Tampere University

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FIRST CUSTOMER ACQUISITION IN START-UPS

Interview Study

Faculty of Business and Built Environment
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ABSTRACT

Kubilay Kağan Özkan: First Customer Acquisition in Start-ups, Interview Study
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The impact of start-ups in economic growth in the world has been enormous. However, most start-ups fail before they break even. If the failure rate of start-ups could be improved, the world's economy and people could benefit from the disruptive innovations that start-ups produce. Therefore, there needs to be more research on understanding the start-up development from the very early-stages. Among many challenges that start-ups face, one key decisive challenge is to get the first customer paying for whatever the startup is offering. This challenge is also closely connected to the life expectany of the startup; if there is a customer, there will be a business.

The objective of this thesis is to discuss the iterative process of how B2B start-ups even-tually get their first sale and how the business ideas evolve until the scalable business models are found. To accomplish this objective, this thesis reviewes the literature concerning start-ups and how the business idea and sales evolve through pivots until the scalable business is found. Special emphasis will be on the software start-ups and especially those who focus on the software-as-a-service business model. A framework is designed to demonstrate the potential iterations preliminary to the first sale and in the development process of start-ups until the scalable solution is discovered. Finally, this framework is analyzed and validated by inter-viewing seven B2B SaaS start-ups.

This study demonstrates the major challenges faced for getting the first B2B software sale and the iterative process while getting the first customer and finding the scalable model in the development process of start-ups. This study also introduces the concept of 'start-up chasm' to emphasize the challenge many customer have to get the first customer willing to pay for the offering. This study contributes to the start-up literature showing the iterative nature of 'pilot cases' startups often have before the first paying customer is found and until the scalable business model is found.

Keywords: software, SaaS (Software-as-a-Service), start-up, early-stage start-ups, software start-ups, SaaS sales, B2B sales, customer acquisition, first sale, first customer

PREFACE

During my bachelor's and master's studies, I have realized that I am passionate about developing innovative products and services and creating my own start-up in the future. I was visionary since my childhood to become my own boss and always wanted to run a business that helps society and the planet in a meaningful way. During my studies, I have had various trials and many failure experiences of not turning any of my projects into a business. In addition to studies, I have had experiences working with tech start-ups and playing an ecosystem player role in Tampere city. During those experiences, I have observed many challenges rising in a small company environment naturally. Therefore, I wanted to investigate those challenges and focus on one of the most important problems in detail I have faced and observed in real life that is getting the actual sales to run the business.

By doing this research and interviews with start-ups, I aimed to provide a great learning experience for myself and other potential start-up founders to start and succeed in their business with less risk and costs in the future. While doing the research and interviews, I really learned a lot more than what I knew about start-ups and sales in general and more specifically software-SaaS and B2B sales in this segment. Doing the research on these topics has been enhancing and eye opening for my personal and professional development.

I would first like to thank Dr. Jouni Lyly-Yrjänäinen for his encouragement and guidance throughout the process of writing this thesis and during my whole study period. I would also like to thank Professor Leena-Anrikka Stenroos for her valuable comments and insights. Furthermore, I would like to express my sincere gratitude to the founders of case companies. In addition, I would like to thank my colleagues and supervisor for their continuous support throughout my thesis study and past colleagues from Y-Kampus, Deal room Events, Utelias Technologies and CHAOS for the learning experiences and Tribe Tampere community for their support in my career. Additionally, I appreciate my dear friend Semih Ersöz for his inspiring and helpful support in my career and life in Finland. Last but not least, I would like to thank my family a million times for their support throughout all the stages of my life.

Tampere, 18th May 2020

Kubilay Kağan Özkan

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LIST OF SYMBOLS AND ABBREVIATIONS

AAARRR	Acquisition – Activation – Retention – Revenue – Referral
AI	Artificial Intelligence
AR	Augmented Reality
B2B	Business to Business
B2C	Business to Consumer
B2G	Business to Government
B2B2C	Business to Business to Consumer
BML	Build-Measure-Learn
CEO	Chief Executive Officer
CMO	Chief Marketing Officer
COO	Chief Operating Officer
CRM	Customer Relationship Management
CTO	Chief Technology Officer
ML	Machine Learning
MVP	Minimum Viable Product
MRR	Monthly Recurring Revenue
PoC	Proof of Concept
R&D	Research and Development
SaaS	Software-as-a-Service
TEKES	Business Finland (old)
UX	User Experience

1. INTRODUCTION

1.1 Background

Technology is playing a significant role in the change of human life. The market conditions, competitive environment and business strategies are being affected and changed rapidly due to technological developments (Yoo, 2010). Since the emergence of the internet, with the diffusion of new technologies all over the world in recent decades, people are now more connected than ever before and many physical businesses have been changing their forms into online business models. Technological growth and the formation of a new type of online economy bring new ways of making business.

The disruption of traditional businesses has been tremendous (Zervas et al., 2015). Most of the services consumers interact with have been the creation of digital ecosystems of software, mobile applications, and online support related to products (Ojala & Rialp, 2017). This service economy is boosted with technology which created new business models and strategies in the market (Irene, 2010). Disruption with technological innovations was mostly created by start-ups that were introducing new alternative ways (Srinivasan et al., 2014). Financing is being reinvented by Kickstarter, hospitality reshaped by Airbnb, and the music industry changed by Spotify (Shontell, 2012).

In addition to disruptive innovation and rapid technological changes, one of the main drivers of economic growth has been booming start-ups. The global start-up economy created a value of 2.8 trillion dollars only between 2016 and 2018 by continuous growth which was a 20.6% increase compared to the previous period and more than double the amount of five years ago. Furthermore, the Group of Seven (G7) economy is head to head with this value generation. Moreover, the list of largest corporations in the world is dominated by technology as seven out of ten largest companies are technology based whereas it was only Microsoft alone in 2008. (Gauthier et al., 2019).

According to the U.S. Small Business Administration (cited in Unterkalmsteiner et al., 2016), the significant contribution of startups to wealth enables job creation and new products and services. According to The Economist (2014), the impressive amount of the diversity of new services and products are accounted for digital software startups.

The development and introduction of software products illustrate unique instances in the market (Unterkalmsteiner et al., 2016).

Widespread internet connectivity and mobile devices lead to the so-called startup bubble which is the extraordinarily rapid growth of software ventures being born. Entrepreneurs of today are attracted by the accessibility and inexpensive reach of promising markets. Many fortunate entrepreneurs stimulate the creation of vast amounts of new software businesses. Markets are widely influenced by the production of advanced modern software products by software startups. (Giardino et al., 2014).

1.2 Objective

Start-ups can be established at an easier level than before. According to Hokkanen (2017), significant investments may not be needed to bring software products to the market. Start-ups can also benefit more from alternative funding options like crowdfunding to reach the capital. However, existential problems are encountered by start-ups in contrast to the encouraging environment (The Economist, 2014) and great success stories. Nobel (2013) states that there are very exceptional outstanding cases and the failure rate is more than 70 percent for companies based on how failure is described. While Åstebro et al. (2014) claim that a high number of market entries surely result in plentiful loss of companies. Within five years from the creation of start-ups, over sixty percent fail (Nobel, 2013) where the most get out of business in the first two years (Crowne, 2002).

While the rates are extremely high, Paternoster et al. (2014) state that start-up failure lacks scientific rigor. Hokkanen (2017) also asserts that research on start-ups with high scalability targets and lean methods is missing. According to Wang et al. (2016), learning the struggles of prior start-ups is beneficial for entrepreneurs to take the necessary precautions and survive in the end. Therefore, there needs to be more research on understanding start-up ideas development from the very early stages.

Most start-ups fail due to several reasons. Among many challenges that start-ups face, one key decisive challenge for a start-up idea to fail or succeed is to get the first customer that would pay for the solution. It can be put that if there is a customer, there will be a business. The first sale brings funding necessary for running the business as well as validation to get new customers. Therefore, the objective of this thesis is…

> *…to discuss the iterative process of how B2B start-ups eventually get their first sale and how the business ideas evolve until the scalable business models are found.*

To address this objective, this thesis reviews the literature concerning start-ups, challenges of start-ups and software-as-a-service evolution, benefits, and business models due to the focus of this thesis. Next, a framework is designed to demonstrate the potential scenarios preliminary to the first sale in the development process of start-ups. This study proposed a new concept, the “Start-up Chasm”, in this framework. Finally, this framework is analyzed and validated by interviewing seven B2B SaaS start-ups as case companies.

1.3 Research Process

The research process was unofficially kicked off in July 2018, when the author started working with a software start-up company for a Sales and Marketing role. The work aimed to seek new solutions to scale the business up by generating new customers and was conducted in a start-up hub called Maria01 in Helsinki, Finland. Working in this company gave the author an opportunity to learn about the B2B software sales by designing the sales and marketing processes for the company and talking directly with the potential and existing customers. The work was concluded in October 2018. Figure 1 illustrates the milestones and main activities in the research process.

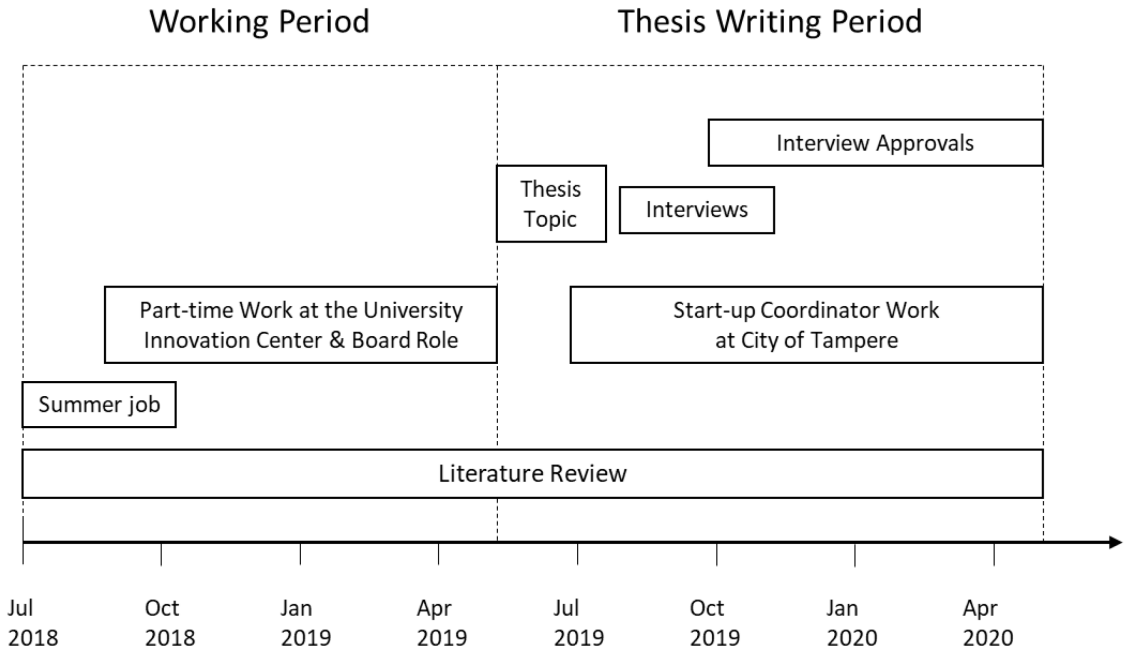

Figure 1. *Timeline of Research Process*

During the work, the author faced the challenges of an early-stage software start-up at first hand. Challenges were selling a product-service (software-as-a-service) during the

development of its newer version, not certain customer segments, high market competition, lack of experience of the author for B2B sales and marketing and a small team with lack of certain skills. Based on the challenges, the author has started doing preliminary research to help his work around different topics like inbound marketing, B2B SaaS sales, account-based marketing, growth hacking, omnichannel marketing, portfolio management and platform marketing.

Upon the work in an early-stage software start-up, the author has started working for the entrepreneurship and innovation center of the university. Additionally, thanks to this role, the author was able to join the board of an entrepreneurial community that was serving not only students but also any other start-up and entrepreneurial-minded individuals in the start-up ecosystem of the city. These roles enabled the author to get in touch with many innovative and entrepreneurial people and make observations. Based on the observations made from these experiences, the author has got into improving the entrepreneurship ecosystem and the success rate of start-ups created in the city.

In addition to these observations, aspirations of the author to become an entrepreneur and his prior start-up ideas development trial experiences made the topic of this research to focus on early-stage software start-ups. One of the key challenges the author has faced and observed was acquiring the first users/customers for the product/service. Therefore, the thesis project with this idea was officially kicked-off in June 2019 after the discussion on the final topic and structure with the supervisor of the thesis upon the author getting a new job.

Due to the current work of the author which is not commissioning the thesis work, the author has defined to conduct an exploratory multiple-case study. The plan was to conduct 5 to 10 case study interviews after summer holidays simultaneously during August and early September 2019. In parallel to these interviews, literature review related to the definition, lifecycle stages and challenges of start-ups, and Software-as-a-Service (SaaS) were examined to gain the theoretical knowledge needed to support the analysis of cases.

1.4 Research Setting and Data Gathering Methods

Knowledge is increased or created by research that is a systematic and methodological process of inquiry (Amaratunga et al., 2002). Buckley et al. (1975) proposes an operational definition of research that satisfies some conditions like defined problem, appropriate scientific methods, necessary evidence, logical reasoning without bias in conclusions on the basis of evidence, validity of reasoning of conclusions shown by researchers

and cumulative results of research in the field to be applied in the future. Amaratunga et al. (2002) states that spirit of investigation conducting the research relies on facts, experience and data, concepts and constructs, hypotheses and conjectures, and principal and laws.

According to Remenyi et al. (1998), procedural framework followed within a conducted research study defines the research methodology. He further states that research methodology selection is affected by many factors with the main influencers being the research topic and specific research question.

Research can be either theoretical or empirical or both. Theoretical research aims investigation of existing theories to answer a research question or creation of a theoretical framework.

Empirical research involves the analysis of gathered empirical data and report of findings and conclusions (Minor et al., 1994). The beginning of any empirical research usually is defining the research question or problem to be investigated. Later on, the literature review is done and a hypothesis or a theoretical framework is built by the researcher. Based on the theoretical framework or hypothesis, real-life cases are tested. Lastly, the researcher draws conclusions and examines the viability and limitations of the study (Simon et al., 1994).

Moody (2002) expressed that qualitative and quantitative methods can be division of empirical research methods. Qualitative methods are especially suitable for theory building in the initial parts of an empirical research. Differently, quantitative methods are appropriate in case of testing and refining the theory. Nevertheless, there is no single pure research method used practically where it is mostly a combination of both quantitative and qualitative methods, which is attributed as triangulation (Voss et al., 2002). According to Wohlin et al. (2006), there are four different types of empirical research strategies: experiment, case study, survey and post-mortem analysis. While only experimentation is quantitative methods, others are a combination of both quantitative and qualitative methods. This thesis is an example of a case study thus, the case study method is introduced briefly in the following paragraphs.

Case study research is conducted to attain an improved knowledge about a complex phenomenon or to discover a hidden phenomenon. Despite both qualitative and quantitative data generation methods are utilized by case study researches, qualitative methods are much more widely used. Data gathering methods for a case study research for management subjects are classified by Gummesson (1993) into five categories. Table 1 introduces these data gathering methods with their short descriptions.

Table 1. *Data gathering methods (Gummesson, 1993)*

Method	Description
Existing materials	Often exchangeably used as secondary sources of data which is gathered by other media (e.g., books, articles, mass media reports, brochures, films) than humans.
Questionnaire surveys	Utilised for standardized interviews
Questionnaire interviews	Case study research uses this method most frequently to gather data with open-ended questions, which are asked based on the progress of the interview
Observation	The subject of the study is observed in this method to gather information
Action science	The researcher is involved in the process fully in this method which can include all other data gathering methods

The goal of this study was to create a theoretical framework for B2B sales in the early stages of start-up ideas development. The theoretical framework was validated in various real-life cases. Several data gathering methods were applied in this study, including existing materials, questionnaire interviews, observation, and action science, but primarily through semi-structured interviews. The next figure illustrates the data gathering methods used throughout the research process.

