurship may be considered to be altering the world through resolving major issues. Because when entrepreneurs start a firm, they are not just solving societal problems, but they are also making money. Entrepreneurship may also be defined as the process of creating one's own life. As an entrepreneur, you have no employer, no set timetable, and so on (Ferreira, 2021).

Furthermore, David Audretsch has discussed entrepreneurship in one of the publications. He states that in reality, several strands of literature define entrepreneurship in terms of distinct organizational characteristics. Each of these streams of writing is rich and healthy, with a strong proclivity to evolve. Institutional standards such as the size of the organization (small business or small and medium-sized enterprises), leverage, and whether it is owned by a person or a family have all been used to define what actually qualifies as entrepreneurship. It should be noted that they are not at all uniform rules, and in some situations, they contain blatant inconsistencies. For instance, according to the size requirement, a company might be tiny yet have been there for a long time, making it too old to be deemed entrepreneurial. This is true for the self-employment requirement, as well as the firm ownership and family business characteristics, where age is clearly not a factor in determining what qualifies entrepreneurship. Even so, a criterion regarding organizational status unites these various perspectives on what defines entrepreneurship. Despite the fact that each sort of profile group is distinct and often conflicting, they all categorize what comprises entrepreneurship based on organizational position (Audretsch, 2012, p. 756).

On the other hand, Marc Dollinger mentioned entrepreneurship in today's life in one of his books. He started to describe nowadays entrepreneurship system - People all throughout the world, but especially in today's age, have ideas, abilities, skills, and information that foster entrepreneurship in the new century. This new orientation contrasts with prior periods when the pressures of economic expansion favored more experienced company executives. However, the global economy has changed, and today's youth are well-suited to entrepreneurial endeavors. He continued by giving a few examples such as he

states that today's potential entrepreneurs are digitally savvy. They are at ease with emerging innovations and are not afraid of change or the drastic changes that new technology might bring. Younger individuals have laptops and other consumer gadgets at home. Over 80% of families with children have computers and Internet connections. Also, he continued that now it's an exciting moment to be an entrepreneur. Because now hardware is so cheap when we compare it to decades ago, also now it is easy to find free infrastructure software, worldwide job markets are easily accessible, and SEM (search engine marketing) has transformed delivery and selling strategies. In another example he talked about the characteristics of the young generation - This youth is driven, curious, and ambitious. They appreciate the concept of development and welcome change. They've witnessed advances in information technology, as well as new medical and biotech procedures and products, as well as significant shifts in how people interact and work. They believe that in the future, they will see further progress and possibly systemic change (Dollinger, 2008, p. 4).

Kevin Hindle also touched on the topic "what is entrepreneurship" in his article. He states that entrepreneurship is the act of analyzing, deciding to, and attaining the production of new products from fresh ideas for the interest of involved participants under external restrictions (Hindle, 2010, p. 609). He also mentioned that despite the apparent lack of consensus and the reported range in replies, the study suggests that two primary schools of thought encompass most of the variation in what constitutes the specific emphasis of entrepreneurship as a subject (Hindle, 2010, p. 602).

Meanwhile, entrepreneurship has been defined differently by another author as well. The ownership and utilization of resources to construct an innovative economic organization (or network of organizations) for the goal of advantage or progress under uncertainty and risk is referred to as entrepreneurship (Dollinger, 2008, p. 9).

There are also some other theories that were defined by Jonathan T. Eckhardt and Scott A. Shane. The prevailing entrepreneurship theories have largely ignored the importance of opportunity in explaining entrepreneurship as a consequence of the sorts of individuals who participate in entrepreneurial activity. First, academics have tended to embrace a person-centric approach, in which entrepreneurship is based on people's stable, persistent characteristics rather than variations in the knowledge they have about the availability of possibilities. On the other hand, entrepreneurship was supposed to be a balance concept, either clearly, as in economics studies on the matter, or obliquely, as in management and

organizational research, where researchers use fixed cross-sectional assessments that can only be accurate if the trend under inquiry is constant (Eckhardt & Shane, 2003, p. 334).

Also, in this section, I would like to talk about the importance of entrepreneurship in society while we discuss its meaning. So, nowadays, we can say that entrepreneurship is vital for the general progress of a country and economic development. Also, it helps develop society. In her article, Georgiana-Delia Costin addressed this topic in her “The Profile of an Entrepreneur in a Modern Society” publication. In general, in her paper, she is concerned about how entrepreneurship is essential in society. So, entrepreneurship represents the field of study, art, and activity and is also a science. It is a combination of various qualities and abilities to cause progress (Costin, 2012, p. 14).

1.2 Entrepreneurial ecosystem and its key elements

The environment and ecosystem affect the impact of entrepreneurship as well as the journey of it. So, it is obvious that the ecosystem plays a vital role in the entrepreneurial journey of businesses. And now, in most cities and regions, improving the entrepreneurial ecosystem has become vital. If we discuss the meaning of an entrepreneurial ecosystem, we can say that it is a community that has different components, and those components are independent of each other while they are connected with one another for growing the business.

On the other hand, understanding the key elements of the entrepreneurship ecosystem is important too. Unsurprisingly, a picture of what components make up the entrepreneurial ecosystem and how it changes is at the center of the entrepreneurship ecosystem strategy. The necessity for an ecosystem strategy originates from the fact that cultures, where entrepreneurship happens on a regular basis or is self-sustaining, have grown into a unique, complex environment or ecosystem. It is obvious that that ecosystem consists of many elements, and it has its own model, which was made by different people.

So, this section will provide the meaning of entrepreneurship ecosystem by different scholars as well as some of them have drawn ecosystem models with their components in it. This part will also show how the startups should be constructed and what kind of elements would be taken into account when they start a business.

Coming to the part where scholars have discussed the meaning of the entrepreneurial ecosystem. So, Erik Stam and Andrew van de Ven express that the entrepreneurial ecosystem is made up of a collection of interconnected players and elements that are regulated in such a way that productive entrepreneurship is possible. When it comes to entrepreneurship in an

area, the metaphor is ill-defined, under-theorized, and poorly assessed. Also, according to their paper, the first ideas about entrepreneurial ecosystems appeared in the 1980s and 1990s. They argued that in order to build and sell the businesses, individual entrepreneurs don't have full control over all of the business functions, markets, resources, and institutions. They continued that regardless of popular belief, entrepreneurship is a collective success that involves important contributions from several entrepreneurs in both the public and private sectors to establish an industrial infrastructure that both enables and constrains innovation (Stam & van de Ven, 2019, p. 810).

Erik Stam and Andrew van de Ven discussed the meaning of the entrepreneurial ecosystem in their paper by separating them. So, the first part of the term entrepreneurial was defined as follows: a procedure for identifying, evaluating, and pursuing new product and service possibilities. Proceeding on this topic, they claim that the importance of creative and growth-oriented entrepreneurship appears to be growing in the entrepreneurship literature. While the second part of this term - the ecosystem explained that, it comes from biology, where an ecosystem (also known as an "ecological system") is described as "a biotic community, its physical surroundings, and all conceivable interactions in a complex of living and nonliving components" (Stam & van de Ven, 2019, p. 811).

The definition of the entrepreneurial ecosystem has been explained in other papers as well. Colin Mason and Ross Brown defined this term as follows: Entrepreneurial ecosystem is a system where entrepreneurial actors, entrepreneurial organizations, and entrepreneurial institutions are connected to each other. Here they defined entrepreneurial actors as current and prospective ones, while entrepreneurial organizations as just simply firms, business banks, etc. And finally, the amount of high-growth enterprises, degrees of major studio entrepreneurship, the number of serial entrepreneurs, and entrepreneurial desire are all factors to consider are considered as entrepreneurial processes (Mason & Brown, 2013, p. 5).

Furthermore, some scholars explained the importance of the entrepreneurial ecosystem in technological startups and businesses. In one publication, it was mentioned that if the entrepreneurial ecosystem is good, then the technology will be even stronger. And continued that the development of technology will benefit the company's economic growth. As a result, entrepreneurs serve as agents who, by promoting ideas, operate as a gearbox for converting advancements in knowledge into income progress (Acs et al., 2018, p. 502).

Another paper also shows that a good ecosystem accelerates the technology within the company. The authors took an example of the journey of technology companies - Apple and

Amazon and explained that their entrepreneurial ecosystem helped to improve. Of course, one of the main reasons for that was selecting the correct elements of ecosystem and technology (Bharadwaj et al., 2013, p. 474).

As the importance and the definition of an entrepreneurship ecosystem were discussed above, now it is time to talk about what kind of elements or components should be considered in this ecosystem that will affect the entrepreneurial journey.

So, firstly James Moore also explained that the elements and resources in the entrepreneurship ecosystem are important in order to be successful in business. He stated that small businesses are the ones that develop so quickly and effectively. He stated that those technological businesses could not increase themselves in a “vacuum”. He explains that those firms must gather a variety of resources, including the capital, partners, suppliers, and consumers, in order to form productive partnerships (Moore, 1999, p. 75).

So, Jennifer Woolley stated that universities are one of the key elements of the entrepreneurship ecosystem. She explained her statement that universities are regarded as one of the primary providers of research and technology, although private-sector experiments are seen as more practical than academic research. Scholars, students, labs, and major organs at universities are all geared to supporting the invention of cutting-edge technologies and new information. In such environments, entrepreneurship is cultivated via the exchange of ideas, technology, and prospects. As a result, institutions contribute to the formation, discovery, and utilization of opportunities. Universities also train professionals that assist entrepreneurial firms in taking advantage of these prospects (Woolley, 2017, p. 4).