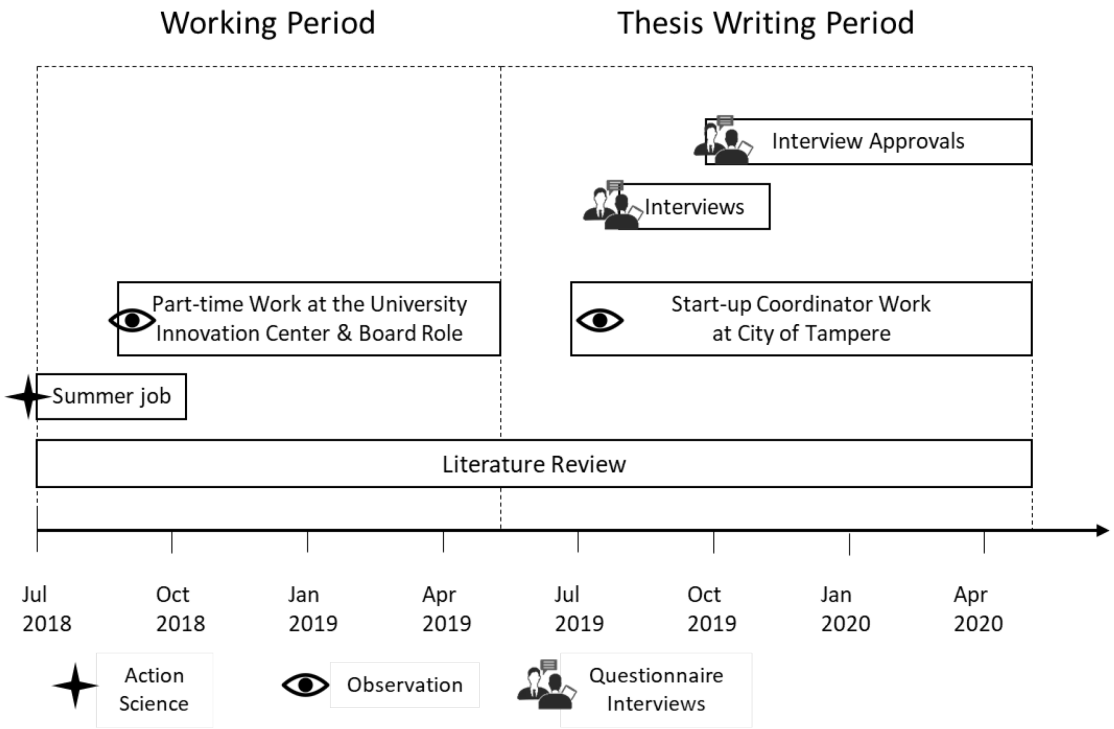

Figure 2. *Data gathering methods used during the research process*

First part of the research included action science method by working in Start-up A during summer and early autumn in 2018. Upon the summer job, the author has observed several other companies in his works at the university and the municipality and conducted interviews. The following table shows the research methods conducted with Start-up A.

Table 2. *Research Methods with Start-up A*

Research Method	Role of the Author	Date
Action Science	Key Account Manager	July 1 – October 15 2018
Interview	Interviewing the CEO and co-founder of Start-up A	19.08.2019

During the summer job period, the author has realized that one of the key challenges was acquiring the first customer for the service himself and how many different iterations the Start-up A has gone through and been continuing such as changing pricing and business models, customer segments and value propositions. This discovery made the author curious to investigate the topic in a deeper level by observing and interviewing other start-ups. The following table summarizes the research methods and details of the interviews from six individual cases in this study.

Table 3. *Research Details of Interviews*

Company name	Role of the Interviewees	Interview Method	Date of the Interview	Date of the Interview Approval
Start-up B	CEO – co-founder	Video call	06.09.2019	15.05.2020
Start-up C	CEO – co-founder	Meeting	29.08.2019	02.10.2019
Start-up D	CTO – co-founder	Meeting	05.09.2019	17.11.2019
Start-up E	CEO – co-founder Growth Hacker	Phone call Email-Meeting	06.09.2019 11.09.2019	08.04.2020 17.11.2019
Start-up F	COO – co-founder	Video call	22.08.2019	11.10.2019
Start-up G	CEO	Video call	20.09.2019	24.04.2020

The information from company catalogues, brochures, company websites, and other online sources were gathered prior to interviews concerning the company, its operations, and future goals. In addition, semi-structured interviews were conducted with founders, C-level executives e.g. CEO, COO, CTO and sales and/or marketing leads of the case companies to gain more detailed knowledge specifically regarding the first sales and respective growth of their business. The interviews lasted about 30 to 60 minutes and they were all recorded in either face-to-face meetings or phone or video calls. Thereafter, the case studies were constructed and sent for review to the interviewees. Some of them

commented on the content and some edited while other interviewees accepted the case studies as they were.

1.5 Introduction of Case Study Start-ups

The thesis consists of case studies to investigate real examples from the industry to validate the theoretical framework and discover sales and marketing of B2B Software-as-a-Service (SaaS) start-ups. Seven start-ups have been interviewed and case studies were built based on the interviews as well as existing online and offline material resources about the companies. The list of start-ups is shown in Table 4 below.

Table 4. *List of case study start-up companies and their details*

Case Company	Idea	Business domain	Founding year	# of founding team members
Start-up A	Event efficiency tool – matchmaking & agenda management	Event Management – Networking	2018	2 (3)
Start-up B	Artificial intelligence software and app for foreign languages	Education Technology	2017	1 (2)
Start-up C	E-learning & training for dementia caregivers	Healthcare & Education	2017	2 (4)
Start-up D	AR Whitelabel app for 3D drawings of large components and products	Augmented Reality & Sales-Mar-Tech	2018	2
Start-up E	Startups data and analysis, for corporate innovation	Corporate Innovation & Big Data	2015	2
Start-up F	Whitelabel platform for marketplace businesses	Software development	2011	3
Start-up G	Dynamic Pricing as a Service	Sales Tech	2016	2

Table 4 basically summarizes the idea, business domain, founding year and number of founding team members of each start-up. Most of the start-ups interviewed are operating as Software-as-a-Service. However, there are some differences in the implementation or services provided in some cases. The following table categorizes the start-ups based on their service type.

Table 5. *Service type of start-ups*

Product - Service Type	**Software/SaaS + Product**	**SaaS – App**	**Software/SaaS + Service**
Companies	Start-up B	Start-up A*, Start-up D*, Start-up F, Start-up G*	Start-up E, Start-up C

As shown in Table 5, Start-up B is not purely a SaaS company at the moment since its service is dependent on a physical robot product. Therefore, a customer who is interested in Start-up B solution needs to buy hardware as well. In addition to that, Start-up B also provides training to customers. Similar to this model, Start-up C and Start-up E do not have a direct SaaS offering currently. The core service of Start-up C is providing training and, therefore, it does not require any software. However, they do have an online learning platform that is helping customers to get trained better so the company thus sells a blended service of software and on-site. Start-up E also has an analysis and validation service for its customers based on computing that generates results from big data however they do not yet provide direct access to its customers whereas they do provide a data management interface for introduced cases.

In parallel to these cases, Start-up A and Start-up D have also some additional service implementation for their big customers or premium services for facilitation and/or guidance on spot. Start-up F with its latest product Flex has premium development service too as well as custom style development for its Go service. Start-up G mainly operates as SaaS, yet Start-up G has some other side services to support the customers on pricing consultancy and monitoring analysis.

1.6 Structure of the Thesis

This thesis is logically divided into eight chapters. The content and objectives of the chapters are as follows:

1. Chapter 1 has given an introduction with the background and main objective of the study where it has also demonstrated the research process of the study and data gathering methods applied in all the research activities. Lastly, it has introduced the case companies.
2. Chapter 2 introduces start-up definition and life cycle stages from different perspectives by also focusing on software start-ups.
3. Chapter 3 describes the Software-as-a-Service (SaaS) with its historical evolution, advantages and disadvantages and business models.

4. Chapter 4 discusses and analyses the challenges faced by start-ups, pivoting phenomena and different ways to get customers.
5. Chapter 5 expresses the study cases of selected start-ups with the quotes from interviewees of studied cases of start-ups. It also gives a short history of case companies with a snapshot of their milestones.
6. Chapter 6 analyses case studies from an empirical perspective. Common and first sales-specific challenges as well as defining their first sales, and their growth path are examined based on the interviews. Lastly, it summarizes the current status of start-ups from product development, funding and growth stages as well as giving a snapshot of their current sales model and deal size.
7. Chapter 7 reviews the research problem and the theoretical framework of the thesis. Then, it applies the framework to the case study and analyses the results. Finally, it states the findings of the research and points out the limitations of this study.
8. Chapter 8 concludes the study.

2. SOFTWARE START-UPS AND THEIR LIFECYCLE

2.1 Definition of Start-up

To understand the sales and growth of B2B SaaS start-ups, there needs to be first clarification and understanding of what start-up is and how it evolves. Although there is vast amount of research on entrepreneurship, modern start-ups with lean methods lack the scientific analysis (Hokkanen, 2017). Since the current trend and understanding of start-ups evolve continuously, there are multiple definitions and characterizations made by different authors. Although there is no consensus made on a common start-up definition, the following definitions are widely accepted and respected definitions in the start-up environments as shown in Table 6.

Table 6. *Startup definitions by different authors*

Author	Definition	Related Terms
Eris Ries (2011)	"A start-up is a human institution designed to create a new product or service under conditions of extreme uncertainty."	New, Uncertainty
Steve Blank (2006)	"startup is a temporary organization that creates high-tech innovative products and has no prior operating history. It is an organization formed to search for a repeatable, scalable and profitable business model"	Technology, Innovation, New, Repeatability, Scalability, Profitability, Business Model
Paul Graham (2012)	"A start-up is a company designed to grow fast."	Growth, Speed
Peter Thiel (2014)	"Positively defined, a start-up is the largest group of people you can convince of a plan to build a different future. A new company's most important strength is new thinking: even more important than nimbleness, small size affords space to think."	Different, New, Small
Wang et.al. (2016)	Start-ups are newly created companies that aspire to grow fast in extreme uncertainty.	New, Growth, Uncertainty
Erkko Autio (2016)	A Startup is a new, independent firm, up to six years old, which is strongly growth-oriented, has not yet settled upon a scalable business model, and spends at least 15% of its operating expenses on R&D.	New, Independent, Growth, Uncertain Business Model, R&D

As the table shows, start-up entrepreneurship usually resonates with following aspects:

- newness,

- uncertainty and risks,
- scarce resources,
- scalability and sustainability,
- rapid rate of growth,
- business models,
- technology, disruptive innovations, and R&D,
- instutition, source of value and human

This section will introduce these elements.

First, most of the definitions differentiate start-up teams from well-established organizations by being newly formed businesses and no or limited history of operations. Ries (2011) defines it as new product or service whereas Blank (2006) describes it with no operating history. Thiel (2014) states that new ventures like start-ups create new technologies. He also points out the importance of new thinking. Wang et.al. (2016) describes new companies as start-ups in part of their description. Ries (2011) extends the definition to entrepreneurship by suggesting it being creation of new product or business within extremely uncertain situations.

The second most important aspect of start-ups can then be defined from extreme uncertainty. According to Ries (2011), extreme uncertainty distinguishes start-ups from most large and small companies since new business creation with same or very similar characteristics like business model, pricing, target segment and product can be successful with a good execution which lacks higher level of uncertainty and risks. Ries (2011) further points out to the speed of change and the rise of alternatives faced by customers making the future unpredictable. Hokkanen (2017) also mentions the pivoting phenomena of start-ups on their target segment or business model that adds to volatility and predictability of future operations of start-ups.

Third, lack of resources distinguishes start-ups and contributes to the uncertain nature of start-ups. Sutton (2000) suggests that start-ups are also reactive to change with informal ways of operations. Sánchez-Gordón and O'Connor (2015) state that major reason for existence of start-ups is bringing a new product to market with limited resources and uncertainty. Park and Steensma (2011) and Bertoni, Colombo, and Grilli (2013) together cited in Kang (2018) claim that often lack of resources pushes a start-up beyond its boundaries to capture crucial capabilities from outside resources.

Fourth, scalability is another aspect. Both aspects of new business creation and extreme uncertainty make start-ups differ from corporations that have more resources and serve a mature market but not fully from any small new businesses. Wang et.al. (2016) states

that the main differentiating factor of start-ups from small businesses is seeking the scalability and sustainability of business models. Hokkanen (2017) claims that for the sustainability of the business, the aim of start-ups should be the creation of value to customers for extended time. She further defines that acceptance of a business model creates the differentiation of start-ups from small businesses. Moreover, Blank (2006) specifies start-ups in terms of their intention to grow and find a scalable, repeatable and profitable business model.

Fifth, the rate of growth of start-ups makes distinction from new businesses or large corporations. According to Paul Graham, founder of a leading American start-up accelerator Y Combinator, “a startup is a company designed to grow fast. Being newly founded does not in itself make a company a start-up. Nor is it necessary for a startup to work on technology, or take venture funding, or have some sort of ‘exit.’ The only essential thing is growth. Everything else we associate with startups follows from growth.” Weinberg and Mares (2014) also claim that the existence of a start-up comes from rapid growth which is the traction of getting customers.

Sixth, business models are an essential part of start-ups definition. In addition to scalable business model creation, it needs to be understood what business model is. Osterwalder et.al (2010) introduced the business model and value propositions to guide entrepreneurs which illustrate value creation and capture by companies. Ries (2011) asserts that most management tools were not meant for start-ups due to the harsh environment although many were using common forecasts, milestones and business plans in detail.

Seventh and another important aspect commonly defined by authors is the innovation and technology orientation of start-ups. Blank (2006) describes start-ups with the resonation of creating high-tech innovative products. Autio (2016) also points out to the use of resources on R&D to be over at least 15%. Although start-ups usually come to mind with technology at the same time, start-ups do not have to have a technology tendency directly. Ries (2011) claims that wide understanding of innovation is needed since it occurs with start-ups in many ways like “novel scientific discoveries, repurposing an existing technology for a new use, devising a new business model that unlocks value that was hidden, or simply bringing a product or service to a new location or a previously underserved set of customers”. Building a different future in the definition of Thiel (2014) can also be seen as innovativeness. Therefore, instead of technology or R&D aspects, start-ups can be better defined with broader innovation or innovativeness.

Lastly, other aspects of start-up definitions include product or service, institution, and few others. Ries (2011) divides his definition into pieces and describes each term separately.

He refers to institution aspect with bureaucracy and process since start-ups also hire, coordinate and build a company by time. Similar to institutions, he also mentions about human enterprise since companies are made up of people. In addition, he defines creation of new product or service from a source of value perspective.

York and Danes (2014) assert that customer development by Blank (2006) and lean startup method by Ries (2011) are widely utilized in incubators and university entrepreneurship programs therefore have affected the new business development of startups. Although they both grasp main aspects of start-up nature, it is important to understand other opinions and improve to stay up-to-date with current phenomena of start-up development. Emphasizing above definitions, a new comprehensive definition of start-up as a synthesis of common points can be that:

> *"Start-ups are new companies that have an innovative and valuable solution and aim to grow fast with a scalable business model under extremely uncertain and resource limited conditions."*

In addition to start-up definition, there can be also scale-up and unicorn definitions since they are very commonly used terms. Without needing to analyse different definitions, it is enough to rely on the definition by Autio (2016), since those terms are mostly commonly agreed and analysis of different definitions on scale-ups is not so necessary within the context of this thesis. According to Autio (2016):

> "*Scale up is a new, entrepreneurial firm, up to 10 years old, that is strongly growth oriented and has attracted €1 Million or more of venture capital funding. A Unicorn is a Scale up whose valuation exceeds €1 Billion…"*

Evolution of start-ups and phases of development are explored in the next section.

2.2 Lifecycle Stages of Start-ups

Start-ups have been defined as new businesses yet it is important to understand how start-ups evolve and grow by time. Hokkanen (2017) states that clarification on evolution of start-ups and a life cycle standard has not been made yet. By the time of getting into maturity, start-ups take their initial ideas and inexperienced teams to standardized mechanisms of product and business development. The phases during the process are examined differently by various authors which is summarized in Table 7.

Table 7. *Start-up lifecycle models by different authors*

Model	**Start-up development phases and characteristics**			
Customer Development (Blank, 2006)	Customer discovery	Customer validation	Customer creation	Company building
The Lean Startup (Ries, 2011)	Validated learning and experimentation Finding problem-solution fit	Build-Measure-Learn cycle Finding product-market fit	Growth and scaling	
Traction (Weinberg and Mares, 2014)	Making something people want	Marketing something people want	Scaling your business	
S-Curve Model of entrepreneurship, start-up funding, and customer development (Overall and Wise, 2015)	Involve innovators in customer discovery Funding from personal savings and friends/family	Involve early-adopters in customer validation Funding from angel investors, crowdfunding and venture capital	Involve early-majority in customer creation Funding through venture capitals.	Involve late-majority in company building phase Merger or acquisition or stock launch is possible Funding from venture debt or public equity
Hunter-gatherer cycle (Nguyen-Duc et.al. 2015)	Actions include searching, finding, and freezing a target. Product development activities include prototyping and requirement elicitation		Actions involve collecting and assembling the target. Product development activities include commercialization, requirement description, testing, and deployment	
Salamzadeh and Kesim (2015)	Bootstrapping stage	Seed stage	Creation stage	

Table 7 presents an overview of different life cycle models and their phases. The most common models in start-up development are customer development by Blank (2006) and Lean Start-up by Ries (2011) which are linked to each other since Blank was a mentor to Ries. According to Hokkanen (2017), emphasis of both methods is on the discovery of achievable and productive business idea prior to extensive investments for an entire product development. Ries (2011) in his Lean Start-up method suggests to test the ideas or hypotheses with actual users to have validated learning and apply this by continuous iterative Build-Measure-Learn (BML) cycles to develop the business and product. Learning is a critical principle for any start-up development. Ries (2011) claims that “start-ups exist to learn how to build a sustainable business”. According to Blank (2006), learning process includes definition or observation of a problem, evaluation of the problem, definition of a solution, and evaluation of the solution.

Blank (2006) illustrates the commonly used product development stages as concept/seed, product development, alpha/beta test, and launch/first ship. Wang et.al. (2016) divides the process into concept, in development, working prototype, functional product with limited users, functional product with high growth, and mature product stages. On the other hand, Blank (2006) claims that success of a start-up depends synchronization of both customer and product development methods. Customer development process by Blank (2006) defines four stages as Customer discovery, Customer validation, Customer creation, and Company creation. Both methods complement each other since one is external and other is internal development activities.

In parallel to four phases of Customer Development (Blank, 2006), Ries (2011) suggests phases for exploration, finding a problem-solution fit, product market fit, and scaling the business in Lean start-up method. The following figure illustrates the growth path of start-ups from this perspective.

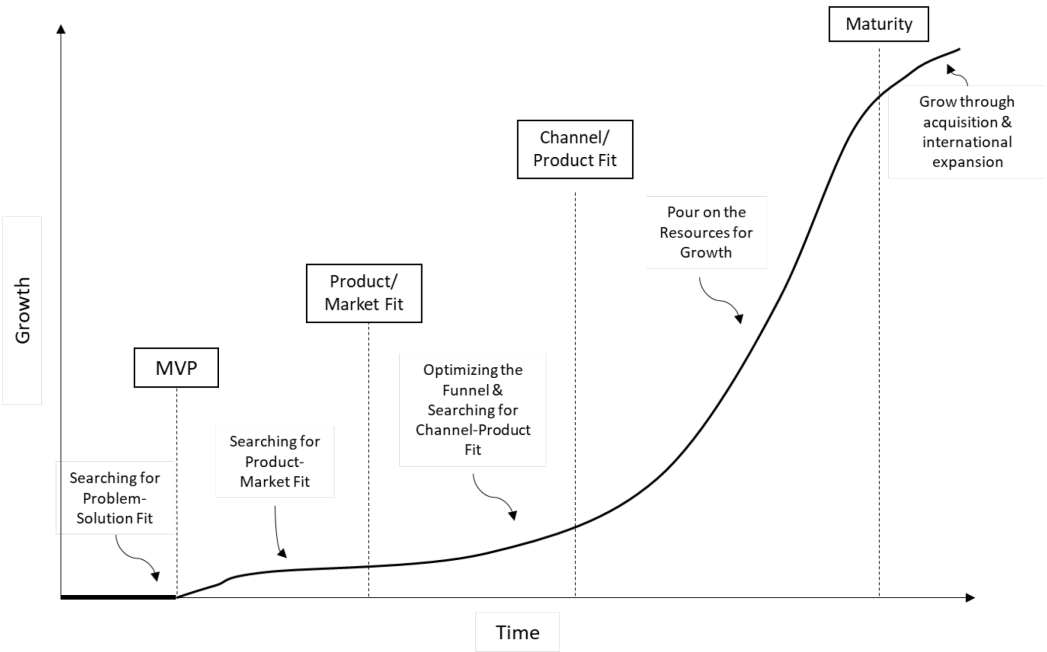

Figure 3. *Growth Stages of Start-ups (Ries, 2011)*

Growth stages of start-ups, therefore, can be seen as Problem-Solution Fit, Minimum Viable Product (MVP), Product-Market Fit, Channel-Product Fit, Growth and Maturity with potential Acquisition or Merger or international expansion.

Nguyen-Duc et al. (2015) presents two stages as Hunting, “action to search, find, and freeze a target” in parallel to Customer discovery, and Gathering “action to collect and assembly the target” in parallel to Customer validation. Similarly, Weinberg and Mares (2014) propose three phases of making something people want, marketing something

people want and scaling. Salamzadeh and Kesim (2015) define stages bootstrapping, seed and creation.

In addition to these, Overall and Wise (2015) propose a combination of the S-curve model of innovation by Bollen (1999) and the innovation adoption model by Rogers (1993). According to their suggestion, start-ups evolve by reaching initially to innovators in Customer discovery and early adopters in Customer validation phases and validating problem-solution fit. After the achievement of the problem-solution fit, Customer creation occurs by the early majority to test an MVP. Eventually, the late majority defines product-market fit to build a company. Overall and Wise (2015) have also combined the financing sources in their lifecycle model. Table 8 summarizes those financing phases according to the classification of a venture capital (VC) firm.

Table 8. *Funding stages summary adapted from Indexventures*

Funding rounds	**Pre-seed**	**Seed**	**Series A**	**Series B**
Type of investor	Self-funded, friends and family	Angels, seed-stage and micro funds	VC investors	VC investors, potentially growth or strategic investors
Typical round	<$500K	$1m ($0.5-2m)	$5m ($3-20m)	$20m ($10-40m)
Development phase	Ideation, beta testing, MVP	MVP and initial signs of traction	Commercially viable product, testing, go-to-market strategies	Ramp-up, go-to-market, internationalize
Team	Founders only	From 0 to 10	From 10 to 60	From 60 to 100

Based on the information gathered, it is possible to illustrate a new model that combines both product and customer development and funding phases of start-ups.

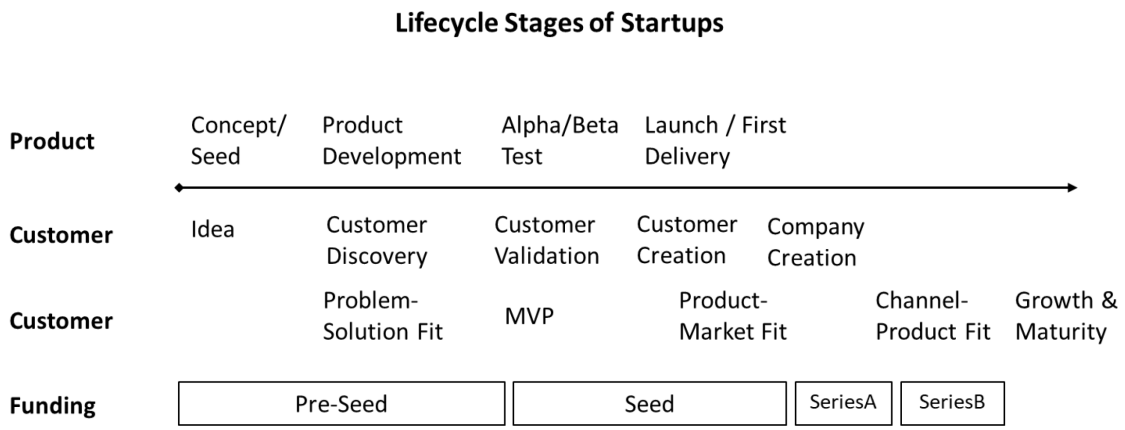

Figure 4. *Lifecycle Stages of Startups (adapted from Blank (2006), Ries (2010), Indexventures)*

Although many models emphasize various stages from different perspectives, it is interesting to combine them in one model. Each stage from different perspectives can be seen very interlinked and connected to other elements. For example, a start-up forming a team and building the first beta to test with the customer to validate the problem-solution fit can lead to an early investment that can help to achieve product-market fit and product development.

As it can be seen in figure 4, early-stage of a start-up involves customer discovery with innovators and getting FFF (friends, family and fools) funding as well as developing the concept of the seed product idea and building an MVP to test its feasibility. Brush et.al. (2006) state that aim of this stage is getting the company ready by showing product feasibility, managing cash, building and managing a team, and customer acceptance. Later, a start-up validating the problem-solution fit moves into market and customer validation stage to prove product-market fit and develops early designs of the product and prototypes. Lastly, based on customer creation start-up starts scaling the business and launches the product with the help of VC funding.

The lifecycle and evolutionary development models of start-ups help to understand and analyse start-ups. Honkkanen (2015) states that “the stages of searching for a lucrative business idea, developing a product or service, and then growing business are very different”. Also, each start-up probably have a different story and different ways of creating and growing their business. Wang et.al. claims that attempting to achieve something as start-ups is very demanding and especially for software startups. Next section will therefore give an introduction on software start-ups.

2.3 Software Start-ups

Booming of start-ups from all around the world has been common in recent decades. Smagalla (2004) states that access to technologies, venture capital and rise of new markets enabled the initiation of many software start-ups. Unterkalmsteiner et al. (2016) states that characteristic of software start-ups is struggling with uncertainty and cutting edge technology. They further assert that software start-ups are often facing technological changes arising in software industry, such as new computing and network technologies, and development of diverse computing devices, in contrast to similar traits like scarcity of resources and limited operational history within other start-ups. Sutton (2000) expresses that development of software products and services by software start-ups are done by utilizing forefront tools and methods.

First introduction of software start-up term in the literature was made by Carmel in 1994 with software package start-up. Carmel discussed that software developed more into a completely materialized product. After him, several unique definitions have been made on software start-ups by various researchers. Hilmola et al. (2003) assert that product orientation and development of forerunner software products are common in most software start-ups. Coleman and Connor (2008) define that creation of software through various processes that lack a pre-defined development path makes software start-ups unique companies.

Sutton (2000) distinguishes software start-ups based on their challenges that are lack of past operational experience, lack of means and capabilities, numerous influential groups, and actively changing technologies and markets. In addition to the characterization of Sutton, investigation of the literature on software start-ups by systematic mapping of Paternoster et al. (2014) suggests some common occurring traits in software start-ups. Lack of resources, innovativeness, rapid evolvement, small and low-experienced teams, dependence on third parties, and time pressure are the most common traits found by Paternoster et al. (2014).

Although there is no consensus on the definition of software start-ups according to Unterkalmsteiner et al. (2016) as in start-up definition, the common characteristics introduced similarly by Paternoster et al. (2014) and Sutton (2000) can be taken as a base to differentiate software start-ups from other types of start-ups. This master thesis identifies software start-ups as businesses built on products or services that are enabled by or produced as software. However, it also investigates start-ups with a software ambition or software connection.

Due to its complex and varying technology nature, software start-ups have many diverse business models. One common and recently becoming more and more popular type of software start-ups is Software-as-a-Service (SaaS) model based start-ups. Therefore, next chapter will introduce definition, historical evolution, enablers, benefits and shortcomings of SaaS solutions as well as its various business models.

3. SOFTWARE AS A SERVICE (SAAS)

3.1 History and Enablers of SaaS

According to Luoma and Rönkko (2011), Software-as-a-Services (SaaS) is a way of supplying software to various customers over the Internet by giving admission to the software application. Luoma and Rönkko (2011) assert that the difference between SaaS and Application Service Provisioning (ASP) and other software models is the extent of uniformity since SaaS serves several customers from a single instance without any particular arrangement or establishment. Luoma and Rönkko (2011) further define SaaS in the business context as a model of efficient organization of software development, deployment and operation for production and delivery of standardized software on a browser with usually high volume, high scalability, and on-demand pricing characteristic to help customers in outsourcing operation, maintenance, and other software-related activities. Laatikainen and Ojala (2014) summarize the current literature that SaaS is an application accesed via browser that offers multi-tenancy, scalability and adjustability.

Software development and industry has been advancing very rapidly in recent decades. There are various elements playing a role in enabling SaaS models technically. Waters (2005) claims that enablers of the SaaS –software utility model are the relatively homogenous and ubiquitous workstations, no dependency on the physical location of data, the development of web services protocols and the relatively mature level of the software business. He states that nowadays almost every business person is provided a computer with connectivity to the internet where completely identical data communication protocols are applied indifferently to its operating system thanks to the maturity of the internet technology. Additionally, high-speed connectivity with IP-based software and network-based storage solutions help full transparency on data location can be provided to users as well as web service protocols enabling transparent communication between different active applications to exchange data regardless of its geographical location just as it was the same server. Lastly, service agreements with a precise knowledge of the authority and responsibility of each side can be reached more conveniently than ever before thanks to the mature software business.

Software applications are developed by various computational methods. One important element in enabling SaaS solutions is the development of cloud computing. According to Bibi et al. (2012), cloud computing “refers to virtual servers, distributed hosting in large

data centers, and shared resources available over the Internet". Furthermore, cloud computing highlights a shift in service orientation for the design, development, and delivery of software applications. They assert that business consumers of the applications can have contracts for software, middleware and infrastructure at the same time thanks to these technologies. Additionally, the cloud enables three main systems: software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS).

Modern business has been shaped by software applications which are often called enterprise software. Therefore, it is necessary to understand the evolution and history of enterprise computing. According to Waters (2005), there are several waves that have been evolving the enterprise computing in the last forty years where vastly expanding advantages have been gained for any type of business and organization by each era. The following figure illustrates these waves by Waters (2005).