Furthermore, Daniel J. Isenberg has also discussed the elements of the entrepreneurial ecosystem and even built an entrepreneurship ecosystem model. In one of his publications, he mentioned that there are six main components which are policy, finance, culture, supports, human capital, and markets. Here each component was explained where policy means leadership (entrepreneurship, strategy, etc.) and government (institutions, etc.), finance is financial capital (investors, loans, etc.), culture is success stories (successors, etc.) and societal norms (risks, fails, hunger for success, etc.), supports is infrastructure (technology, etc.), support professions (legal, accounting, etc.), and non-government institutions (conferences, etc.), human capital is labor (serial entrepreneurs, etc.) and educational institutions (general degrees, etc.), and last component markets is early customers (first reviews, distribution channels, etc.) and networks (diaspora, multinational networks, etc.). He continued his publication that why his model is beneficial. Firstly this model affects the

decision and the entrepreneurial journey as it reflects the world. Second of all, it contains certain crucial components that are sometimes overlooked, such as early consumers and diaspora networks. As clear as it may seem now, there are very few rules dedicated to teaching and rewarding new markets and customers. Entrepreneurs require early consumers to talk to in order to define items and levels of service, as well as act as references, and money from a lucrative client is the sweetest type of funding for the entrepreneur. Later, he states that this model doesn't have any arrows that show which elements are affected by each other. Such as, it can be said that there is a correlation between education and culture; however, the things we consider to be outcomes are actually strong reasons (Isenberg, 2011, p. 7).

Furthermore, Farrokh Emami Langroodi also discussed this topic in his “Schumpeter’s Theory of Economic Development: A Study of the Creative Destruction and Entrepreneurship Effects on the Economic Growth” paper. He mentioned that according to Schumpeter’s theory of economic development, there are four main features of the entrepreneurial ecosystem which are circular flow, the role of the entrepreneur, cyclical process or business cycle, and the end of capitalism (Emami Langroodi, 2017, p. 67).

According to Schumpeter’s theory, in a circular flow, the supply and demand are balanced at every point in time. He continued that the companies' expenses are the same as their receipts, and their prices are the same as their average costs. Profits, interest rates, savings, investment, and unemployment are all absent. This stable equilibrium, according to Schumpeter, is defined by a circular flow that renews itself every year in the same fashion as blood circulates in the human body (Emami Langroodi, 2017, pp. 68–69).

When we would continue for the second feature for Schumpeter Entrepreneur is one of the key factors in the analysis and development of entrepreneurship. So, entrepreneurs are a vital character in the entrepreneurial ecosystem. Schumpeter discussed that entrepreneurs are people who carry the business forward and make them successful. According to him, entrepreneurs have many functionalities such as overcoming problems on their journey, production into new channels, making a business environment, leadership, etc (Emami Langroodi, 2017, pp. 69–70).

Another feature of the entrepreneurship ecosystem, according to Schumpeter, is the cyclical process or business cycle. He believes that analyzing the business cycle entails examining the capitalist economic process. Schumpeter takes a historical, statistical, and analytical approach to the business cycle or crises. He argues that business cycles are caused

by a combination of economic and non-economic forces. Schumpeter finishes his opinions with it - the process by which economic life adapts itself is the new economic conditions (Emami Langroodi, 2017, pp. 70–71).

Lastly, according to Schumpeter, another factor for developing entrepreneurship is the end of capitalism. He believes that capitalism made entrepreneurship grow slowly, and the end of it made it develop even faster (Emami Langroodi, 2017, pp. 71–72).

Apart from the above scholars, some others also discussed this topic in their publications, such as Andrew H. Van de Ven and Raghu Garud. They also made an entrepreneurial model for technological business. This model includes three main components, which are institutional arrangements, resource endowments, and technical economic activities (Van & Garud, 1992, p. 6).

They explained each component on their paper. Starting from institutional arrangements, they mentioned that it regulates, arranges, legitimates, and standardizes the new technologies. Scholars continued that companies can build their own institutional requirements, or they can follow the goals and procedures of other businesses (Van & Garud, 1992, pp. 6–7).

Andrew H. Van de Ven and Raghu Garud gave a brief explanation for resource endowments too. They discussed that there are three main resources for technological firms which are insurance and financing mechanisms, human resources, and advancements in the common technological or scientific knowledge (Van & Garud, 1992, p. 7).

Lastly, those two scholars discussed the last component of their model - technical economic activities. For them, the focus on traditional industrial economics is the actions of entrepreneurs as well as businesses who are taking the common skills and knowledge from society. Later, they transform that knowledge and skills by using research and development into technical knowledge (Van & Garud, 1992, pp. 7–8).

Furthermore, Erik Stam and Andrew van de Ven have also mentioned this topic in one of their publications. They build a model of an entrepreneurial ecosystem which affects the journey of entrepreneurs with ten elements and entrepreneurial outputs. In this model, they mainly focused on institutions, resources, and new value creation. Where institutions capture formal and informal ones and social networks, different types of resources and humans are included in the resources section, and finally, new value creation capture productive entrepreneurship. The first two components - institutions and resource endowments capture ten elements while the last component - new value creation is the output of the

entrepreneurial ecosystem of Erik Stam and Andrew van de Ven's entrepreneurial ecosystem model. Table 1 (see [Appendix A](#)) summarizes all elements of this model (Stam & van de Ven, 2019, pp. 812–813).

1.3 Entrepreneurs and their features

When we talk about entrepreneurship, there is a need to talk about entrepreneurs as well. Because as entrepreneurship was mentioned in the above section, entrepreneurs are one of the main characteristics of entrepreneurship. In short, entrepreneurs are people who create a business where they sell their services or product to society. They can also be referred that they are the main source of those services and products. They play a vital role in the countries' economies as they are building business. On the other hand, this section will cover entrepreneurial features as well as it is one of the main topics of the thesis.

There were discussed in many papers about entrepreneurs. For example, in one paper it was mentioned that being a self-employed entrepreneur who establishes, develops, leads, and takes the blame for a firm provides a personal drive that many people prefer to be a worker for someone else. Entrepreneurs assume the private finance risks that come with running a firm, but they also profit directly from the company's future prospects. Being an entrepreneur is typically considered a risky career decision since it involves more unpredictability, barriers, failures, and disappointments in regular career and life settings (Segal et al., 2005, p. 42). While Hébert and Link discussed that entrepreneurs face situations outside their influence, and their success is dependent on their knowledge and abilities, which they may employ in a variety of "creative" methods to decrease risk. But, to the degree that he is confronted with situations beyond his control, he puts himself in danger, which is unlikely to be mitigated by new means (Hébert & Link, 2006, p. 590). On the other hand, there was a publication where social entrepreneurs were described. There was mentioned that in contrast to business entrepreneurs social entrepreneurs are people who care about society rather than gaining some revenue. With their ideas and by producing their services or products, they want to change the life of people in society. However, most of them understand that for improvement there is a need for some investment or at least some financial resource (Thompson, 2002, p. 413). In addition, many entrepreneurs, according to traditional opinion, thrive and succeed without any training programs. They are driven to succeed, optimistic in their attitude, and realistic in their approach. They value independence and are willing to take calculated risks. They are vivacious, determined, and self-assured. They have the potential to encourage others and adapt to new situations (Thompson, 1999, p.

210). Furthermore, By pressing factors of production into different channels, the entrepreneur provides economic leadership to create discontinuous dynamic change. He imagined this occurring as a result of a novel mixture of processing conditions that resulted in one or more of the following: the creation of a new product, establishment of new technology, introduction of a new market, discovery of a new resource, and implementation of a new organizational structure (Nair & Pandey, 2006, p. 49). Also, a simplified model of the evolution of a technological entrepreneur may be as follows: The first factor that impacts an individual's growth of goal orientation and motivation is his familial history. The educational level obtained by the kids is likely to be influenced by the family's history. Goal orientation and motivation, as well as educational level, are both intermediary elements that determine whether or not a person becomes an entrepreneur. The effects and expressions of these many factors can be studied. For example, certain goal orientation is an expression of characteristics of one's upbringing, and it most likely leads to entrepreneurship. In comparison to the general population, the technical entrepreneurs used in this study should be better qualified. The premise for inclusion in this study, namely the character of the source laboratory where they had worked previous to their firm establishment, is perhaps the most fundamental explanation for this. Both laboratories are technically oriented, requiring specialized knowledge typically associated with a bachelor's degree (Roberts & Wainer, 1971, pp. 100, 104).

Many scholars have also defined who are entrepreneurs such as Marco Vivarelli. He stated that entrepreneurs are innovators, starting changes and creating new opportunities that lead to economic progress in the long term. The conventional theory of the company examines repeated decisions in an established and fully matured business (Vivarelli, 2011, p. 200). Later, entrepreneurs were defined as the beginner of new innovative ideas for new products or services (Stam & van de Ven, 2019, pp. 811–812). Also, some scholars noted that entrepreneurs are managers of manufacturing procedures, gatherers of employees, early investors, and brains to export the products or services (Acs et al., 2018, p. 503). Meanwhile, Daniel Isenberg stated that entrepreneurs are people who are always seeking financial benefit through expansion and hence are never happy with the current situation (Isenberg, 2011, p. 1). Another author stated that innovation is playing a vital role in new businesses. And in that case, entrepreneurs are the number ones who push the innovation in the early stages (Baron & Tang, 2011, p. 49). Also, a recent paper shows that entrepreneurs are innovators and they are making changes, creating new opportunities in order to lead to economic progress in the long

term (Elenurm & Alas, 2009, p. 319). It is stated that an entrepreneur is a visionary who sees a fresh opportunity and is willing to seize it and begin something new (Thompson, 1999, p. 209). It would be interesting to define the who are technology entrepreneurs as the main topic is to define the key features of entrepreneurs in the way of tech startups. So, technical entrepreneurs are a part of the overall group of entrepreneurs with qualities that are shared by everyone. They also have unique characteristics that enable them to launch technological businesses (Roberts & Wainer, 1971, p. 100). While Martijn P. Driessen and Peter S. Zwart discussed that an entrepreneur is a person who owns and operates an organization on his own dime (Driessen & Zwart, 2006, p. 383).