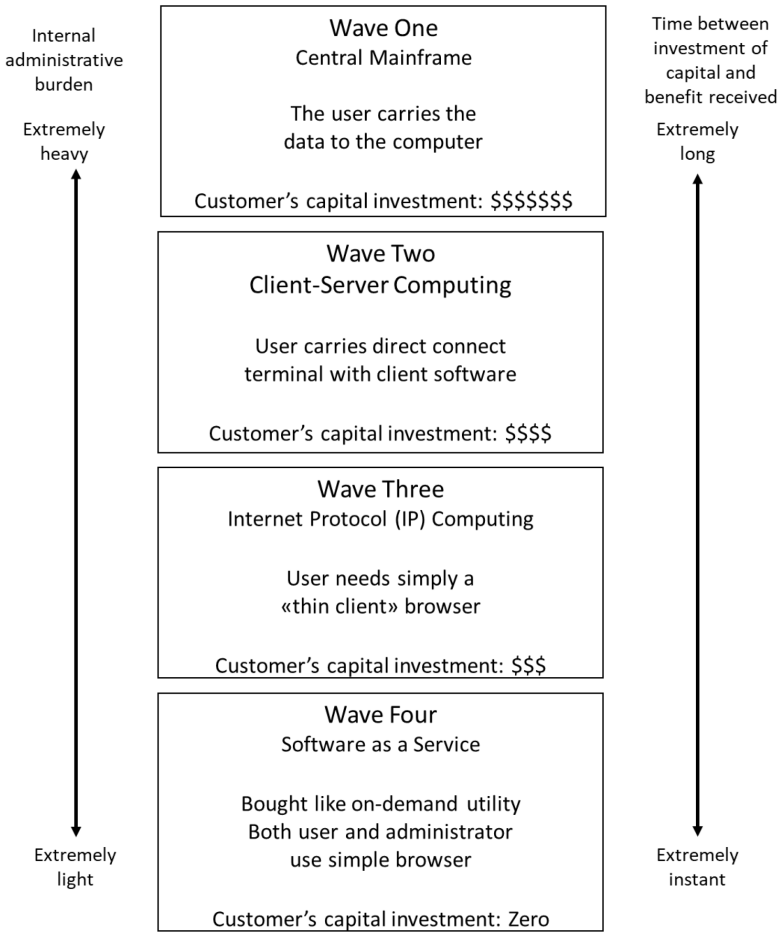

Figure 5. *Evolution of Enterprise Computing (Waters, 2005)*

This figure interprets that capital investments, the time for return on investments and the internal administrative burden are decreased by each wave of innovation in enterprise

computing. Waters (2005) claims that the main frustration of customers of enterprise software has been unexpectedly high costs which may arise from various sources such as long implementation, maintenance and update, customization of software to altered needs, change management, organizational confusion and consumption of internal resources. He further asserts that customers can now reach to ultimate results by receiving their wanted strong software with reliable delivery, low costs and rapid implementation. Therefore, the next section will focus on investigating deeper these advantages as well as disadvantages of SaaS.

3.2 Advantages and Disadvantages of SaaS

Kaplan (2007) states that the simplest appeal of Software-as-a-Service (SaaS) is the possibility of ending its deployment and tracking and review of its performance since SaaS applications are often on a per-user or per-month basis without capital invested where the delivery, security, and management of the application is undertaken by the SaaS provider. On the other hand, he asserts that there is a trade-off to be made by handing over the performance of the application and security of the company data.

Prior to SaaS, traditional enterprise software was purchased with licenses to download and execute it on one's own computer. Therefore, it is important to understand the shortcomings of the traditional software at first. Waters (2005) notes three major repeating challenges of traditional software that costs are unkown at the purchase, implementation is often behind schedule and administration is overloaded constantly. He states that performing and maintaining the software consumes most of the IT budgets up to 80 percent thus only the small friction of the total costs is the price of the software. Waters (2005) illustrates the unexpected costs under the surface in comparison to SaaS with the glacier viewpoint as shown in the next figure.

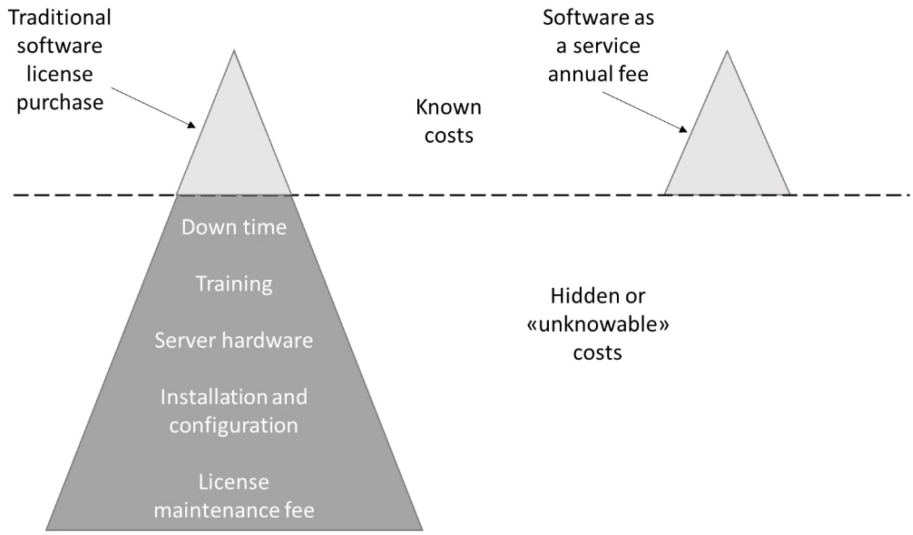

Figure 6. *Known and unknown costs in traditional software and SaaS (Waters, 2005)*

Most of the cost elements are unkown at the time of purchase thus can change based on the company and the type of the software. In addition to unforeseen costs, traditional software implementation projects would usually take extensive amount of time and exceed the budget from the planned targets for several reasons. Lastly, there are continuously arising challenges in the administration that results in extra costs and delays such as diverse technical environment management, capacity plan and usage and managing security as well as amplified upgrade expenses and delays. (Waters, 2005).

In addition to the benefit of knowing total cost of ownership (TCO) in SaaS model as shown in figure above, there are various other benefits SaaS can offer. Waters (2005) asserts that these benefits are lower TCO, rapid deployment where there is no need for installation and configuration of the software, higher reliability, better security and safety and recovery of data, usage optimization, routine updates and mitigation of risks. Additionally, he expresses that there is unchanged ownership of data, source code and admin control in contrary to belief in differences between the anology of owning and renting a software in this comparison.

According to Bibi et al. (2012), adoption of SaaS and cloud applications is enhanced by three factors as potential cost reductions by reducing both the capital and operational costs, complex IT operations to adopt and administer simpler way, and innovativity pressure upon eliminating these overloaded operations and total costs. They further state that on-permise software provides customization regardless of costs rising whereas SaaS brings restrictions on flexibility of software which results in low maintenance and

costs. Figure 7 exhibits a cost structure comparison between on-premise and cloud-based software applications.

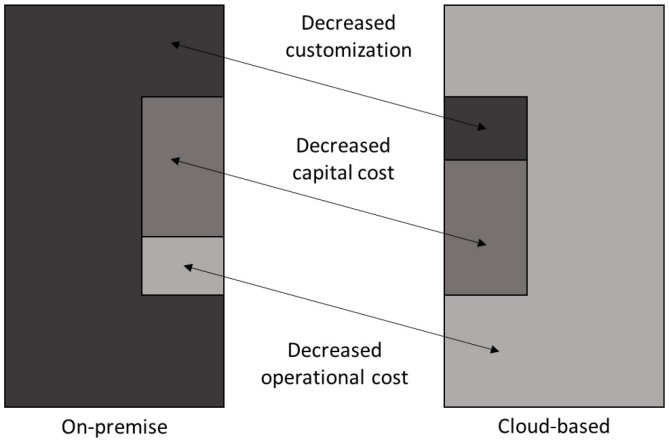

Figure 7. *Cost Structure Comparison of On-premise and Cloud-based Software Applications (Bibi et al., 2012)*

Based on the figure by Bibi et al. (2012), operational costs are the major cost item in SaaS where customization and up-front capital investments are decreased. They further analyse strengths, weaknesses, opportunities, and threats (SWOT) of switching to cloud-based SaaS model which is shown in the table below.

Table 9. *SWOT analysis for migrating to the cloud*

Strengths	**Weaknesses**
Small capital expenses Easy set-up Easy maintenance (No dedicated personnel) Horizontal scalability (number of instances) Vertical scalability (size of instances) Redundant data and services	Latency problems (until next-generation digital transfer technology available) Reliability (data loss, code reset during operation) Limited customizability Limited configurability No revenue from support operations
Opportunities (external)	**Threats (external)**
Eco-friendly systems Elasticity Conversion of capital expense to operational expense Quick time to market Flexible pricing, such as pay per use Tolerance to revenue decreases during crises	Data confidentiality, integrity, and availability Difficulty in cloud-switching interoperability Legal problems from cross-country data No clear downtime agreements or reimbursement policies No guaranteed return on investment Compatibility issues

One prominent difference in their analysis is the reliability concern on the data which was also pointed by Kaplan (2007) whereas Waters (2005) was interpreting it as a benefit earlier. Although the handling of data seems to create contradictions in academia, there are obvious major financial and operational benefits gained by SaaS. Kaplan (2007) asserts that with SaaS there is a chance to try and implement new applications much faster than the legacy software which can enable more productive workers, teams, and business results in the ever-growing scattered work and business environment. According to Kaplan (2007), low capacity utilization rate causes costs inefficiencies in enterprise software where the pricing model of SaaS which is based on usage takes away the burden on enterprises in licenses and infrastructure upgrade costs. The next section will focus on the SaaS business and revenue models that resulted in these major cost savings.

3.3 SaaS Business Models

Software as a Service (SaaS) has enabled various new business models. Value creation and capture is referred as business model introduced by Osterwalder and Pigneur (2010) which is often related to monetization and revenue. Kaplan (2007) describes that SaaS applications and data of users are accessed via the Web in exchange of per-user or per-month based rental fees. Bibi et al. (2012) state that SaaS is subscribed by users to move and manage their data to remote cloud servers. Luoma et al. (2012) describe SaaS business model by using Osterwalder's business model elements such as value proposition, customer segments, customer relationships, channels, revenue streams, activities, resources, partners, and cost structure based on the current literature.

Value is offered in a standard and simple way for cost savings and easy implementation online. Economies of scale are aimed with automation and IT resource scalability. Small to medium enterprise (SME) users of any level can also be targeted with efficient marketing and sales model. Growing attention is given in getting and keeping customers as well as automation of provision and customer care. SaaS provider invests large amounts in advance to develop its software and acquiring customers while having price per use with modest purchases and costs per customer. (Luoma et al., 2012).

Luoma et al. (2012) further focus on characteristics from the value capture side of the business model framework in the classification of SaaS business models and firms which are customer segments involving customer size and buyer role, value proposition containing online delivery, customer specificity and complexity, revenue streams consisting of sales case size and usage-based pricing, and channels and customer relationship including on-demand model and self-service purchasing. Based on this, they introduced

two models that are Pure-Play SaaS and Enterprise SaaS. The following table summarizes the characteristics of these models.

Table 10. *SaaS Business Models (Luoma et al., 2012)*

Pure-Play SaaS	Enterprise SaaS
- A horizontal, standardized web-native application. - Revenue streams are obtained through a small entry fee and a recurring fee. - Mainly target SMEs and sell to middle management and end-users. - Sales channel is push-oriented and SaaS firms engage in inbound high-pressure sales. Less human contact in deployment in required than traditionally, owing to more simple applications. - SaaS firms are required to have both domain expertise, to include the best practices to the application, and application development capabilities. They partner with IT service providers for infrastructure and support services. - Initial development costs may be high, but firms aim for minimal marginal costs.	- A mass-customized, but complex application requiring also support services. - Vendors charge an entry fee, recurring fee and service fees. - Target at larger enterprises and their IT-managers and top executives. - Aim at high-touch, trust-enhancing customer relationships with tailored contracts. - Perform personal sales to do consultative sales, and employ channel partners. - Possess domain expertise and utilize an ecosystem of companies as a resource. - Use partners to deliver value-adding applications and services. - Have varying marginal costs, owing to the long sales cycles and required support.

A new customer segment of earlier less benefited SMEs can be reached and served more thanks to the “Pure-Play SaaS” business model. This model attracts investors due to its low initial investment and long-term benefits. However, most of the companies in the research by Luoma et al. (2012) do not tend to implement the scalable SaaS model thus revealing the "Enterprise SaaS" model that provides the option to adapt without radical adjustments by providing the features on demand by customers with additional revenues.

In addition to these two, Luoma et al. (2012) introduce alternative business model “Self-Service SaaS” which represents pull-oriented sales where the discovery, evaluation, and implementation are done by customers on their own for a simple and established software. Self-Service SaaS provides ease for adoption by its product simplicity. It enables freemium, advertising or small repetitive revenues for targeting individual users and later SMEs. Customer interaction is kept at minimum with a complete automation where customers are attracted with outbound and viral marketing to a critically important landing page to become customers. Marginal costs per customer are minimized to almost non-existent in this model. (Luoma et al., 2012).

Pricing plays a significant role in shaping business models as it impacts directly the revenue and cost structures as well as other fields. According to Laatikainen and Ojala (2014), there are various pricing logics applied in SaaS applications which can be complex although clear and transparent pricing is preferred by both customers and providers. They further describe that monthly or annual subscription, advertising, transaction or usage, premium, implementation and maintenance, and licensing are the typical and most frequent models to generate revenue in software industry.

Laatikainen and Ojala (2014) state that SaaS has distinct ways to generate revenue in comparison to traditional software licensing such as subscription-based and/or usage based pricing. Kaplan (2007) states that pricing of SaaS offerings is done based on “pay-as-you-go” or subscription models. Laatikainen and Ojala (2014) declare that the current state of computation with various software architecture types enables different pricing options. They further state that although success relies both on price and architecture, flexibility and good design of the software architecture lowers the limitations on the pricing.

Various pricing models of SaaS influences product development and design. Early-stage decision on pricing is required in SaaS compared to traditional software due to the dependency of development on it such as an example of the pay-per-use model requiring usage metrics built in the software. Large amount of diverse pricing models are mainly enabled by the scalability and modularity of SaaS. Bargaining power of customers on customization and price is reduced thanks to multi tenant access. Seven dimensions are used in describing and classifying cloud pricing models that are scope such as package or different functionality prices, base as initial level based on either cost, competitors or value, influence of buyers and sellers, formula given as fixed and variable elements, temporal rights on length and usage period, degree of discrimination on various price levels based on region or customer type and dynamic pricing strategy as changing prices. (Laatikainen and Ojala, 2014).

Giardino et al. (2014) point out to the main challenges of software startups as their lack of resources from naturally being a new company of small teams, uncertainty, reliance on a single product and innovation, fast development, tension on time, third-party dependency, and high risks. There are various challenges start-ups face during their journey at the different stages of the lifecycle. Therefore, next chapter focuses on common challenges faced by start-ups that may result in failures and pivoting of business ideas.

4. CHALLENGES OF START-UPS

4.1 Pivoting

Facts given on the start-up failure and success rates prove the need for changing the mind-set towards a lean way while building a new company. Lean start-up method by Ries (2011) and Customer Development phases by Blank (2006) clearly pointed out the importance of validating the business ideas with customers before investing massive resources into developing a new product or services. Ries (2011) proposed to have Build-Measure-Learn (BML) cycles continuously and have iterations based on the validated learning while developing the business. Figure 8 illustrates the iterative nature of building a business along the Customer Development stages.