Furthermore, I asked a question that what kind of features or characteristics affect entrepreneurs and made some research about it. It was described in some papers. One of the papers shows that leadership and motivation have a huge effect on the entrepreneurial journey of startups (Frese & Rauch, 2000, p. 106). While Tiit and Ruth stated that the entrepreneur was described as a person who has self-motivation which allows him to cope with difficult situations. They continued in their paper that there is a need to consider characteristics of entrepreneurs such as their mindset and animosity and vibrancy of the economic ecosystem because it is important for Estonia, as well as other Baltic countries as their entrepreneurial experience, has changed a lot in the last decades (Elenurm & Alas, 2009, pp. 320–321). Also, those authors made a research on the Estonian market and concluded that in the 1990s, a strong hand of the entrepreneur and the ability to cope with stress as crucial traits of an entrepreneur were less significant than analytical and communication abilities that allowed the analysis of vast volumes of business data. Estonian researchers concluded their paper by stating that a successful entrepreneur should have long-term goals and need to be a team player as well as creative. Apart from the previous characteristics, they should balance their life with work too (Elenurm & Alas, 2009, pp. 325–327). Furthermore, Robert A. Baron and Jintong Tang made research in order to find which characteristics made successful businesses. So, according to their research, hypothesis tests show that creativity and environmental dynamism are positively related to success (Baron & Tang, 2011, pp. 55–56). Meanwhile, other scholars referred to entrepreneurs as people who are risk-taker and growth-creator. Ross Levine and Yona Rubinstein stated that those characteristics would make a business more successful. Also, they approach this topic a bit differently. They tried to find an answer to who becomes an entrepreneur by using data from the Current Population Survey (CPS) and the National Longitudinal Survey of Youth

(NLSY). The result showed that entrepreneurs have unique cognitive and noncognitive characteristics. Where it showed that most of them are trying to be more educated and learn as much as they can (Levine & Rubinstein, 2017, pp. 964–965). While in one of the papers some main characteristics of entrepreneurs were found. The first one is the need for achievement which was described as a need for conquering a challenge, realizing a dream, attaining personal success, and creating a concept. Another characteristic is the need for independence. The definition for that characteristic was described as follows: the yearning for independence, the urge to do things your way, and the ambition to be your own boss. The last characteristic is the economic reasons which are making a lot of money, taking care of your own requirements, being financially secure, and being financially independent are the main motivations behind this characteristic (Barba-Sánchez & Martínez-Ruiz, 2009, p. 259). In addition, entrepreneurs are defined as active persons engaged in "entrepreneurial processes" from a psychological point of view. It was mentioned that certain people appear to have natural characteristics that make them more prone to take chances, be better at identifying and acting on attractive business possibilities, and be more receptive to new encounters. The author added that the primary psychological qualities connected with entrepreneurs include the need for accomplishment, affiliation, self-efficacy, risk-taking inclination, and uncertainty acceptance (Baqtayan, 2016, p. 51). Also, there was research about entrepreneurs in Canada where the result showed that the main feature of entrepreneurs in their journey on tech startups is well educated. From the findings, it came up that most entrepreneurs have a university degree and they gain this degree in the fields of engineering or science (Litvak & Maule, 1973, p. 63). In another paper, the entrepreneurial characteristic was analyzed and came up that it is leadership. They discovered that teenage leadership is related to entrepreneurial proclivity and success in later life, as measured by reported sales. This makes sense because the leadership construct seeks to reflect things like a person's drive to win or take command. These characteristics are considered necessary for an entrepreneur. As a result, young age, entrepreneurial qualities that forecast entrepreneurial careers emerge (Viinikainen et al., 2017, p. 12). On the other hand, entrepreneurs were described as people who have good communication, and decision-making skills as well as they are people who tend to take greater risks (Cox & Jennings, 1995, pp. 8–9).

1.4 Entrepreneurial journey

The above section described the definition of an entrepreneur and its feature by stating different articles. While in this part I will discuss some famous tech entrepreneurs'

journeys such as co-founder and Chief Executive Officer (CEO) of the social-networking website Facebook (now it is called Meta) Mark Zuckerberg, the founder, former CEO, and now executive chair of global e-commerce of Amazon Jeff Bezos, and the founder of SpaceX and Neuralink, entrepreneur and co-founder of Tesla and Paypal Elon Musk (Tarver, 2021; Delventhal, 2021; Biography.com Editors, 2018; Blystone, 2021).

The reason for this subchapter is to define what kind of characteristics have some entrepreneurs and of course to understand the ecosystem where they built their ideas. Also, in this section, I would like to learn more about the challenging way of those entrepreneurs which are the more real examples.

Before building Facebook Mark made two programs which are called CourseMatch and FaceMash. Those programs became very famous at Harvard University where he was studying but later they were terminated by the university because they were improper. Later Zuckerberg with his friends started a new business named Facebook which made him a very famous tech entrepreneur around the world. He left university and moved to Silicon Valley which is one of the best places for tech entrepreneurship in the world according to various sources (Brits, 2021; Reder, 2017; Seth, 2021). Here he increased his capital up to 119 billion dollars (according to the date of May 2021) (Tarver, 2021).

Jeff Bezos graduated from Princeton University where he got a computer science degree and which made him have an interest in technology. After graduation, he rejected many companys' job offers because he has different ideas where he wanted to put the first steps into entrepreneurship. Firstly, he joined a startup called Fitel which was failed but Bezos was thinking about new ideas. Back at that time, he saw that the interest in the internet is increasing and Bezos started to list the products to sell through the internet. So, he decided to sell books and built his first fresh startup called Amazon. And now Jeff Bezos earns billions of dollars from his company Amazon and his other businesses which made him one of the top wealthiest people around the world (Delventhal, 2021; Biography.com Editors, 2018).

Most people know Elon Musk with electric car maker Tesla and rocket manufacturer SpaceX. It is said that one of the reasons for his success is he is working around 80 to 120 hours per week. On the other hand, his interest and skills in technology made him earn money from his childhood when he sold his first game called Blaster to one of the game magazines which was a space invader game for 500 dollars. Then Elon moved to Canada and entered Queen's University in Kingston, Ontario. After a few years, he got a Bachelor of Science in

Physics and a Bachelor of Arts in Economics degrees. After selling money transfer company PayPal to eBay he invested his money in different places where he founded Tesla Motors and Space Exploration Technologies Corporation which is mainly known as SpaceX (Blystone, 2021).

1.5 What are technology startups and their features

In the above section entrepreneurial journeys of some tech entrepreneurs were discussed. So here comes the question of what these startups mean especially technology ones. And also, this section will cover which features they are differentiated from. So, firstly I will answer the question of what a startup is.

Pavel and Svetoslav discussed startups especially technology ones and entrepreneurs in their paper. They stated that technology startups are usually created by an entrepreneur - a person or a responsible employee in a company who is willing to take economic risks to make a profit (Petrov & Ivanov, 2020, p. 401). Also frequently we heard entrepreneurship and startups next to each other in different places. As entrepreneurship and entrepreneurs were discussed in the above section the rest sections will cover startups, especially tech startups.

So, coming to the question “what is a technology startup?”. In short, the startup is the early stages of companies while technology startups are the ones that offer technological products or services to the market.

Many scholars have mentioned the definition of technology startups in their papers. Yoonjo Cho and Gary Mclean stated that tech startups are the startups that build technology-based products or services to serve society by using innovative or high-tech technologies (Cho & Mclean, 2009, p. 125). Also, some scholars have some publications about startups and their development. For example, Sivicka has mentioned in one of the papers about the startup. So, she referred to the startups as newly created businesses that don't generate any profit at the beginning of their activity. She continued that a startup firm is a type of entrepreneurial endeavor that tries to address a market demand by building a successful marketing strategy around new products, services, techniques, or systems. A startup is often a firm created with the goal of developing and validating a successful business. (Sivitska, 2018, pp. 164–165).

Furthermore, two researchers Aidin Salamzadeh and Hiroko Kawamorita Kesim discussed startup theories. They believe that startups aren't the central focus of theories in different fields. However, they continued that there are some hypotheses that may be called

startup theories implicitly. In their paper, they categorized these theories into three main areas which are organization, management, and entrepreneurship (Salamzadeh & Kawamorita Kesim, 2015, pp. 2–3).

So, the first theory is called organization. In the early years, this theory wasn't related to startup evolution or in other name organizational theory. However year by year the number of researches about it increased and scholars started to investigate it. So, after these investigations, it needs to be pointed out that the organizational approach contends that the circumstances in which an enterprise is formed and the methods followed in its early growth have significant implications for its performance and effectiveness later in life (Salamzadeh & Kawamorita Kesim, 2015, p. 4).

Meanwhile, management theories might be described as "perspectives" or "descriptions of the links among organizational traits." Hence, while management theories have little to do with startups in an organizational sense, they do have to do with such entities as individuals/teams coordinating their activities toward some shared goals, according to this viewpoint. Also, some of the management theories are used in the startup research of different management fields such as strategy, team, human resources (HR) management, complexity theories and etc. However, these theories are only tangentially related to startup research, and they primarily use startups as examples or instances (Salamzadeh & Kawamorita Kesim, 2015, pp. 4–5).

Lastly, they discussed that entrepreneurial theories argue that entrepreneurs are the founder of new organizations. Also, Salamzadeh and Kesim continued their discussion about entrepreneurship theories in their paper. They believe that this subset of concepts focuses on startup companies. This might be attributed to a variety of factors. To begin, entrepreneurship is concerned with concepts such as creativity, innovation, the development of new products or services, and prospects. As a result, entrepreneurship theories are much more likely to be explored early in the development of any company or organization (Salamzadeh & Kawamorita Kesim, 2015, p. 5).

Furthermore, Pavel and Svetoslav have divided setting up the technology startups into several stages. For them, the setting starts from zero where it includes the research in the market, finding out the needs for this service or product. Also, for them in this stage, the expected profit is calculated. After making these calculations and researching entrepreneurs think about moving forward into the first stage. In the first stage of the setting for technological startup people, resources are taken into account based on the goal. Later for

scholars - Pavel and Svetoslav in the next stage each procedure should be divided into several subprocedures and they should be well monitored and evaluated. At the third stage of technological startup setup, the should be estimated for each subprocedure that was created in the previous stage. In the final stage, every contractor of each subprocedure which was defined in the previous stage starts his own subprocedure. Meanwhile, managers must pay special attention to certain resources while controlling them since they are crucial for the implementation of processes. Additional contractors should be recruited to be included in the technology startup firms for those sub-procedures for which there are no contractors (Petrov & Ivanov, 2020, pp. 401–402).

So, the above part showed what are startups especially the tech ones, and below startups' features will be discussed. It is known that day by day interest in startups, especially technology ones has increased around the world and many scholars have touched on the technology startups topics. Meanwhile, other researchers have discussed the features of technology startups. In one of the publications in Forbes, it was mentioned that a startup's potential to expand is its most important feature. It is a business that is built to expand rapidly. Startups are distinguished from small firms by their commitment to unrestricted expansion regardless of location. A single-town restaurant is not a startup, and neither is a brand (Robehmed, 2013).

Petrov and Ivanov discussed many features that distinguish a startup. One of them is the main goal in the business which is building a new product, making a new economic model, and believe the economic growth of a startup. Also, they continued with the feature that the main goal in business should also focus on consumer demand and need to find out what kind of needs have in the market. Another feature that identifies a startup firm, according to Petrov and Ivanov, is its concentration on innovation, new items, and new technologies. There are several distinct sorts of business intentions in management research. Several of them include activities such as licensing, company mergers, reproducing a competitor, and others that take an operation or item from another firm, use or copy a whole object, management culture, invention, and a brand with a broad scope of protection. Even if a company uses third-party components and pursues a well-known business strategy, it nevertheless has a new business product in the form of services and goods. Because of its unique combination of commodities, business strategy, brand, and software, the company distinguishes out as innovative. One of the other features that differentiate startup is the type of product or service. For example, most startups are using various technologies in order to

reach their goals and they have different software, hardware, or services to do them. Computer programs, methods, regulations, and sometimes associated documentation, as well as data relevant to the functioning of a computer system, are all examples of software. A software product is another term for the program. It has distinct characteristics, such as a wide range of forms, functions, abstraction, uniqueness, composition, quality, dependability, and performance, to name a few. These features of the creation process, such as uniqueness, resource intensity, interdisciplinary, high risk, and quality, are more fascinating for the chosen topic. By uniqueness, we mean that developing software takes a large amount of upfront effort before the first functioning instance appears, as well as spreading faults (also known as bugs) among all copies and replacing older versions with newer versions. The resource-intensive feature is accessible as a result of a great deal of work done before the first copy is ready for sale. And lastly, those authors defined that another key feature of technology startups is entrepreneurs. They can be one or many and also they can be called founders (Petrov & Ivanov, 2020, pp. 403–405).

Furthermore, two authors have defined the attributes of startups. To begin with, startups bring to market unique products or services, and the following choices are viable. Electronics goods and products with service offers have evolved in the industry, whereas on the fringes can be built products and services. Startups have been able to produce products or services that bring value to clients thanks to their capacity to break free from restraints and not be confined. Then, it is preferable to have many co-founders so that activities may be debated and choices can be made. It also stands to reason from a continuity standpoint. Co-founders with diverse skill sets form a better team for moving the company forward, and their knowledge and understanding come in helpful in overcoming possible issues. Lastly, they introduced nine main elements for startups where this also including tech startups as well: Product/Service, Target Market, Market Segment, City of Operations, No. of co-founders, Cofounders experience, Investor funds, High tech, Employee count (Kalyanasundaram et al., 2020, pp. 312–313).

So, lastly, I will conclude the theoretical part by researching the stages of the lifecycle of technology startups. The reason for adding this section is it would be important to understand from which phases are startups going on the way to be a company. Some scholars argued the stages of startups in many publications. According to Sivitska, there are three main stages in the lifecycle of startups which are the pre-seed stage, seed stage, and series A, B, C & D stages. The pre-seed stage is the stage where entrepreneurs

build startups' minimum viable products. Later they start to make the products or services' prototypes to show to friends, family, and fans. In general, this stage can be called early development. While in the seed stage startup already has constant revenue and operating well. However, it needs to grow and increase its market value. In the last stage, investment is more likely to take place when the firm is producing significant income from its marketing plan, although it is uncommon for the company to be profitable at this time. The majority of shareholders will be private investment firms or wealthy individuals who are ready to take on the considerable risk associated with investing in premature companies (Sivitska, 2018, pp. 170–171).

Meanwhile, other scholars have also touched on the topic of stages of the lifecycle of startups. Aidin Salamzadeh and Hiroko Kawamorita have mentioned three stages as the previous researcher but the naming is different. So, they defined the stages as follows: bootstrapping stage, seed stage, and creation stage. In the first stage - bootstrapping, the entrepreneur sets in motion a series of operations in order to develop his or her concept into a lucrative firm. However, he or she contemplates a higher degree of risk or even doubt, proceeds to focus on the new enterprise concept, forms a team, spends finances, and seeks capital from family and friends. Later, the founder moves on to the seed stage. Where the entrepreneur is busy with teamwork, building a prototype of an idea (product or service), valuation of capital, and mainly trying to find some fund to develop his idea and spread it to the market. Lastly, the creation stage comes and the entrepreneurs introduce their ideas to the market and start to sell their products or service and of course, generate some revenue (Salamzadeh & Kawamorita Kesim, 2015, pp. 5–7).

2. Methodology & Data

2.1 Methods

So, in the previous sections the key concepts of the research problem were presented. While this section will cover the methods that I have used and also what and how I have done this research.

The goal of this thesis is to find what kind of features are needed for entrepreneurs to reach the desired destination which is to earn some revenue. To reach my goal I will need qualitative data where I will take interviews with different tech-based startup entrepreneurs. Interviews are a better approach for my research question and data collection. There are several reasons. Firstly, interviews are good for explaining the topic to the interviewee and getting answers from them. Also, in interviews, it is easier to explore the research subjects

and easy to understand the opinions of interviewees. Also, interviews are mostly open-ended questions and it is easier to go deep into the topic (DeBose, 2018). Apart from them in the interview, you can choose the specific group more accurately which made the results more precise.

2.2 Data

In order to get better insights for my master's research, I conducted semi-structured interviews while most of the questions are predetermined and a few of them aren't. Also, each interview took around forty minutes in total. For these interviews, I chose six technology startups that are based in Estonia and seven founders or co-founders of those startups. Table 2 describes structured information about interviews.

Table 2

Structured information about interviews

Name of the interviewee (founder/co-founder of startups)	Name of the startup	Description about what organization is/was part of	Software that was used for conducting an interview	Duration of interviews in minutes
Anette Aguraiuja - co-founder	StoryBox Games	Is part of STARTERtartu of UT sSTARTUp Lab	Zoom	31
Henry-Gerret Grüning - co-founder	StoryBox Games	Is part of STARTERtartu of UT sSTARTUp Lab	Zoom	31
Stefano Alberico - founder	Skudo OÜ	Alumni of Tallinn Science Park and was part of the ESA Business Incubation Centre	Zoom	51
Simone Briatore - co-founder	Golbriak Space OÜ	Was part of Tehnopol Startup Incubator and is part of the European Space Agency	Google Meets	37
Timmu	Unsinkable	Alumni of	Google Meets	33

Tollimägi - co-founder	Robotics	Tehnopol Startup Incubator		
Patrik Hollos - co-founder	litegrav.AI OÜ	Is part of ESA Business Incubation Centre Estonia	Google Meets	43
Henri Trees - co-founder	Bauhub		Google Meets	36

Apart from the above descriptions all of the interviews were recorded with the phone application called “Voice Memos” and asked the permission for recording. Also, an interview with co-founders of StoryBox Games Anette Agurauja and Henry-Gerret Grüning was conducted together in the same call.

All interviews started with intro questions where I asked questions about the respondent and his/her startup. Then I continued with 15 questions to find an answer to my research question.

Each response from the founders was described in the written form in [Appendix B](#), [Appendix C](#), [Appendix D](#), [Appendix E](#), [Appendix F](#), [Appendix G](#), and [Appendix H](#). Also, each startup was described in [Appendix I](#).

2.3 The interview questionnaire

1. To start off please introduce yourself and give brief information about your startup.
2. How did you find the idea for your startup?

The point of this question is to find out what kind of external things affected the entrepreneurs while they started their startups (Hindle, 2010, p. 609)

3. What do you think about the effect of entrepreneurship on society?

Georgiana-Delia Costin discussed that entrepreneurship has a big effect on society (Costin, 2012, p. 14).

4. What kind of contributions did you get from other entrepreneurs?

Some authors argued that individual entrepreneurs don't have full control over all of the business functions and entrepreneurship is a communal success that involves important contributions from several entrepreneurs in both the public and private sectors (Stam & van de Ven, 2019, p. 810).