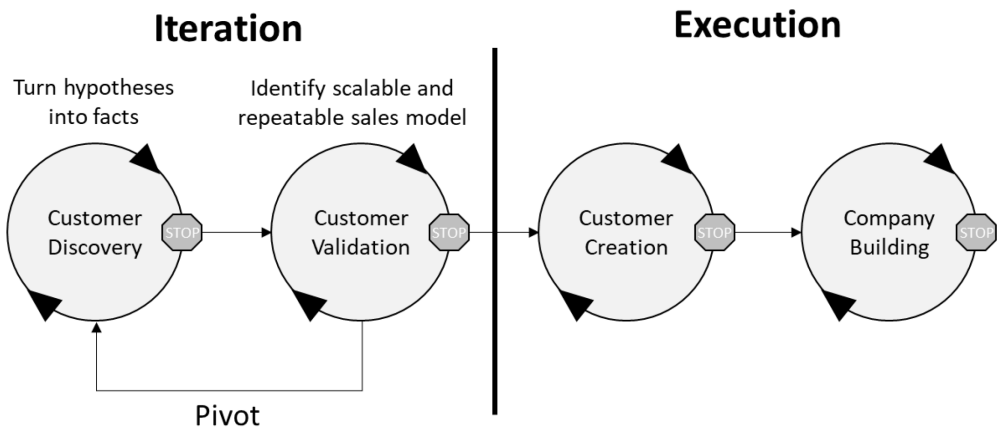

Figure 8. *Iteration in Customer Development Stages (adapted from Blank, 2006)*

As seen in figure 8, customer discovery and customer validation parts are the main part of the iteration process. The iteration process and the change of several elements in doing business is called pivoting. Ries (2011) claims that “70% of every start-up would possibly pivot from the initial idea”. The process of learning by Blank (2006) involves defining the problem, evaluating the problem, defining the solution, and evaluating the solution. The following figure demonstrates the process of pivoting.

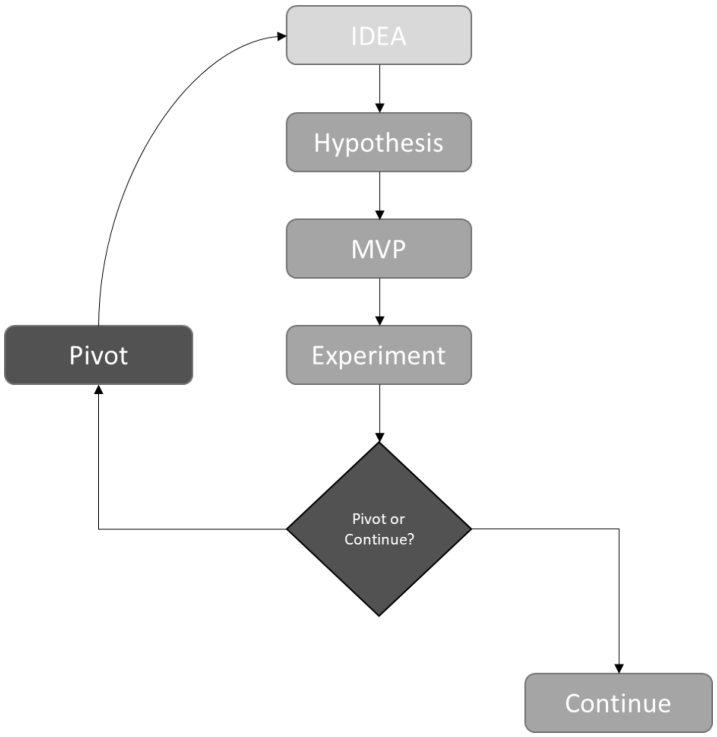

Figure 9. *Pivoting process (Ries, 2011)*

Validated learning can be seen as the first idea generation and building hypothesis and later experimenting and evaluating with the customer. There are many different ways to validate a problem and its solution without building a product. Thus, the lean methodology proposes to apply those in the creation of a new business.

In addition to pivoting based on customer validation, there are many other changes done by start-up during their development phases. Ries (2011) defines a triangle of the change occurring in start-up development based on a start-up vision to create a sustainable and scalable world-changing business. A strategy supporting that vision to be accomplished results in a product. Figure 10 illustrates the triangle of change with pivots and optimization happening in start-ups.

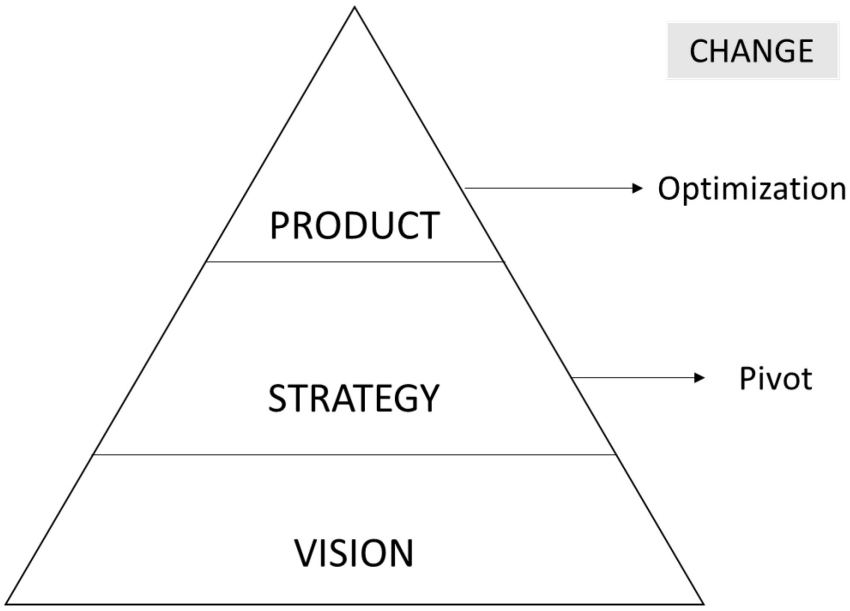

Figure 10. *Triangle of Change in Start-ups (Ries, 2011)*

Constant change occurs in the products through the process of optimization, what Ries (2011) calls “tuning the engine”. On the other hand, strategy changes called pivot may appear less regularly. However, alteration of the vision is very seldom. Ries (2011) defines pivot as “a change in strategy without a change in vision”. The strategy encompasses various elements such as “a business model, a product road map, a point of view about partners and competitors, and ideas about who the customer will be”. The ultimate outcome of the strategy is the product.

According to Ries (2011) there are different types of pivotal changes upon testing hypothesis in either product, business model, or engine of growth. He describes zoom-in and zoom-out pivots as product becoming either a single feature or a larger sets of features. Customer segment pivot happens when a different segment than the targeted segment needs the product. By learning from customers, one can discover that the product or service is filling actually a different need than targeted problem which causes customer need pivot. Evolving from an application to a platform that enables third parties mean platform pivot.

Business architecture pivot refers to change from high margin, low volume to low margin, high volume or vice versa. Value capture pivot is often related to revenue generation side of the business model, however, Ries assert that business, product, and marketing strategies can be significantly influenced by the changes in this. Engine of growth pivot is the change of growth strategy of a startup between the viral, sticky, and paid growth models defined by Ries to find a more rapid or cost-effective growth. Channel pivot refers

to alteration of the sales or distribution channel of a product or service. Technology pivot happens when the technology in use for the existing solution is changed with an alternative possibly to find out if a greater benefit can be gained in performance or price with a new technology. (Ries, 2011).

Honkkanen (2015) states that scalable business models enabling fast growth replaced traditional business plans with canvases such as business model canvas by Osterwalder or lean canvas by Ries to be light and agile for iterating based on learnings. Since there are many aspects in learnings from customers, there are several challenges faced by start-ups which is discussed in the next section.

4.2 Common Challenges of Start-ups

Creating a successful venture is probably the goal of every start-up founder. Giardino et.al. (2014) state that there are successful businesses evolved by new start-up ventures recently such as Facebook, Linkedin, Spotify, Pinterest, Instagram, Groupon, and Dropbox. Thanks to not requiring significant investments for the development and global distribution of software products, there are more entries to the market every day where according to Mollick (2014) crowdfunding even helps to avoid dependencies geographically to start a business.

Crowne (2002) asserts that in spite of many successful examples, there are large numbers of failures of software start-ups before reaching their commercial potential within two years after their creation. Entrepreneurs of the future can benefit from learning challenges of startups to be prepared and overcome them. With extremely scarce resources and time, effective methods to cope with the challenges are required to be developed by startups. Startups need effective practices to face with those unique challenges. According to Nobel (2013), a fundamental part of discovering fruitful business opportunities could be seen as failure. Ries (2011) asserts that “failing fast” to minimize risks is a new strategy in the elimination of insignificant business ideas. Therefore, understanding of the challenges and success factors is crucial to success for technology start-ups. However, Paternoster (2014) claims that the characteristics of failure, especially during the early-stage, lack scientific rigor.

Prior research describes numerous challenges faced by startups. Gauthier et.al. (2019) claims that the success of a company is shaped by a balance between its outer and inner dimensions as one key factor. Outer dimensions are mostly relevant to traction such as users, customers, product usage and revenue whereas inner dimensions are in five areas such as customer relationship, product, team, finance and legal. In addition to this,

MacMillan et al. (1987) proposed a framework for Venture Capitalist (VC) firms to evaluate new venture success with four holistic dimensions that are product, finance, market, and team as well as performance measures. This research study takes the framework of MacMillan with an addition of environmental and legal challenges. The next figure illustrates these categories of startup challenges.

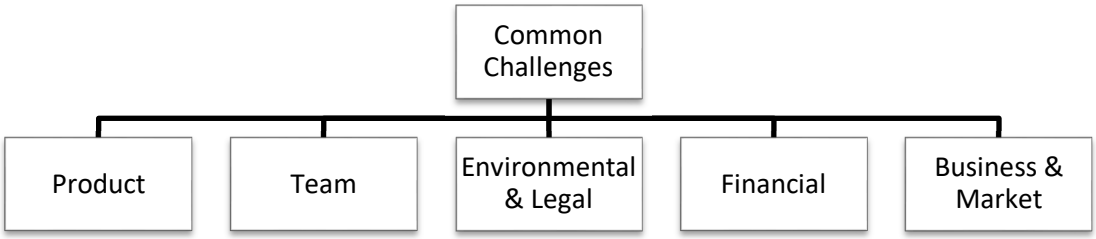

Figure 11. *Common Challenges of Start-ups (adapted from MacMillan et al., 1987)*

First, product challenges may play a major role. Crowne (2002) states that software companies are usually founded for the creation of a high-tech innovative product. According to Giardino et al. (2015), this high technology product development requires leading tools and techniques. MacMillan et al. (1987) also described “high tech” in their framework sub-questions as well as protection of the product, market acceptance, and functioning prototype. Thriving in a technologically uncertain field might be difficult. Block and Macmillan (1985, cited in Unterkalmsteiner et al., 2016) define some product-related success factors as the generation of ideas to test the product, completion of a prototype, and frequently re-designing or modifying. Giardino et al. (2015) also studied the definition and development of Minimum Viable Product (MVP) in their research. Due to the use of new technologies, start-ups may face challenges from its architectural design to the development methods and more.

Second, team aspects may become challenging. Giardino et al. (2015) define the team as the fundamental component for the success of start-ups. In another study, Giardino et al. (2014) further state that recognition of the impact of competent people for successful development by software project managers has been known for long. Moreover, building entrepreneurial teams, managing multiple tasks, and staying focused and disciplined are mentioned. MacMillan et al. (1987) also define aspects from VC perspective such as the capacity for sustained effort, evaluation and reaction to risk, articulation when discussing venture, attention to detail, personal compatibility, familiarity with the market,

leadership ability, relevant track record, familiarity with the team's reputation and the team being referred by a trustworthy source.

Richter et al. (2016) investigate multiple sources on barriers and enablers for startup success and find out the significance of personal points of the core team and founders such as expertise, commitment, the entrepreneurial orientation and qualification, internal locus of control, risk taking propensity, pro-activeness, size and complementarity of team, tolerance for ambiguity, self-efficacy, personal experience and background, working and industry experience (e.g. Jain, Ali 2013; Block, Brockmann, Klandt 2008). Ardichvili (2003) states that any new business requires "Entrepreneurial alertness and opportunity identification". Åsterbro et al. (2014) share that overconfidence, tolerance for high risk, and persistence are observed by entrepreneurs. Cassar (2014) expresses that success is affected by the industry experience positively whereas not by the experience on entrepreneurship.

Since start-up founders will need new expert team members to build their business by time, team-building skills are as important as core competencies of founders. Richter et al. (2016) claim that "the most important parameter in startup success stands out as the characteristic of the startups' team both in the literature review and in their own research". They further state that consensus exists in academia on the skills, attitudes and competencies of founders as an essential determinant to succeed for start-ups. Hokkanen (2017) asserts that effort is put into identification of a successful startup team to invest in by VCs while the current business idea may be of secondary priority as it is likely to change.

Third, there are environmental and legal challenges start-ups face. Richter et al. (2016) report that a few elements such as legal issues and special problems concerning business models in certain fields were recognized by start-ups as barriers. For example, problems with data privacy or intellectual property issues are the main concerns. They further state that policymakers on a national level can regulate and make laws in favor of start-ups whereas local policymakers can support them in building local networks and ecosystems as well as integrating various players such as the attraction of venture capitals and corporate cooperations. Salamzadeh (2015) claims that limited availability of support mechanisms such as angel investors, incubators, science and technology parks, accelerators, small business development centers, venture capitals, etc. raises the risk of failure. He further states that environmental elements, such as the existing trends, limitations in the markets, legal issues, etc could be the reason for failure. Bruton & Rubanik (2002) and Van Gelderen et al. (2005) as cited in Salamzadeh (2015) claim that

“the environment for a startup is even more difficult and critical than for an established firm”.

Fourth, financial aspects are one major challenge for many start-ups as in many start-up definitions, very limited resources are significantly mentioned. Moogk (2012) states that there can be a scarcity of resources regardless of bright ideas and determination of entrepreneurs. Richter et al. (2016) share their results that most start-ups lack financial means and acceptance of their brand. Moogk (2012) claims that securing money for the realization of a new idea is challenging and it has become a common practice to bootstrap due to decreased amount of venture capital money in the last decade. She further states that the ones with funding are accountable and should demonstrate persuasive results to their investors.

Giardino et al. (2015) assert that the advancement and position of a start-up in the market can be decided by its financial component and financial evolution. They analyze “acquiring initial funding and reaching the break-even point” in their study. Blank (2006) also takes into account the financial aspect by defining ongoing capital and time to profitability. MacMillan et al. (1987) analyzed the financial aspect in the study by asking “investment easily made liquid, return 10 times in five years, no subsequent investments, and the first round of investment” to VCs.

Furthermore, Richter et al. (2016) define the financial knowledge aspect in addition to access to finance. Although there were challenges on funding availability by the majority of start-ups, a few had the luck to secure funding and see positive impacts. However, Richter et al. (2016) further claim that financing and funding decisions are done early without much knowledge which can affect their future funding and success. Salamzadeh (2015) states that financial challenges can be encountered by any start-up in different stages for various reasons. The following figure demonstrates the start-up financing cycle based on funding stages.