5. How do you relate technology with your startup?

According to some authors, the development of technology will benefit the economic growth of the company (Acs et al., 2018, p. 502; Bharadwaj et al., 2013, p. 474).

6. How did university affect the success of your company?

According to Jennifer Woolley universities are one of the key elements of the entrepreneurship ecosystem (Woolley, 2017, p. 4).

7. What are the key elements for you in the entrepreneurial ecosystem?

Many scholars have defined several elements and created a model for the entrepreneurship ecosystem (Emami Langroodi, 2017, pp. 67–72; Isenberg, 2011, p. 7; Stam & van de Ven, 2019, pp. 812–813; Van & Garud, 1992, pp. 6–8).

8. In which stages do you use innovation to grow?

Most scholars have defined that innovation is a key factor for entrepreneurs (Baron & Tang, 2011, p. 49; Elenurm & Alas, 2009, p. 319; Vivarelli, 2011, p. 200).

9. How do you handle difficult situations?

Michael Frese and Andreas Rauch argued that motivation is one of the key characteristics of entrepreneurs (Frese & Rauch, 2000, p. 106) and other authors described that successful entrepreneur was described as a person who has self-motivation which allows him to cope with difficult situations (Elenurm & Alas, 2009, p. 320).

10. How did the vibrancy of the Estonian business ecosystem affect you?

Authors stated that there is a need to consider the vibrancy of the economic ecosystem as it has changed a lot in the last decades in Estonia (Elenurm & Alas, 2009, p. 321).

11. What are the effects of education on the growth of your startup?

At this point, I meant institutional education and self-study. Scholars made research and as a result, most entrepreneurs are trying to be more educated and learn as much as they can (Levine & Rubinstein, 2017, p. 965).

12. What characteristics should entrepreneurs have in order to be successful?

In section 1.3, most of the authors have defined the features of successful entrepreneurs (Baron & Tang, 2011, pp. 49, 55–56; Elenurm & Alas, 2009, p. 320; Frese & Rauch, 2000, p. 106; Levine & Rubinstein, 2017, p. 965; Stam & van de Ven, 2019, pp. 811–812; Vivarelli, 2011, p. 200).

13. How would you divide the setup of your tech-based startup?

Pavel Petrov and Svetoslav Ivanov have divided the setup of startups into 5 stages (Petrov & Ivanov, 2020, pp. 401–402).

14. How would you distinguish your startup from small companies?

In the second part of the 1.5 section, the features and distinguishes of technology startups have been discussed (Petrov & Ivanov, 2020, pp. 403–405; Robehmed, 2013).

15. What are the main elements for technology startups?

Two authors have defined the attributes of startups and 9 elements of them (Kalyanasundaram et al., 2020, pp. 312–313).

16. What phases did or should you pass to become a company?

In some papers, the stages of the lifecycle of technology startups were discussed (Salamzadeh & Kawamorita Kesim, 2015, pp. 5–7; Sivitska, 2018, pp. 170–171).

Results

Idea

The idea came to the founders/co-founders in different ways. Some people developed their ideas in the garage, others while working in some sector, etc. Though Estonia is a small country and there are plenty of startups, there is still a space for new ideas, even similar ones. Currently, there are some successful CRM, fintech, and space technology businesses it is still possible to be successful. Some of the responses showed that the idea came up from their own interest as well as the effect of their previous workplace.

I have been working at Nokia for seven years. During those times, I had an interest in security, especially since there were some cases where many dates were hacked from different sources. So, after that, I started to develop my idea and build my own startup. (Stefano Alberico)

In Estonia, there are many opportunities to start and develop an idea. Some entrepreneurs came up with the idea from the interest, while for the co-founder of Golbriak Space OÜ, the situation was different.

The idea for this startup came while I was studying at the university. With my colleague, we were working on how to improve the ecosystem in aerospace to find communication between satellites. (Simone Briatore)

In that sense, universities, experience in that field, or seeing the gap in the market made the entrepreneurs go for their ideas and build them.

Effects of entrepreneurship

The importance of entrepreneurship in society is so great. When the startups grow, it will open new job opportunities to people and will give the taxes to the government, which will make the country's economy develop.

Entrepreneurship has a big effect on society, and mainly startups increase the number of jobs in the country. (Anette Agurauja)

On the other hand, startups are motivation to other people to start their own businesses.

Startups give people opportunities, vision, and trying to do something greater and bigger. Also, it gives too many chances to do their own while they see a problem that they can solve. (Timmu Tollimägi)

According to the interview with the founder of Skudo OÜ, startups are increasing the economy in different ways as well. While the foreigners are coming to the country, they start to spend money in Estonia.

When we attract people to move to Estonia, that helps the economy. Because while they are living here, they are spending money on rent and buying food which made increases the economy of the country. (Stefano Alberico)

Overall, entrepreneurship has a big effect on society in different ways. As they help to increase the economy of the country and decrease the unemployment percentages.

Contributions from other entrepreneurs

Estonia is the heart of the startups, and here arranging many startup events. One of the most popular is sTARTUp Day, where hundreds of entrepreneurs and investors share their experiences, which is a great chance to get contributions and find financial aims. There is also witnessed getting contributions from famous entrepreneurs such as one of the co-founders of StoryBox Games.

I liked the jobs that Steve Jobs did as he brought a lot of innovation. For example, he brought a product where you could store thousands of songs in one device and hold it in a pocket. (Henry-Gerret Grüning)

However, sharing the experience and skills with the local entrepreneurs makes them more knowledgeable. Rather than getting inspiration from other famous entrepreneurs, respondents took more contributions from the same level of entrepreneurs.

The main feedback I get from the local entrepreneurs. Which are especially I gain that how to get through bottlenecks or ups and downs. (Patrik Hollos)

As a result, it seems that as entrepreneurs were communicating with each other, they shared their own experiences and increased their knowledge about entrepreneurship and, of course, startups.

Technology

Technology is an inseparable part of our life as the same for companies. So, technology made the startups' essence as the interviews were conducted with the co-founders/founders of technology-based startups.

We are a big tech company that provides hardware to people like our product.
(Simone Briatore)

On the other hand, many technological tools are used daily to manage the tasks, communicate with the members, store the data, make video conferences, etc. So, those software tools are kinda inseparable things in their working environment.

As we are a software company, we are using many software tools during our daily work time. For service, we mainly use the Amazon web service, where we keep all of our infrastructures, communicate using slack, and manage our tasks using Toggle. (Henri Trees)

Technology makes the startups grow even faster and makes the entrepreneurs' lives easier. With those software tools, they can easily communicate each other online, which makes it faster or control the tasks or store the data in clouds rather than keeping them in their servers. Come up with the results that technology has a high correlation with tech-based startups and, of course, it affects the journey of entrepreneurs.

University effect

Universities became one of the main parts of the development of startups. They helped entrepreneurs to develop their ideas by using the labs of universities.

University affected much in the idea perspective while I was doing my P.h.d. It helped me to think about the problem and analyze it. Identifying and finding a solution helped me more. (Simone Briatore)

On the other hand, universities do not only help entrepreneurs by offering the labs for doing the research but also by offering courses and some programs. For example, STARTERtartu programs help entrepreneurs develop business ideas by offering workshops or webinars. And StoryBox Games is a part of this program.

The university's extra courses helped me develop more, especially courses related to game development. On the other hand, the program of UT sTARTUp LAB STARTERtartu helps to make progress in the idea. (Henry-Gerret Grüning)

In that sense, universities played a big part in developing ideas. Especially in the early stages, universities are a great place to make startup progress for entrepreneurs.

Entrepreneurial ecosystem

There were many various answers about the elements of the entrepreneurial ecosystem. However, almost everyone agreed that one of the main aspects is finance. Money helps startups grow, and it has a big effect on the entrepreneurial journey.

Currently, we are stuck on the financial side. I believe that if we get an investor and with the help of his financial help, we will grow more and go further. (Anette Agurauja)

On the other hand, the environment should be enough to grow. If there are people who understand this idea or place where there is a gap for this product or service, especially if it is a need for many people, then there is more possibility to make progress.

It is hard to explain to people about the idea because it is a very niche technology category. The idea is about phishing farms, and it is not as popular in Estonia compared to Nordic countries. It would be better if more people understood our product. (Timmu Tollimägi)

Also, startup community events play a vital role in the progress as they are the main elements of the entrepreneurial ecosystem.

Startup events help me to develop my idea as an entrepreneur. Also, the startup community has many benefits, as it is easier to interact with other entrepreneurs and ask about your issues. Because most probably those people have been in the same situation, it would be better to get an answer on how to figure out the problem. (Henri Trees)

So, a good entrepreneurial environment will help entrepreneurs develop more. Because within this case, there will be more investors who will focus on the good ideas that will solve the financial issues. On the other hand, a good startup community will improve solving issues. On the other hand, from the previous section, it came up that universities are also one of the main elements of the entrepreneurship ecosystem. Because with the help of universities, entrepreneurs can develop their ideas and get fundamental or additional knowledge about entrepreneurship.

Innovation

One of the essential elements of a startup is innovation. Most co-founders/founders agreed that innovation is needed in the first stages of a startup.

Innovation is a fundamental element. It is a key element for all of the stages. However, when you get the investment, you start to reduce an effort for innovation compared to the early stages while you start to focus on the business side. So, you start with the 90% effort for innovation in the early stages, and then it decreases to 50%, 40%, and so on. (Simone Briatore)

However, the founder of Skudo OÜ was thinking differently. Still, he thinks that innovation is important, but it is not so important in the early stages.