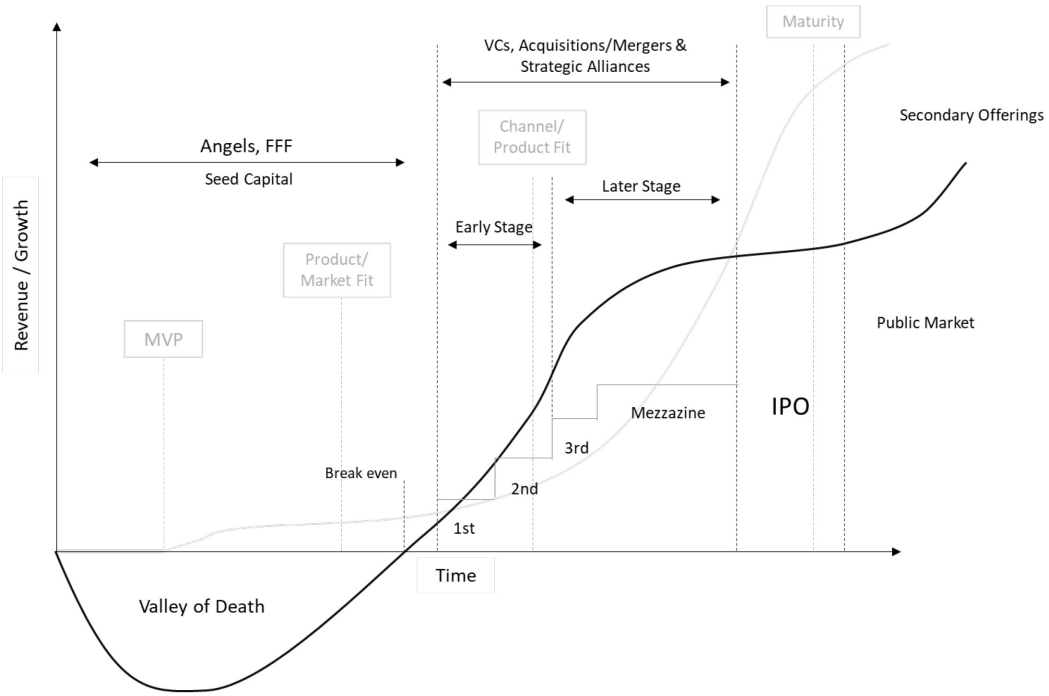

Figure 12. *Start-up Financing Cycle (adapted from Hudson and Khazragui, 2013, Savaneviciene et al., 2015, Vonmont, 2014).*

The most important implications of the financing cycle figure is the valley of death. The valley of death is often defined as a gap in financing to turn a research into a successful innovation since excessive costs occur in the commercialization phase (Hudson and Khazragui 2013, Savaneviciene, Vencku-viene, and Girdauskiene 2015, Vonmont 2014). The break-even point is the point where profits are equal to the costs of the company and further than that point company becomes profitable which is the end of the valley of death. Hudson & Khazragui (2013) claim that the “valley of death” is a black box that has a more metaphorical definition than a clear understanding. Since start-ups need to hire experts or use cutting-edge technology to develop their product and business, there is a major need to find resources.

Fifth and lastly, there are challenges related to the market and business itself. Blank (2006) claims that the lack of customers and a proven financial model is most often the reason for failure in start-ups and customer and market development holds the most risk factor in the failure rather than product development. As earlier mentioned in chapter 2, he defines a customer development process to help start-ups succeed by taking the customers into the main focus before wasting a vast amount of resources. He further defines the categories as customers, market, and sales as well as financial in market type characteristics. The following table illustrates these.

Table 11. *Business Related Challenges (Blank, 2006)*

Customers	**Market**	**Sales**
Needs Adoption rate Problem recognition Positioning	Market size Cost of entry Launch type Competitive Barriers	Distribution channel Margins Sales cycle

MacMillan et al. (1987) also defined several questions in his venture analysis framework for VCs such as established distribution channel, the growth rate of the target market, stimulation of the existing market, familiarity with the industry, the anticipated competition in two years, and creation of a new market.

Giardino et al. (2015) state that financial risks are enhanced by market uncertainties. Blank (2006) states that knowledge of the market is crucial to understand the final customer needs. Åstebro et al. (2014) assert that the high number of new market entries results in many failures naturally. Richter et al. (2016) also found out that marketing and customer relationships were another significant element defined in the literature and their study has shown that the majority of start-ups had considerable obstacles in sales and marketing strategy and customer or user acquisition. Additionally, they also found that developing a business model was significant in the success. Understanding customers, evaluating the market and competition, and forming a repeatable business model are major barriers for start-ups. Another way of financing a business is by bootstrapping as mentioned at the beginning that means using one's own resources and growing by sales. Thus, the next section will focus on getting customers since getting customers to validate the idea and find a repeatable business model is crucial for the success of a start-up.

4.3 Getting Customers

According to Blank (2006), some entrepreneurs have been developing frameworks for success by taking customers and markets into the main account. He asserts that the Technology Life Cycle Adoption Curve developed by Rogers (1983) and the "Chasm" introduced by Moore (1991) have become a bible for sales and marketing in start-ups since the nineties. Moore (1991) describes the technology adoption life cycle as "a model for understanding the acceptance of new products". He further states that the model illustrates the diffusion of an innovative product to the market in aspects of different consumer types along with its life. The following figure shows the technology adoption life cycle.

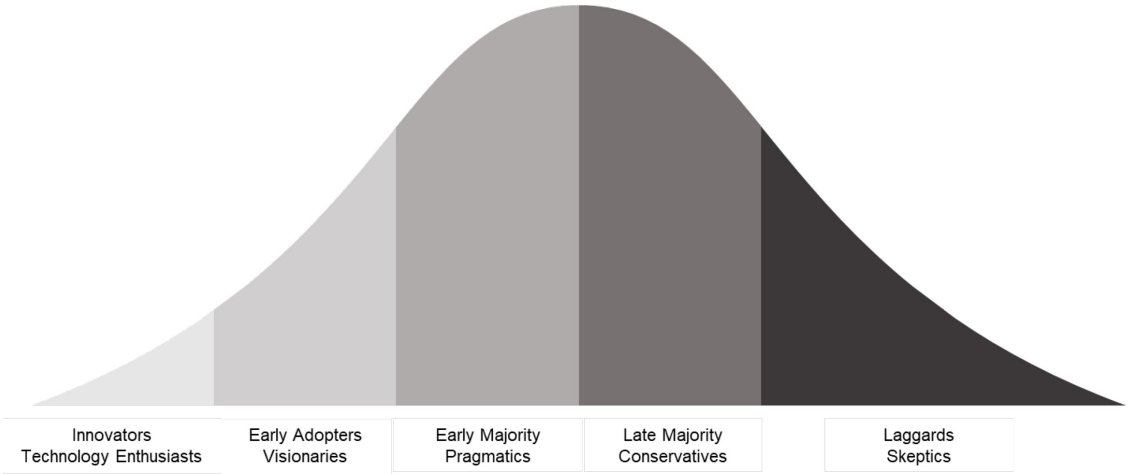

Figure 13. *Technology Adoption Lifecycle (Rogers, 1983)*

The lifecycle model is shaped like a bell curve representing the total market divided by the standard deviation. This model implies that the adoption of the technology goes step by step where there is a small start in the early market and exponential growth in the mainstream market through groups distinctively separated by each other. These groups are innovators (technology enthusiasts), early adopters (visionaries), early majority (pragmatists), late majority (conservatives), and laggards (skeptics).

According to Moore (1991), the distinction between each group is made by their response to a new technological discontinuous innovation. He further states that knowledge on the unique psychographic profile of each group and its relationship to neighboring groups is an essential part of the High-Tech Marketing Model. That model enlightens the development path of the high-tech market by moving from left to right and focusing on growing one segment at a time. Therefore, Moore (1991) introduces gaps between each group which illustrate the misalignment between two groups in aspects of acceptance when a new product is introduced in the same way. Figure 14 shows these gaps and the chasm that will be analyzed after it.

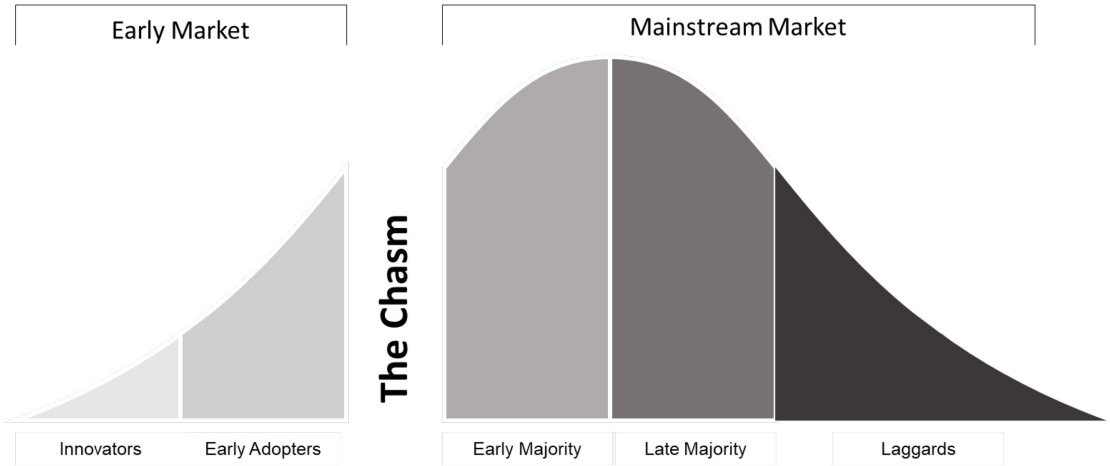

Figure 14. *The Chasm (Moore, 1991)*

Moore (1991) claims that there is a risk for marketing to drop its strength at the gaps due to switching between groups with different characteristics. He introduces the first “crack” creating a gap that occurs between the innovators and the early adopters where a new technology product loved by enthusiasts might not be easily understood and used by any others. He points out to another similar impactful crack between the early majority and the late majority where the mainstream market has mostly consumed the product but the challenge occurs because of the technical competence of the users.

However, Moore (1991) highlights the gap between the early adopters and the early majority as being the main and deepest challenge called “the chasm”. He claims that this transition between the early market and the mainstream in the Technology Adoption Life Cycle is the most relentless and dreadful one since it is often unnoticed. The gaps occur because of the different product needs and buying habits of each group. Moore (1991) states that the major problem in crossing the chasm is the majority of marketing and sales tactics cannot be used in the mainstream market since early-adopters do not provide credible references. Thus, there is a need for ultimately new sets of strategies in marketing and sales to overcome this challenge. He also suggests that targeting a niche market to gain leadership is central in overcoming whereas a clear segmentation is most often not examined by the people.

On the other hand, Blank (2006) claims that well prior to any chasm there are problems faced and unless customer development in early stages is done properly, there will not be a mainstream market and a business. He also asserts that there needs to be an understanding of technology enthusiasts in finding “real” paying early customers, the repeatable sales process and their influence in the sales road map instead of seeing tech-

nology enthusiasts just an early set of customers in the customer adoption curve. Therefore, it can be said that the “Startup Chasm” occurs at the very beginning of the technology adoption life cycle. The following figure illustrates Moore’s (1991) “The Chasm”, Blank’s “Customer Development” stage, and the “Startup Chasm” proposed by this study on the technology adoption life cycle.

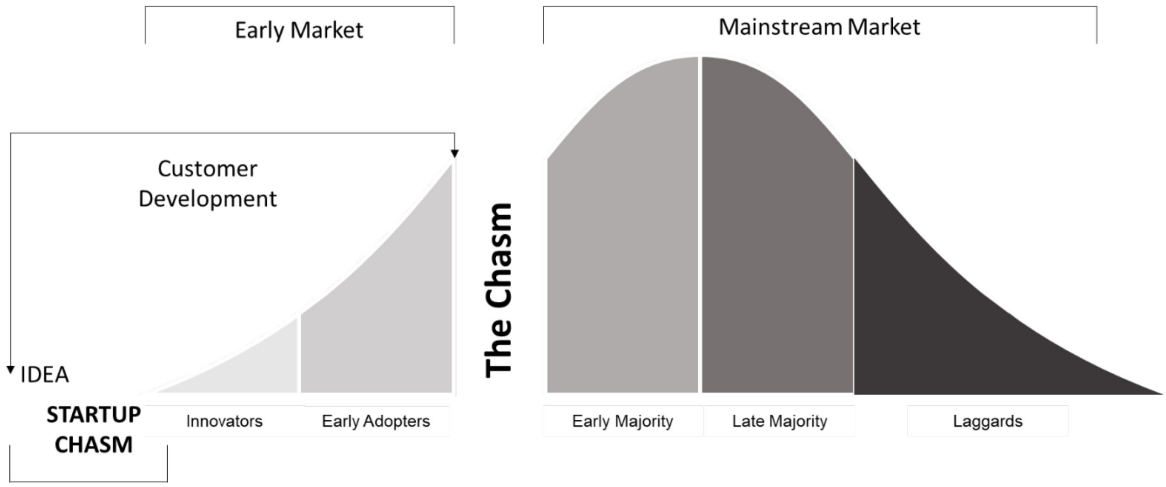

Figure 15. *The Startup Chasm (adapted from Blank, 2006 and Moore, 1991)*

The figure tells that there is a big challenge, the “startup chasm” at the beginning to find the first customer and the customer development process takes place in the early market and the chasm between early and mainstream markets is less impactful in magnitude. In addition to real struggle being at the very first moment with finding the first sales and customers, customer growth is uniquely different for each startup company which would not always follow a similar smooth curve shape. Therefore, it can be assumed that for each startup a different set of fluctuations may occur in the customer development process. The next figure illustrates one possible example of this.

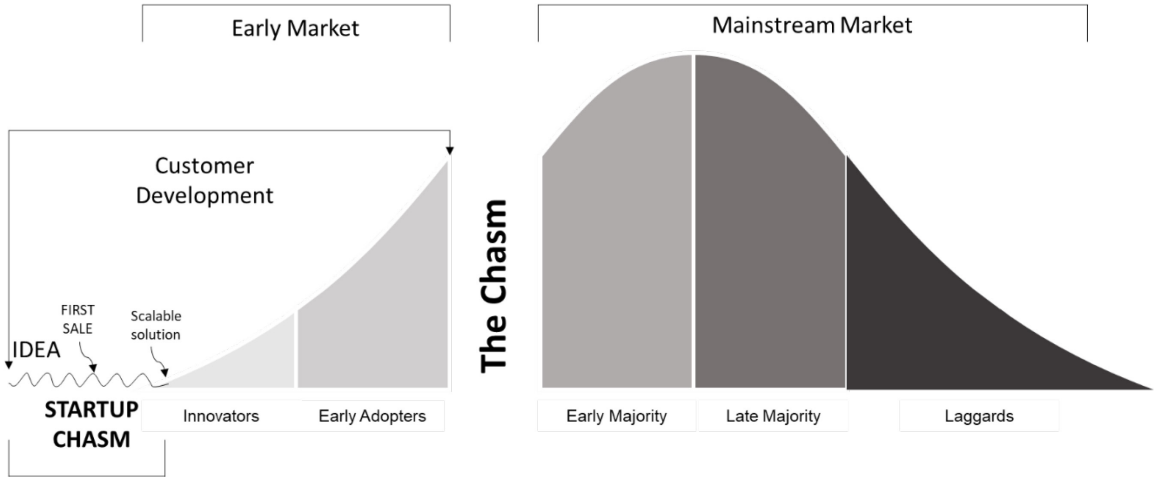

Figure 16. *Iterative Learning in the Startup Chasm*

This figure can also be perceived as a multiple valleys of death from financial perspective as well as customer growth. The iterative process between the initial idea and the first sale implies potential free pilots and tests with different customer groups. Blank (2006) claims that the smooth shape of the growth of customers in the technology adoption model is a risky assumption leading to think customer adoption being only a sales execution problem. Hokkanen (2017) asserts that there are different stages of a lucrative business idea exploration, development of a product or service, business growth which may not be linear. Figure 17 illustrates one potential example of the growth cycle of startups with this iterative approach.

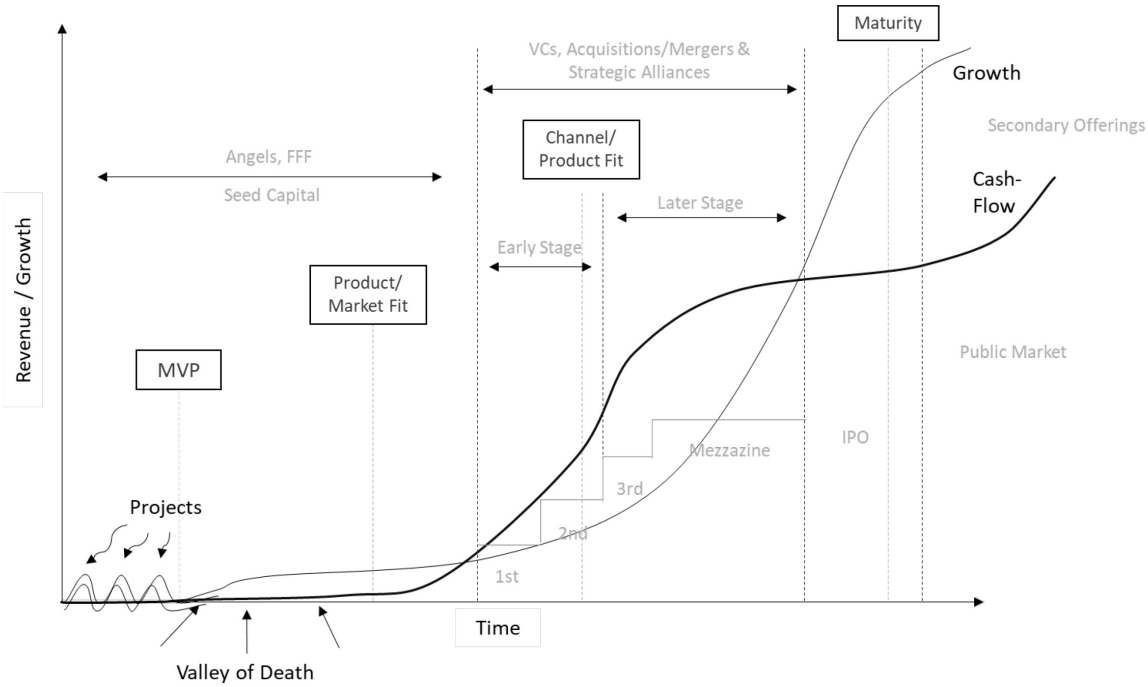

Figure 17. *Iterative Growth and Financing Cycle*

As figure above shows, start-ups are experimenting and going through an iterative process before finding the scalable solution with several trials to also sustain their business and prevent falling into the valley of death. Blank (2006) further states that “learning and discovery” are needed at the early stages of a startup with trial and error approach focusing on customer and market instead of risking the business with “execution” focus. He asserts that the difference between successful and failed startups is the customer development process of listening to customers and their needs. Giardino et al. (2015) report their study results that many startups perceive thriving in technological uncertainty and acquiring the first paying customer as their top key challenges. Therefore, this study shows seven cases of how this was done in practice in the next section.

5. WITHIN CASE ANALYSIS

5.1 Start-up A

In early March 2017, there was a meeting between two relentless networkers to get together and discuss the future of events. One of the parties was an event organizer of a highly reputable and recognized tech and start-up networking event in Helsinki with a special focus on matchmaking investors with start-ups. In addition to keynotes and workshops, there used to be an area called “Start-up A” to enable business deals to occur among participants, mostly between investors and start-ups.

The event organizers used to utilize several matchmaking tools for their event. While organizing the event and utilizing several digital tools year after year, the organizers had an idea of building their own tool and making it become a spin-off company to be sold to other events in their network as well. They had tried to build it a few times, however, it was failed due to resources and time constraints as a result of the lack of careful planning. When the CEO of Start-up A had met with the event organizers, he did not take the risk of start building an app just a few months before the event similar to prior trials and he convinced them to continue the development of the idea after the event.

They have had a couple of meetings to understand each other and what is needed to be done. June and July 2017 was the time to meet many event organizers from different event types and meetup groups; B2B events and tech events, conferences and industry events, investor or start-up events. According to CEO:

> *“It was to understand the needs and pains of the event organizers as well as sending out surveys”*

It took two or three months to study and understand the needs. The initial business idea was only a matchmaking tool. However, the idea evolved into something bigger than that. CEO states that:

> *“We changed it to that not only event participants could meet but also exhibitors could invite participants to their booths, then the whole event agenda was added as well as a few other features. Based on the needs coming from the market both customers and users, we kept iterating the product”*

In October 2017, the Start-up A platform was used first time by an industry event. 2017 was the year that Start-up A was used by 5 events in Nordic Europe. Start-up A was

officially founded in 2018 and the author has started his thesis work based on the challenges and learnings gained from working in the company during summer and early fall 2018.

Evolved final business idea of Start-up A is a software tool for event efficiency and matchmaking to manage agenda and workshop sessions, enable 1 on 1 meetings and networking and engage visitors to exhibition booths and event content. In addition to these three main services, Start-up A also offers several other features on its platform. Its product development still continues at a rapid pace to serve customer needs continuously against many challenges. According to the CEO, the initial challenges of Start-up A were that:

> *"To find the talent in Helsinki, mainly developers, to find the validation of the market after testing out several events and to build a showcase to grow the company. We have already had a customer and tested our platform. Finding money and customers was also always a challenge"*

Until finding the problem-solution fit, it took Start-up A several iterations with product development challenges as they always had some glitches during the process of adopting to the needs of customers and different use cases. All in all, CEO summarizes that:

> *"I would consider more main challenges on the customer side, funding side and talent side as Start-up A had a big financial challenge since the beginning and still has a financial challenge to support the growth"*

Start-up A is still a bootstrapped company with its partners. Start-up A tool helps both event organizers and event participants. Although the main users are event participants, Start-up A is sold to event organizers and then event organizers offer Start-up A tool to their attendees as part of their tickets. Therefore, it can be seen as both Business-to-Business (B2B) and Business-to-Business-to-Consumer (B2B2C) sales.

Although Start-up A has started its journey from the request of its partner company that it got spanned of, the partner company was their 12th customer and they had 11 customers beforehand. Partner company had a good network of event organizers in Europe. The first sale was through the organic network of the partner company and it took a few meetings to get initial sales. CEO admits that:

> *"I was new to the industry so partners had helped with supporting sales at first a lot"*

An interesting fact is that Start-up A had sold its service without having any software product developed as CEO tells that,

> *"We demonstrated the idea with mock-ups to event organizers to sell the tool first and then we built the product based on the deals and needs"*

Three events were convinced to be paying customers with the mock-ups to try their platform at the beginning of the development process. After that, their partner company had more contacts and good roots in Europe tech events and they could try the platform for 10 months until the main event of the partner company. CEO states that:

> *"We did not sell the product cheap or free to any event unless it was an impact event or a free event we believed in partnering"*

In 2018 summer, Start-up A was used at the partner company event first time and had a successful showcase in spite of many challenges of a big event. 2018 fall was the time when Start-up A totally redesigned the User Experience with a new flow and new User Interface (UI) to better serve event participants while growing and partnering with more event professionals. Start-up A managed to close 2018 with over 40 events in 16 countries. Start-up A had initially targeted tech and start-up events in the Baltics and Nordics region due to the organic network of the partner company and target markets have expanded by time. CEO asserts that:

> *"We discovered that our value was better for some other segments and we started penetrating into different kinds of events like e-commerce, media and other types of tech events than start-up and investors networking. By this shift, markets changed from Baltics and Nordics to all over Europe. Recently, some inbound traffic is coming and Start-up A has diverse demand from all over the world including South East Asia and America. The market has changed our structure and then we followed the market"*

Initial event organizers were satisfied with the Start-up A tool. CEO states that:

> *"Organizers had something digital and some numbers at the end of the day which they had never captured before. They could collect and track data about their attendees during their event"*

Start-up A has lost some customers in the beginning since their initial UX of the platform was not enough for the standards of some organizers and tool was missing some functions as well as competitors competing on price and targeting their events later. First year, 50% of customers stayed with Start-up A and after the first year, they almost did not lose any customer, especially in the corporate events segment. Thanks to the event industry structure, the referral effect helped Start-up A to grow. CEO states that:

> *"The event organizers who are satisfied with us, they would be mostly referring us to their friends"*

86% is the overall satisfaction rate of Start-up A event surveys with participants and event organizers which creates a good referral base for growth. In addition to that, the events would be a great sales channel for Start-up A as there are many event organizers and professionals joining other events to benchmark. Start-up A scouts for those event organizers in the events they have been partnering with. CEO claims that:

> *"From each event we join, we had at least 1 or 2 event leads. When we enter into a new market, that would result in more sales"*

Start-up A goes to events actively and finds people who are event organizers or related to events in their company. Start-up A tries to utilize the referral chain and network through its surveys and asking highly positive people about the tool to share their contact details for further discussion. Compared to autumn of last year with 4 paying and 1 free impact event, Start-up A now grown to 22 total events where 18 of them are paying that are confirmed for the same period already. Events are spread into Asia, Africa, and South America. According to CEO:

> *"What created the growth momentum for Start-up A is that we have constantly built showcases, got the event organizers promote our brand and event efficiency data on the media of event organizers, utilize referrals and events for hunting other event organizers"*

In addition to these, Start-up A has a person assigned currently for lead generation to find leads, contact the right people and create demos and arrange meetings for them. On social media, Start-up A targets event visitors to expand their network by showing how they add value to events and do not target event organizers much. Nowadays, outbound and inbound leads are balanced more or less equally.

Start-up A has pivoted its business model only once where the initial model was a fixed price to the event organizer. Model and price were tested with surveys with event organizers from different markets. In the survey, Start-up A asked event organizers how much they are willing to pay for the services that Start-up A can offer and compared it with competitor pricing. Currently, the second model is pricing based on the number of visitors to the event. However, the CEO adds:

> *"Some different models are in the pipeline and we are structuring the product based on these yet we still need to validate the ideas. Future business models could focus on acquiring data from users to be monetized by bringing people to*

events. An event visitor needs to book hotels, check where to eat and what to buy while going to an event, so we might monetize these aspects in the future."

There is a big seasonal effect where there are no events between mid-July and mid-August and December and mid-January which makes sales season only 9 months during the year. CEO states that:

"Therefore, we could look for entertainment events in summer or different events for winter."

The product is constantly changing, as it was a matchmaking tool first. Then, demand from exhibitors was higher to meet people at their booths, then the agenda was added, and lastly a mobile app. CEO explains that:

"Although we had strategic assumptions that we do not need an application. However, the Asian market wants it so we had to reconsider some functions initially we did not want. Initial value offering was only getting people match and book meetings while now it became an event efficiency tool that is helping the start-ups for doing marketing campaigns using our features, event organizers managing their workshops and registrations. We also formed different value proposals to different segments like exhibitors, visitors, VIP guests, etc."

Start-up A did not put so much money into marketing. Start-up A had few trials and had internal team members at first but it did not seem viable to have some marketing people in the team at the early stage. The CEO believes that:

"The company is too early to invest in marketing, and finding the right talent is also difficult. We are spending money on the development side and we are almost spending no money on marketing but just sharing updates on social media and using it for lead collection and re-targeting the contacts for now. There is no one hired however, eventually, the structure will change, possibly when we get some investment."

5.2 Start-up B

Start-up C was founded by a teacher who used to be teaching Finnish as a second language and is the CEO of the company currently. She was interested in the use of technology in language education and she was aware of the different language learning methods. She explains that,

"I had the possibility to try robots in my work. My original idea was based on the community learning method. The teacher would not be giving a lecture but helping

> *in a real situation and the idea was that I could make a robot to be a language guide in real communication situations. That is what I tried first."*

The initial idea of the CEO was changing upon several learnings and trials on robots with image recognition already at the beginning. Upon this idea, the CEO had a co-founder for another company prior to Start-up B and they had applied to an accelerator. Although Start-up B did not have anything concrete, they had got accepted. CEO tells about the experience that:

> *"Two weeks before the accelerator, the idea was formed. After three months of the accelerator program, I thought that it was very good for us in the beginning because we got our experience on how and what kind of things to do when you have a company, like fundraising, product development, marketing, and sales"*

During 2017, the CEO had made some mini piloting with her students and she had attended a conference, which was the biggest robotics conference in the world. CEO tells upon that:

> *"Then I thought that maybe this is a good idea to do now. At first, I thought about using some other robots. I also learned about developing open source so purchasing some open-source robot and developing it ourselves that we could make our own robot from the beginning."*

Start-up B has been pivoting a lot until now. The business model has been improved and they have been selling the robot, sometimes the device based license for the robot, to schools to use their learning solution. At the moment, the company has three robots that can be used with their software. Also, the product has a lot of new features and has changed a lot since the beginning. Not only for language learning but also other studies, there are quiz type of exercises. However, it has not been an easy path for the company. Challenges at the beginning of Start-up B includes several aspects. According to CEO,

> *"The biggest challenge is, of course, money and resources. You need a lot of people and a lot of knowledge and skills to do something. Related to money, finding a scalable working business model is something we are learning every day. Also, when going to a new market with something working in Finland, we noticed that it does not work the same in other areas. However, to scale up, we have to go quickly to see other places."*

Start-up B was registered as a company in November 2017 and the first sales were made two weeks after that. However, CEO asserts on the challenges that:

> *"One challenging thing is price because the hardware is expensive. However, I think it is not only about money. Technical readiness is important too. If the product is not working, many schools are very patient and they know that we are a start-up and things are not perfect yet and we are developing all the time. But when you go abroad, the competition is very hard and you have to be fully ready."*

The first sale of the robot came from a learning event. CEO explains the story that:

> *"There were some people from a municipality program. They were interested in robots and they were looking for different kinds of robot learning solutions. We did not have a product at that time. They asked to pilot on that idea and then it was very easy. I think it was because they were just looking for very early-stage solutions."*

Start-up B product has been very attractive to both users and the public that it has got a lot of media attention from big news channels. This has helped to get sales easier. Since the beginning, the company has mostly relied on inbound sales. CEO further states that:

> *"We have not done systematic sales and hired salespeople earlier. Now, we have our first salesperson working. Before that, we have got requests from people and focusing on some markets and participating in events but not cold calling or email."*

Although getting people interested in the robot and generating inbound leads have been easy, the sales cycle of Start-up B is somewhat very long due to selling to public institutions. Pricing for the solution of the start-up has been initially assumed. After a few pilots, the company has interviewed school or city principals and decision-makers in deciding the price. The results of the interviews changed the pricing of the solution. The first customer experience was a success and both parties were very satisfied after the pilot. CEO states that:

> *"The first customer was a very great co-creation partner. We focused very intensively on that project because we wanted to do that perfectly and serve them well and listen to everything to understand what they need. When the pilot ended, there was also another robot but they chose us. They bought more robots and now it is in more schools in the city."*

One of the key reasons for the growth of Start-up B has been the global media attention thanks to this first pilot project of language learning with the robot in local schools. CEO claims that:

> *"During that first pilot, there were a lot of media impressions. I think all the media impression we got was because of this project, as they have made it the big thing. There has been so much virality that many schools and teachers got interested."*

Currently, the company did not have outbound sales so much because they have been able to receive a lot of requests to deal with thanks to the media and referrals. Compared to the third quarter of last year, the revenue growth of the company has been 600% this year. However, for future scaling CEO assumes that:

> *"I think one important reason for the growth is that we are education-backgrounded people and we know how to talk with schools, teachers, and principals. We can make sales in Finland because the market is very familiar to us but I think that we can continue like this one or two more years. Then, we have to do something else because Finland is so small country."*

Since the current business model is based on robot learning solution, the company has also plans to try its global sales. CEO explains more on their plans that:

> *"What we are trying to focus first on now is some certain markets. We have already one reseller agent in one place and we have run some school pilots there. So we try to get some good references from there."*

In addition to being known in Finland by people quite much, Startup C plans to have some other activities to scale its business in the coming year. CEO states that:

> *"Participating in different kinds of events is always very useful. Social media helps a lot. We just launched our new website and for the Finnish market a web store partner and do marketing for us. We have resellers and we are negotiating with some others."*

New salesperson of the company is directly contacting Finnish schools currently and company plans to join several events to showcase their solution. In November, the company will run a free workshop for teachers and they can learn how to program robots. Additionally, the company aims to focus on a niche and CEO explains that:

> *"We are especially focusing on early language learning in Finland because there is a new government plan that language learning starts from first grade. So we tell a lot about in our marketing that our solution is very suitable for early language learning."*

5.3 Start-up C

In May 2017, Start-up C was founded as a dementia healthcare education company although the idea stage was dating back to a year earlier in 2016. The first two co-founders of Start-up C had met at a startup event that gathered people from Baltics and Nordics and aimed at forming teams. Upon the meeting, the first idea was an e-learning platform of dementia courses in videos and text for dementia caregivers, practical nurses, nursing assistants, and families with a subscription-based service so that they could buy to get better at their work and have better chances of getting a job or helping their family members. However, the CEO admits that:

> *"We realized when we started building on that idea by interviewing the CEOs, the caregivers, and all in care homes that idea did not get any validation. They thought that the idea and what we are trying is good but we felt that it was not so exciting. Thus, we created workshops to add more value and we sold them together with e-learning."*

Upon an immediate pivot right at the beginning in the business, Start-up C started getting its first pilot customers where three of them were not paid. The fourth pilot was a paid training with Sipoo Municipality that bought for two of their care homes because the city is mostly known for its innovative culture there. CEO tells on the initial sales:

> *"How we still do sales is that I contact people via phone call or email. We met with the Sipoo municipality manager at a caregivers association meeting. After a while, they wanted to do a pilot and they were really excited. The manager was an active developer in care work as a pioneer who found our offering very valuable. We cannot tell that this was normal and it did not tell us much about other customers but it got us started."*

Start-up C created the content and materials of the workshops and sold it one year earlier than they could do a pilot with Sipoo. Start-up C did not have any more free pilots. They started a pilot with Deaconess Institute in Helsinki which was much bigger and well-known. The results were not so well for multiple reasons from Start-up C's perspective. Based on the lessons learned, Start-up C changed almost completely the course for the pilots by redesigning the e-learning platform, recreating almost all the materials, and putting more emphasis on the workshops. The training service is now a blended learning course with the caregivers taught online. Upon this new model, the problem is scaling up with workshops. CEO shares that:

> *"There are two ways; either we would pivot back to e-learning only or mostly e-learning would become our main product. We will try it again from this September*

on to sell e-learning courses with a subscription model instead of one sum. If they want to have a more comprehensive training, we can still give that as a premium service for them. We are going to test it now in September when we are publishing our new website."