Firstly, there is a need to find a problem in the first stage. When you find a solution to that problem, it is time to use innovation. Innovation could also help to attain customers for your product or service. For example, it is good to find an innovative way to use some marketing to scale up. (Stefano Alberico)

All of the respondents feel that innovation makes the growth of their startup. It is a really good way to find a solution, and even it can make your company different from other organizations.

Handling difficulties

All entrepreneurs have faced many issues during their way-on startup, especially during covid times. However, they found out how to get rid of those things by their various characteristics or methods. Though StoryBox Games is a fresh startup, they also face many difficulties.

If a difficult situation arrives, I try to solve a problem directly as I am a problem solver. Also, if there is an issue at work, I will put away everything and start to find a solution by talking. (Anette Aguraiuja)

On the other hand, there is also a need to think about other people. Because you are a team and you are a responsible person. If you give up, then you will leave your team alone. So, for Henri Trees, his team is important for him, and he thinks that there are people who work for his idea and try to be better.

We have grown our company to ten to fifteen people, and those people are focused on working for you. I am responsible for those people, which motivated me to continue during hard situations. (Henri Trees)

It is also good to think about the future of the company. There is a need to think about the growth potential. Golbriak Space OÜ faced many difficulties, especially during the Covid time, but they saw the opportunity for progress.

I have faced many difficulties and already have many experiences with the difficulties. You need to understand that you invest not only with money; it is also about the effort and time you put into your idea. While in difficult situations with my colleagues, we discussed whether it is worth continuing, and when we see that there is still growth potential, we continue. (Simone Briatore)

Overall, it is hard to manage difficulties. The startups were taken interviews have experience with these situations. But they found a way to have a motivation to continue and solve their issues.

Estonian business ecosystem

All of the co-founders/founders are satisfied with Estonia's digital governmental system, which made it easy to start and run their businesses. These economic changes in Estonia made this system very handy for entrepreneurs with less paper works. There was also a big effect on Estonia when it joined the EU in 2003.

After joining the EU business ecosystem, Estonia was affected radically in a good way. So, it is very easy to do business here. People here are very practical, and they know how to solve problems when you have some. When you have a problem, it is easy to call and talk with the people in government. (Stefano Alberico)

There is also a case where Patrik Hollos opened a startup without having an Estonian residency. He made it by e-residency. So, this Estonian business ecosystem made it happen.

We decided to establish this company in Estonia because of the perfect development. I started a startup by using e-residency and building an international team. Though the country is so digitalized, bringing people from outside the EU to Estonia is not so smooth. (Patrik Hollos)

It is easy to register a startup in a system officially, a tax system is comfortable, a bureaucratic system is uncomplicated, and it is more reachable to interact, call and make meetings with people, and of course, the government support affects much in Estonia which made this country a really good place to start a business.

Education

Not surprisingly, most entrepreneurs have lack knowledge in different fields, which makes it hard to develop their ideas. Some of them get that knowledge from universities while others by self-studying. The co-founder of Unsinkable Robotics explained the effects of education on his journey. It is hard to know everything; however, it is easy to grow when there are people from different educational backgrounds.

...when one of you studies math while another studies physics, you put them both together to solve the problem. You are using the physics formula while it needs to be solved by math skilled person. (Timmu Tollimägi)

Colleges, schools, or universities become prior sources when it comes to education. Henry-Gerret Grüning agrees that education helps to make progress.

Tartu Vocational College helps me by teaching me how to develop a company and problem-solving courses. (Henry-Gerret Grüning)

Education is one of the main elements for growth, especially when you start a startup and don't have enough experience.

Entrepreneurial characteristics

Entrepreneurial features are varied from one another. Having good characteristics will affect the entrepreneurial journey. There are different features for entrepreneurs where it helps to solve issues, attain customers, develop, and reach goals.

I think being open-minded is the main characteristic that makes developing a startup. Also, it is easy to solve the issues and find investors by having good communication skills. (Anette Agurauja)

Though thousands of software or hardware have made our lives better, people still have problems. There is always space for new ideas which would make our life easier and fast.

There is a need to be visionary and understand the customer and the problem. When you understand a problem, you start to find a solution for it. (Stefano Alberico)

Also, the co-founder of Unsinkable Robotics added his own opinions about the characteristics of entrepreneurs.

To run this startup, being patient, stubborn, curious, working in a team, giving tasks to others, and having analytical helped me a lot. (Timmu Tollimägi)

Both Estonia gives many opportunities to start a business, and people have an entrepreneurial culture that makes them think like entrepreneurs and has those features.

Setup of a tech-based startup

Based on the answers setup of technology startups is not so different. It started with seed stages until getting financial aid.

There are pre-seed, seed, and investor sections in a startup system that we are in the early stage of right now. (Anette Agurauja)

On the other hand, there are MVP and prototype sections where you develop your product before launching. This phase is important as you test your product before servicing them to people.

The setup was a bit different for us compared to software startups as our idea is science-based, where the research takes more than five years. Then MVP and prototype parts were quite apparent, and they went parallel. (Patrik Hollos)

However, the setup generally starts with an idea, then in the next stage, MVP is developed, and lastly, fundraising.

Small company vs. startup

Startups can also be called a company at some points. Entrepreneurs who took part in my interviews mainly agreed that idea is one of the distinguishes between startups and small companies.

The unique idea made startups different from companies. Also, there is a long way to reach a goal. In addition, you start to gain revenue very lately, and then you increase it while in the company, you continuously generate revenue. (Stefano Alberico)

In that sense, innovation also comes together with startups to make it different.

There is a great ambition for growth when you run a startup, and innovation makes startups distinguish from small businesses. (Timmu Tollimägi)

A small company can be any business where you generate revenue. It can be a restaurant, cafe, or store. However, in startups, there is an idea where it will make you grow more not only locally but also globally.

Technology startups elements

Technology made the main difference between tech-based startups from the usual ones. If company services a product related to technology, it would call technology startups. However, there are other main elements for technology startups, such as scalability and idea.

Startups just come from an idea where you want to make a service or product that would be beneficial and compete with others. You need to put your product on the market as soon as possible. Another element of a startup is the idea can be scaled up day by day. (Henri Trees)

According to the responses, the elements of technology startups can be different, but many points make them a startup. The co-founder of litegrav.AI OÜ has agreed on various elements for each startup.

Each startup could have various features according to its area, but generally, it should be possible to imagine the way of the progress in startups. (Patrik Hollos)

Technology startup elements can't be stuck to several certain features. It can be varied depending on what kind of product there is. But the main elements are all startups' ideas solving people's pain points and scaling up.

Becoming a company

Not all startups become companies. Thousands of startups have started their idea, but they failed in the early stages for several reasons. Even some of them failed although they were gaining a profit from sales. So, organizational structure can make startups a company.

When the times come, a startup starts to have a bureaucratic structure, a process to hire people, and not be dependent on the founders. I mean that if the founder left the company still, this organization would be able to work. (Simone Briatore)

To be independent, the startup should start to earn where the economy of the startup will be stable.

To become a company startup should attain some customers, which I would say it is a river that you need to cross. And, of course, you need to have stable earnings. (Stefano Alberico)

In conclusion, to become a company startup should be able to stand on its own feet where you have enough customers, enough earnings to run a company, a good organizational structure, and independence from the founders.

I also made a structured table where I have mentioned every result for each interview question and described them in table 3.

Table 3

Structured results

Interview questions	Result
How did you find the idea for your startup?	Finding a gap in the market; researching while studying at the university; joining the idea of another co-founder;
What do you think about the effect of entrepreneurship on society?	Job opportunities; economical growth; motivation to other people to start their own business
What kind of contributions did you get from other entrepreneurs?	Sharing experience
How do you relate technology with your startup?	Core essence; communication; building an infrastructure;
How did university affect the success of your company?	Developing the idea in the labs; getting fundamental knowledge; startup programs
What are the key elements for you in the entrepreneurial ecosystem?	Finance; networking environment; startup communities; universities

In which stages do you use innovation to grow?	Early stages
How do you handle difficult situations?	Talking; responsibility; seeing potential
How did the vibrancy of the Estonian business ecosystem affect you?	Affected in a good way
What are the effects of education on the growth of your startup?	Fulfill the lack of knowledge; to gain fundamentals
What characteristics should entrepreneurs have in order to be successful?	Open-minded; communication; visionary; understanding a problem; patient; stubborn
How would you divide the setup of your tech-based startup?	Idea stage; MVP and building a prototype; investors
How would you distinguish your startup from small companies?	Unique ideas; start to gain late; innovation; ambition
What are the main elements for technology startups?	Ability to scale; able to see progress
What phases did or should you pass to become a company?	Bureaucratic structure; gain revenue; attain customers; no need for founders

Discussion

The results indicate that social skills, mainly communication and understanding the problem, are the main features of entrepreneurs in their journey to tech startups. Those characteristics have a significant effect on the entrepreneurial journey. In addition, this analysis supports the theory that universities and startup environments are needed elements in the entrepreneurial ecosystem.

It was expected that the external factors affect the idea of entrepreneurs, which is university was one of the main elements of the entrepreneurial ecosystem. However, contradicting Frese & Rauch and Elenurm & Alas, motivation was not so crucial to the entrepreneurial journey rather than communication.

The generalizability of the results is limited by the number of interviews and entrepreneurs who were the co-founders/founders of small startups. The results would be more accurate if I conducted interviews with more than ten entrepreneurs and more experienced ones.

Conclusion & Suggestions

As the number of startups, especially tech ones, is increasing worldwide, it is important to understand the key features of the entrepreneurial journey and the effects of the entrepreneurship ecosystem.

This study established how technology startups are essential for people and the country by conducting several interviews. In addition, the main elements of entrepreneurs and elements of entrepreneurial ecosystem come up from the result. The results showed that by having good communications skills, entrepreneurs are willing to solve the issues in their startups, exchange their experience with other entrepreneurs, and get investors while understanding a problem affects attaining customers and finding people's pain points. In addition, there is a high positive correlation between universities and technology startups. Because universities give fundamental knowledge and some entrepreneurs come up with their startup ideas while they did research at the universities' labs. Also, by having a good entrepreneurial environment, entrepreneurs get contributions from others.

Overall, it would be suggested that entrepreneurs would have good communication skills and the ability to understand the problem, which would affect them in a good way in their journey. Also, it would be better to consider the university and entrepreneurial environment as the main aspects of the entrepreneurship ecosystem.

Future research into the entrepreneurial effects on the tech startups should focus on how the universities affected entrepreneurs. There is a need to research the impact of the level of study at the universities on the success of entrepreneurs.

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Appendix A. Model of entrepreneurial ecosystem

Concept	Construct	Definition	Element
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Institutions	Formal institutions	The rules of the game in society	Formal institutions
	Informal institutions	Cultural context	Culture
	Social networks	The social context of actors, especially the degree to which they are socially connected	Networks
Resources	Physical resources	The physical context of actors that enables them to meet other actors in physical proximity	Physical infrastructure
	Financial resources	The presence of financial means to invest in activities that do not yet deliver financial means	Finance
	Leadership	Leadership that provides guidance for, and direction of, collective action	Leadership
	Human capital	The skills, knowledge, and experience possessed by individuals	Talent
	Knowledge	Investments in (scientific and technological) knowledge creation	Knowledge
	Means of consumption	The presence of financial means in the population to purchase goods and services	Demand
	Producer services	The intermediate service inputs into proprietary functions	Intermediate services
New value creation	Productive	Any entrepreneurial	Productive

entrepreneurship	activity that contributes (in)directly to net output of the economy or to the capacity to produce additional output	entrepreneurship
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Appendix B. Responses of the co-founder of StoryBox Games Anette Aguraiuja

1. Anette Aguraiuja is the co-founder of StoryBox Games. The idea of this startup is they are making games that give the player an amazing experience by connecting players. They are using real-life experience to tell the story to other players.
2. Anette Aguraiuja started the idea when she saw that there is a gap in this market.
3. Entrepreneurship has a big effect on society and mainly startups increase the number of jobs in the country.
4. Anette said that to become an entrepreneur she was inspired by Walt Disney.
5. Technology helps to communicate with teammates where she manages to talk about the future goals of the startup. Also, technology helps Anette to develop the marketing of the startup.
6. The university program called StartupLab helps her develop her idea.
7. She mentioned that one of the key elements of the entrepreneurial ecosystem is finance.
8. In order to grow the startup, she mentioned that innovation takes the main part in its growth and needs good innovation in every stage of its development.
9. One of the main characteristics that help her to solve the difficulties is she is a problem solver and always tries to figure it out as soon as possible.
10. As StoryBox Games is a new startup vibrancy of the Estonian business ecosystem didn't affect the growth of the startup.
11. While she studies at Tartu Vocational College project management courses helped her develop her idea.
12. Communication and being open-minded are the main characteristics that make developing a startup.
13. She also divided the setup of a startup into pre-seed, seed, and investor sections.
14. Anette explains that small businesses start with some capital while startups are not.
15. She responded to the question what are the main elements of tech startups she told that workspace is an important factor where you communicate and discuss the problem with your teammates.
16. For her when the startup gets the first investment they would call this startup a company.

(A. Aguraiuja & H.-G. Grüning, personal communication, April 10, 2022).

Appendix C. Responses of the co-founder of StoryBox Games Henry-Gerret Grüning

1. Another co-founder of StoryBox Games is Henry-Gerret Grüning. The brief information about StoryBox Games was described in [Appendix B](#).
2. Henry-Gerret Grüning liked the idea of Anette Aguraiuja (Another co-founder of StoryBox Games) and started to develop their idea.
3. He called Estonia Silicon Valley because there are too many startups and startups have a big impact economically by giving taxes to the government and socially startups give a lot of jobs to other people.

4. Henry-Gerret was inspired by Steve Jobs because of his actions he has done especially he created a product where you can store thousands of songs in one device and carry it in your pocket.
 5. He mentioned that technology helped him a lot to grow as it helps him to communicate with other team members and google workspace where he structures the startup, and email system, and controls the website.
 6. Extra courses from the University of Tartu such as a game development course and of course StartupLab help him to improve his idea and grow the startup.
 7. Henry-Gerret states that the main element of the entrepreneurial ecosystem is an investment.
 8. He continued that he needs innovation in every stage to grow.
 9. He mentioned that when he faced some difficulties being a family team helps the startup to overcome those challenges.
 10. One of the effects of the Estonian ecosystem is it is easy to register the startup and understand the tax system as Estonia has digitalized system.
 11. He started by that the effect of studies on growth by explaining that being a founder of a startup you need to be very diverse and need to learn by yourself a lot. Also, Tartu Vocational College helps him as well by teaching him how to develop a company and problem-solving courses.
 12. For him to be a successful entrepreneur you need to know when to take a break and be relatable.
 13. Henry-Gerret stated that startups should pre-seed, seed, and investor sections.
 14. He mentioned in the interview that one of the main differences between small businesses and startups is startups have unique ideas and there is a long way to reach the goal.
 15. Website and email accounts are the main elements of tech-based startups for him.
 16. While the startup can stay on its feet then he would call it a company.
- (A. Agurauja & H.-G. Grüning, personal communication, April 10, 2022)

Appendix D. Responses of the founder of Skudo OÜ Stefano Alberico

1. Stefano Alberico is the founder of Skudo OÜ. Skudo OÜ is securing data by encrypting them and authenticating the end-user. Startup reaches their goal by making hardware - chips.
2. The idea came to him when he was working at Nokia and during that time he has some interest in security especially since there were some cases where many dates were hacked from different sources. So, after that, he started developing his idea and building his startup.
3. Startups give many benefits to society such as taxes and job opportunities. Also, currently in that startup, there are some people working in different countries he mentioned that this also makes some promotions about Estonia, and relocation of those employees will make those employees would spend some money in Estonia.
4. He gets some contributions from Elon Musk but mainly from networking. He gains too much knowledge by sharing with the same level of entrepreneurs.
5. Technology plays a vital role in his startup. He uses video conference technology for communication, an encrypted email system, and slack.
6. As he get a degree in Italy many years ago, he stated that he got the theoretical knowledge from university and gain the fundamentals.
7. About the entrepreneurial ecosystem, he mentioned that it is easy to build a startup in Estonia, cheap to grow, and easy to get in touch with many people even at the ministry level.

8. He talked about innovation where he thinks that it is important to use almost in every stage except the early stage.
 9. Stefano talked about the difficult situation in the growth of a startup and he handle them with his passion to go forward, adjust to any problem, and change directions.
 10. He talked about the vibrancy of the Estonian ecosystem where the bureaucratic system is easy now, it is more reachable to interact, call and make meetings with people and of course, the government support affects much.
 11. As this startup has just 5 employees there is a lack of experience and in order to fulfill it, there is a need for self-study about different departments, especially HR.
 12. For this interviewee, being visionary is one of the main characteristics to become successful and he said that a successful entrepreneur should understand the customer and the problem he/she solves.
 13. He divided the setup of his tech-startup where he said that the first should be finding the pain of the problem then start to get an idea, build a prototype, MVP, and find an investor.
 14. He has mentioned that one of the differences between the startup and small business is you start to gain revenue from the startup very lately and then you increase it while in the company you continuously generate revenue.
 15. The main elements for technology startups are finding a pain point, understanding the customer, being a good team, and of course technology
 16. He mentioned that in order to become a company startup should attain some customers, and gain revenue where it will be able to stand on its feet
- (S. Alberico, personal communication, April 12, 2022)

Appendix E. Responses of the co-founder of Golbriak Space OÜ Simone Briatore

1. Simone Briatore is the co-founder of Golbriak Space OÜ. The idea of this startup is to communicate the satellites with each other via optical fibers. More deeply it is a highly powerful laser pointed to the satellite where it transforms it into the data. It can also be called optical communication solutions for aerospace.
2. The idea for this startup came while he was studying at the university. He was working on how to improve the ecosystem in aerospace to find communication between satellites with his colleagues.
3. He talked about the effects of entrepreneurship in a society where he thinks that startups push people to do something on their own. And startups help economic growth for the country lastly, give job opportunities to other people and improvement in the long term.
4. The main contribution he gets from is not the specific people but the famous entrepreneurs who give inspiration have also some effects. The co-founder mentioned that networking, communication, and sharing experience with other entrepreneurs make him grow much more.
5. As it is a technology-based startup technology plays an important role in his idea.
6. He stated that the university help him develop his idea even his the idea came while he was doing a Ph.D. at the university.
7. Simone also talked about the entrepreneurial ecosystem where he mentioned that bureaucracy, a networking environment, and an easy approach to the government are the key elements of the ecosystem.
8. We talked about the effects of innovation on growth where he said that innovation is very important in every stage especially in the early stages while the importance is decreasing when startups are growing.

9. About the handling difficulties, he mentioned that while you see the potential in the future about your startup idea that makes you continue.
10. He was a foreigner and came to Estonia a couple of years ago. So, he didn't come across any strong economical changes in Estonia
11. During his university time, he gets the fundamentals in a technical way while on the entrepreneurship side he is doing self-study such as reading books or taking online courses.
12. He mentioned that in order to be successful there is a need to have 50% on a strong technical approach while 50% on social skills like communication.
13. He also divided the setup of tech startups where he mentioned that first comes the idea stage, then building a prototype.
14. He stated that innovation makes a difference between a startup and a small business. If there are a unique idea, technology, and innovation then it is called innovation.
15. We continued the discussion about the elements of technology startups he said that the key element is MVP.
16. Simone Briatore mentioned that in order to become a company startup should start to have a bureaucratic structure, a process to hire people, and not be dependent on the founders which he meant that if the founder would leave the company still this organization would be able to work.

(S. Briatore, personal communication, April 14, 2022)

Appendix F. Responses of the co-founder of Unsinkable Robotics Timmu Tollimägi

1. Timmu Tollimägi is a co-founder of Unsinkable Robotics. The startup is an underwater robotics company and the main idea is to research, monitor, and construct under the water by using drones.
2. Firstly, they were making the robots with their colleagues and saw that there are many potentials and they can be used in different ways. So, they saw that this idea already works in Norway and try to implement it in Estonia.
3. Startups give opportunities to others in many ways. Some of them are - startups that give chance to do things better, great excitement, and encourage people to do their own startups.
4. Sharing experiences with other local entrepreneurs gave Timmu too many contributions, especially from entrepreneurs who are a bit further than him like those who are generating revenue already.
5. Startup is itself a deep tech company and also during pandemic time bring colleagues to the home office. Also, computer programs are used for building, planning, and designing robots.
6. University helped him to put him in contact with the right people at the right place. Though he didn't learn from courses, extracurricular courses helped him much to develop.
7. Specifically for this startup he states that one of the main elements of the entrepreneurial ecosystem is people who are capable of doing engineering. But in general, finance, understanding the idea, and the environment in that people would understand your idea of a startup are the other key elements of the entrepreneurial ecosystem.
8. He thinks that innovation is mainly needed in the pre-seed and seed stages for the growth of startup
9. In this entrepreneurial path, Timmu faced many ups and downs. He handled them by cooling down and talking with others for help.

10. We also discussed the business ecosystem of Estonia where he mentioned that currently, it is so easy to start a startup, and the number of startups increased after the spark of Skype.
11. He explained that it is impossible to learn and implement them. So, in more detail, he said that one of you studies math and another studies physics and they combine their knowledge together where they develop their startup idea.
12. He has mentioned many characteristics of successful entrepreneurs such as being patient, stubborn, curious, able to work in a team, able to give tasks to others, and have analytical thinking.
13. The first stage of the setup of a tech-based startup is the idea stage, then comes MVP and at the end, Timmu mentioned that you need to have investors and clients.
14. In startups there is a great ambition for growth and innovation makes startups distinguish from small businesses.
15. He has mentioned that the main element of a tech startup is growing so radically and fast.
16. In the last question, he thinks that when he feels that a startup becomes profitable, scales based on its revenue, and there is no need for an investor then he can call Unsinkable Robotics a company
(T. Tollimägi, personal communication, April 19, 2022).

Appendix G. Responses of the co-founder of litegrav.AI OÜ Patrik Hollos

1. Patrik Hollos is one of the co-founders of litegrav.AI OÜ. The startup is developing hardware and software for life science research such as laboratory equipment. litegrav.AI OÜ provides products and services to increase the research by using space economy
2. The idea came from his own experience while he was investigating space.
3. In general startups' services or products is a big benefit to society. Because people can use those services or products and can gain from them. Also, he added to the effects of entrepreneurship in society that startups give new job opportunities to people.
4. He didn't have any idols from famous entrepreneurs. He gets many contributions from local entrepreneurs.
5. Core essence of this startup is technology. Also, they are using machine learning algorithms, deep learning, and databases in order to grow their idea.
6. University also affected Patrik. During his studies, he was able to work in labs and made the prototype of the startup idea.
7. He mentioned several main elements of the entrepreneurial ecosystem which are matching the area of this idea and funding agencies.
8. For the growth of the startup, innovation is very vital. While for him early stage is much more important.
9. During this entrepreneurial path he had faced many issues and he tried to call back his memory that it will work.
10. Firstly he had built this startup by using an e-residency. Building it was easy thanks to the digitalized system however it was hard to physically operate in Estonia and relocate the employees from different countries to Estonia.
11. Attending many events, exploring investors, and taking a part in conferences increased his knowledge of entrepreneurship.
12. In order to be successful, Patrik mentioned that entrepreneurs should be persistent, and have social skills.

13. We also discussed the setup of a tech startup. According to his answer, the first stage is about researching, and MVP alongside with prototype should be developed parallel. After them, investors need to be found.
 14. He also talked about the differences between startups and small businesses. He mentioned that if it is possible to scale the solution globally in from the first day then it can be called a startup.
 15. Firstly, each startup could have various features according to its area but generally, in startups, it should be possible to imagine the way of the progress.
 16. He thinks that if there is a place for this startup in the market and has around five to ten customers then it can be called a company.
- (P. Hollos, personal communication, April 19, 2022).

Appendix H. Responses of the co-founder of Bauhub Henri Trees

1. Henri Trees is one of the co-founders of Bauhub. It is a software development company where they are making products for construction in order to manage them. So, rather than doing this job with papers by Bauhub, it is possible to do it digitally.
2. Actually, the idea came from another co-founder who was working in the construction field and he saw that there is a need for such kind of product in the market.
3. He mentioned that entrepreneur is a big part of society has many effects on it. One of the effects is entrepreneurs are motivation to others.
4. By following the other famous entrepreneurs Henri saw that they are also like him and there is nothing special they have.
5. As they are a tech company technology is a core essence in their field. They are using technology in their daily usage mainly for storing managing the task and communicating with each other.
6. University has an effect on his journey as well. He mentioned that by not graduating from university it is possible to be a good developer but for him as an entrepreneur university played a great role.
7. One of the key elements for Henri in the entrepreneurial ecosystem is the startup community. Also, incubators, startup events, and conferences are other elements of the entrepreneurial ecosystem.
8. Generally innovation needs in all stages of development. However, in the early stages, it is more vital. Because sometimes when you already develop people start to put the focus not on product mainly to business and try to earn more money.
9. Like other entrepreneurs he also faced many issues during his entrepreneurial path. He always remembered that there are people that work for him to stop in the middle of the way would be good for them.
10. The current Estonian business ecosystem is so digitalized. Now, it is easier to register your startup and there are fewer papers works.
11. He states that nowadays there are coming new technologies in the world and in order to adapt to this speed there is a need to learn by himself.
12. It is good to be open-minded and know how to communicate with others in order to be a successful entrepreneur.
13. We also talked about the setup of his tech startup. He mentioned that the first stage is an idea, then comes the MVP and production stages.
14. He thinks that the difference between a startup and a small business is if there are more advanced technological advances and making their own software not dependent on others then it can be a startup.
15. One of the main elements of a startup is it comes from ideas and then this idea scales up day by day.

16. Henri states that all the startups are companies but in general if the startups have already some customers and there is a need for this product or service then this startup can be called a company.

(H. Trees, personal communication, April 20, 2022)

Appendix I. Startups

StoryBox Games

The idea of this startup is they are making games that give the player an amazing experience by connecting players. They are using real-life experience to tell the story to other players.

Skudo OÜ

Skudo OÜ is securing data by encrypting them and authenticating the end-user. Startup reaches their goal by making hardware - chips.

Golbriak Space OÜ

The idea of this startup is to communicate the satellites with each other via optical fibers. More deeply it is a highly powerful laser pointed to the satellite where it transforms it into the data. It can also be called optical communication solutions for aerospace.

Unsinkable Robotics

The startup is an underwater robotics company and the main idea is to research, monitor, and constructed under the water by using drones.

Litegrav.AI OÜ

The startup is developing hardware and software for life science research such as laboratory equipment. litegrav.AI OÜ provides products and services to increase the research by using space economy.

Bauhub

It is a software development company where they are making products for construction in order to manage them. So, rather than doing this job with papers by Bauhub, it is possible to do it digitally.

Foreign-language summary (résumé)

Tehnoloogia idufirmade teekond ettevõtluses ja ettevõtluse ökosüsteemi mõju sellele

Selle lõputöö eesmärgiks on käsitleda tehnoloogia idufirmade ettevõtlusteede ja ettevõtluse ökosüsteemi mõjusid sellel teekonnal. Samuti oli selle eesmärk mõista ettevõtjate põhitõdesid nende tehnoloogia-idufirmade teekonnal ning ettevõtluse ökosüsteemi mõjusid sellel teekonnal Eestis. Vastuste leidmiseks viisin läbi intervjuusid erinevate Eestis asuvate tehnoloogia-idufirmade asutajatega ning kaasasutajatega.

Esimene peatükk käsitleb ettevõtlust ja võtab suuna ökosüsteemi ja ettevõtluse ökosüsteemi elementide käsitlemise suunas. Järgmiseks lahkan ma ettevõtjaid ja nende põhitõdesid. Kokkuvõttes räägin tehnoloogia start-up'idest, nende erinevadest osadest ja elutsüklist.

Peale teooria osa räägin ma meetodikast, mille raamistikus lahkan väärtusandmeid ja teisi intervjuu käigus kogutud andmeid. Küsimustik on koostatud nende elementide järgi, mida taustalõigus mainisin.

Lõpetuseks kirjutasin uurimustöö tulemustest ja tegin tööst järeldused. Tulemused näitavad, et sotsiaalsed oskused: peamiselt suhtlemine ja probleemi mõistmine, on peamised, mida ettevõtjad kasutavad oma ettevõtte realiseerimise teekonnal. Need karakteri tunnused omavad märkimisväärset rolli eduka ettevõtliku teekonna läbimiseks ja on lahutamatud ettevõtluse ökosüsteemi osad.

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