Start-up C does not have any regular customers nor any recurring revenue due to the existing training model. Start-up C aims to have a lifetime license which would be the transition to recurring revenue. Apart from changing the e-learning platform idea to blended learning, the team has faced many other challenges during its journey from lack of experience in developing an e-learning service and any good benchmarks to planning resources needed and developing the product. One of the challenges was also finding the right talent for Start-up C. Although raising funding is always a challenging issue for start-ups, it was not the case for Start-up C but it brought another challenge for the team. CEO claims that:

"With funding, there are two kinds of challenges, either you do not get it or you get it and you do not know what to do. So you get it too early or you focus only on getting funding instead of actually learning about the problem. You create lots of waste of resources, focusing on the wrong things in the beginning. We kind of had that problem because we were able to get funding from the beginning, from the University of Helsinki funds. I knew the risk and knew that ideally you should grow bootstrapping or get a better position in the negotiations by having some revenue and some proof pilots."

It was not a completely negative thing for Start-up C where it helped getting started with the business, hire people, pay salaries, take things forward and eventually find the current model that they were able to sell and get good customers. On the other hand, CEO asserts that:

"We are struggling with having the revenue recurring now. If we have started without the money, we would have more motivation to go to meet actual customers and users and get creative. Instead, it was like now we have the money, we can start working."

Going to customers and getting sales was one of the major challenges for Start-up C at first as they relied on early funding. CEO tells about their challenges while facing customers that:

"Two things were difficult. First was to sell them the idea of e-learning which is not so common, especially in the healthcare sector, and when the caregivers are usually over 40 years old. The second and maybe the hardest problem with users

> *was to convince them that interaction skills are essential for dementia caregivers. Also, there was no one else than me to sell. I also decided that I must sell it first myself and learn and actually understand the customers before hiring a salesperson."*

Last spring, they did hire a not very experienced sales consultant who had opened many good leads. Yet, getting sales was difficult when the target was mainly municipalities or large companies where the sales cycles are very long. Since Start-up C received early funding, the risk was low. However, that funding resulted in some more difficulties with further investments since the University of Helsinki was owning too many shares which makes it harder to get more investment from VCs or angel investors. CEO claims that:

> *"Getting sales is the option for us to show this company can grow and push to change the ownership."*

When Start-up C was trying to price the service, they benchmarked healthcare training in the industry and asked customers on how much they use yearly for training persons. They made an estimate for the price based on these and waited for reactions. Customers were not sure and some was finding it high as Start-up C did not have any background nor product. However, some other training companies are selling higher. Although sales with municipalities are slower yet Start-up C had more luck with the public sector due to the quality pressure of care homes. They were eager to work with Start-up C. CEO states that:

> *"Our training would be onboarding for every time care homes recruit a new caregiver. It can be also for professional growth that nurses can assess their level, define personal goals, and take the next steps. We cannot assume that it will be the same for all as it is personal development. Caregivers need to get trained 3 days a year by law in Finland. It is a good thing for us but there is a big competition too."*

Apart from professional caregivers, there are family and other caregivers so it could fit them better with e-learning and the professional caregivers have many sub-sections. At first, Start-up C was focusing on caregivers as direct customers but now their employers to provide tailored training to them. Therefore, Start-up C's success rate was very high that all the care homes contacted agreed to have a pilot. It has also become easier to go to other partners when Start-up C worked with well-known customers. CEO claims that:

> *"Referrals were good from the care homes. We had challenges with caregivers themselves as half felt very basic. We were able to create much more engaging content with videos later. Registered nurses with high knowledge and experience*

> *were very satisfied, and 95% of them would recommend to their colleagues as a good recap although they knew most things."*

The latest sale of Start-up C with the City of Tampere includes 140 caregivers in Tampere and 10 workshops to be run, which is a big sale for Start-up C that came through the mentor of the CEO. Thus, organic network and referrals were the main inbound channels for Start-up C whereas most of the sales came through outbound contacting. However, Start-up C received two inbound customer requests and one was from Canada already. CEO explains that:

> *"A customer from Canada contacted us with a very specific interest as they have elderly people in their care homes who are originally from Finland."*

One of the problems in inbound sales for Start-up C is that very few care homes are actively looking for training in interaction or communication. Start-up C is creating a new kind of topical training that care homes should be focusing on. In the near future, Start-up C aims to focus on marketing more and the new website will be at the core of the inbound strategy to generate more leads online with focus on content marketing by creating articles from interviews with experts. Start-up C is also trying to build a community that consists of both family caregivers and professional caregivers who can spread the word. CEO further claims that:

> *"I think only now when we are getting good results from the training, we can start with marketing. We have not even done any marketing. Now, we have good results, referrals, and we are publishing the new website, and we know what we are going to sell."*

In addition to shifting from workshops to the e-learning platform being the main offering and inbound strategy, there are two other factors that could help to scale up. CEO asserts that:

> *"There is already quite a lot of content and information which we give for free. If they want to learn more, we will have more advanced training online. Some less expensive courses for family members can be possibly tried too. Another scalability would also come from internationalization. We have already translated our e-learning materials into English and we are going to pilot them in Canada during the autumn."*

5.4 Start-up D

The story of Start-up D starts with two entrepreneurs' roads crossing each other. Both co-founders have had their own companies when they met at Slush event in 2016 December. They have agreed to work together. The prior company tp Start-up D was a mobile-focused development company and Finnish co-founder had strong experience from Nokia and industry in B2B projects, mostly Internet of Things (IoT) related internal projects. When interviewee joined the team, they investigated how Augmented Reality (AR) could change the industry. Current CTO of Start-up D states that:

> *"We have tried many things, many different technologies, and applications, a lot of experiments with smart glass, and some with Hololens. However, we ended up with mobile phones as it is currently advanced and capable of quite many things. We did not have our own idea at the beginning. The idea was to answer the needs of the industry first. The key thing was trying to find how augmented reality can solve industrial problems. We explored different use cases of different segments."*

Start-up D got its first pilot project thanks to the experience from their project on "How AR can impact power plants" with the earlier company Kii. The project started from a Tekes project meeting where large corporations meet with relevant start-ups and smaller companies and universities that bring R&D to solve problems of the big companies. Current CTO of the Start-up D recalls the meeting that:

> *"I was in one of the meetings where one company was telling their challenges to be solved. After what that company said, my response was <<we have solved already>>. That is how this discussion sparked. The company wanted to cooperate on a pilot project. We have developed trust and agreed that if our prior company wants to do something in this domain, they are ready to test it in their power plants"*

Kii made a pilot project during the demolition of a power plant where they explored how they can digitalize what has been demolished so that it can be calculated how much money can be made from that cost calculation of demolition. Current CTO of the Start-up D states that:

> *"It did not lead to a product phase but what it did is we were able to gain the trust from that company and we were able to surpass expectations already. After the relationship was developed, they had a need when they were working on an AR project that was proceeding slowly and they knew we were good and fast so they got us again."*

The idea of Start-up D came to fruition after these trials where they have decided to found a new company based on this idea. The idea did not change after this point but customer segments and application use cases with value propositions varied each time. Current CTO of the Start-up D summarizes that:

> *"I think the idea of Start-up D finally derived from a notion or concept which both of us as co-founders agreed that once we have a product idea that can be scalable and addresses a clear need, that is when we can start a new company, a start-up, not like an old small company which was ten years old working with projects."*

On the other hand, Start-up D had a vision of what it wants to do with a product in mind. Current CTO of the Start-up D as CTO and Timo as CEO have become partners when Start-up D was founded and they were able to transfer customers since the prior company dropped its interest in R&D with AR. Start-up D took it with the same team and an extended product development team was set up in Delhi. Common challenges Start-up D has faced initially were money as they did not have any paying customers first. It was also challenging when they just had an idea but no product developed. Respectively, the team was needed to build the product, and surprisingly it was difficult building a good team and finding good talent. During the idea and customer development phases of Start-up D, they had different challenges while seeking for first customers. CTO asserts that:

> *"We had a lot of interest in our idea and AR. However, there are "Wow customers" and it was difficult to find the real customer. The number one challenge to sell large industrial corporations was to prove our competence and how much we can help by showing the right demos. Another challenge was finding the right person due to hierarchy in companies. Tekes helped us in that a lot. We did not want to sell first but wanted to explore opportunities, validate our idea and gain trust and references with pilots."*

In addition, they were also lacking investment. Angel investors were usually interested in small amounts. However, Start-up D was lucky to close its first round of investment around 80,000 euros thanks to two angel investors with 30,000 € and Tekes 50,000 €. CTO claims that:

> *"I think that is one very major breakthrough we had and this was done in the first three months after the company was built. Coming out from a company with the same team to a new startup can be sensible that it helps us have a better plan. We knew what things we could do, what problems we would have, and how we should mitigate them."*

However, until the first paying customer, there were many challenges. CTO asserts that:

> *"The challenge was the head of the company who thought we are too new. He was asking how much we have done, if we have any references, how many companies we have worked with, what we can show him and so on. I was able to tell them something they got curious about and helped us. They were very impressed with our demos."*

After the first few projects, Start-up D had an offering of Augmented Reality as a Service for sales to companies. This has enabled Start-up D to offer its product with trial licenses instead of developing anything extra like in pilot projects with the prior company. CTO states that:

> *"Because once you have a product, you are not developing, you are possibly just getting the models to put on the platform and giving them the app. So when you have a product, there is not a lot of work to do for trials."*

Start-up D had a lot of trial customers. The product was in a pretty decent stage as the team had already started working on the product even before Start-up D. They were quick at developing the product in four months and were able to test with different people in the next few months. Three months after Start-up D was founded, they had their first paying customer. CTO tells more that:

> *"We added features and we have improved our product. We made a powerful bid saying what we could do for you. We had to do some effort and they were the first ones who we actually built it for and we did not have to do separate development. Once they saw it, they wanted the proof of concept project. We are still continuing with them."*

Start-up D has tested different business models ranging from one-time fee, without exploring much, to seat-based license which is very common in enterprises as CEO had a background in big enterprises. Currently, Start-up D is operating with the SaaS model. CTO further explains that:

> *"We have the SaaS model, as per month per user. I think the model is not the problem but it might be in some use cases. If somebody uses the product for marketing, then you cannot have a price per user, it is thousands of users. So that is different like based on use or per views or such. We are also exploring marketing use cases so having multiple pricing models. When you are planning with augmented reality, it is also different."*

Start-up D has also tested pricing with prospects to understand customers even before proposing by talking with a person who may tell the insights because he might not make the decision but would know the standards. Founders were the ones to define the value first to start with something. Start-up D was able to get many leads and trials on their app however only 20% of those would continue forward. Getting leads to trials was also a struggle at first. However, customer satisfaction was really good for Start-up D from early on. One of the clients had over 50 pilot projects in AR/VR domain and one of very few projects they continued with was Start-up D. CTO claims that:

> *"They were all very happy with what we did. 66% of these ones were over expectations and the third one was a very good experience, but not an excellent experience. There were challenges due to the technology limitations themselves and there were some problems sometimes but that was not a showstopper."*

Most of the first sales have been through internal sales. Start-up D would offer pilots and demos to different people and people in the companies would sell to their bosses later. This was the sales approach of Start-up D and still going on with large corporates directly. CTO states that:

> *"Internal selling is a very important part of B2B. To find out that budget for a project, you have to get approvals which you need to convince the team, you need evangelists for your own company inside their company."*

Although customer satisfaction has been very high and Start-up D used to find evangelists in the companies for their product, it is not common to have referrals happening because it is often a secret development project. CTO claims that:

> *"They might not talk to other people but they might still say it is a good company. One thing we can get from this, when you do good work over expectations, you create a name and you create a brand, not just a reference. There is going to be a good atmosphere around you when you connect with people, which is important for sales."*

CTO further points out the importance of references and how it affected them:

> *"References are very important. To get a reference always count, there are a lot of projects to do. They do not give you a reference unless they think it is valuable enough. Fortum was one of our first references. It was weird for people how we got Fortum."*

Start-up D has been formed by two founders who were engineers thus marketing and sales efforts were mainly focused on cold calling and events at first as well as developing

the product. After developing the product and getting several customers, Start-up D has started working on marketing on a small scale with some branding and presentations, videos, and Facebook advertising without anyone responsible for it yet. CTO tells that:

> *"Earlier, we never had an app. Now, we can market. Many startups start with marketing and develop later. We believe in doing things more than showing things."*

Start-up D has already generated inbound leads. One customer has directly filled their form on the website. Although Start-up D had contact with the Finnish branch earlier, the Polish branch has contacted upon release of the app which was not their target segment. CTO claims that:

> *"The first thing is difficult, to crack the first sale, but it is even more difficult to crack the first five customers in the same domain. So the first challenge is to get repeatability for SaaS. Scalability can only happen if you have recurring revenue with customers who continuously have the same need in a particular domain with a particular use."*

Start-up D has generated most of its leads through traditional methods like cold calling, networking, joining international events and pitching opportunities, and corporate matchmaking by Tekes. To scale up, Start-up D considers several things to apply to increase its online presence and eventually its growth by increasing inbound leads such as focusing on the website, social media marketing, and building different sales funnels online to understand customers. CTO further shares that:

> *"It is very interesting to make different banner pages to redirect people from ads or somewhere. We can try different things, such as pricing or markets."*

Another thing Start-up D currently does is partnering to get a more powerful offering such as partnering with a web app to combine their AR app. Organically, Start-up D can also reach more people because partners will have their sales team helping Start-up D as a secondary sales team. Therefore, Start-up D is seeking partners and partnering with one company now. For the future, Start-up D plans on hosting free webinars for people who want to learn something interesting which could lead to more inbound leads as well as holding events themselves. Start-up D was in the top hundred Slush last year that helped to find one investor inbound. Start-up D uses several digital tools to enable sales like CRM and planning on using email automation and sales intelligence tools.

5.5 Start-up E

Start-up E is a fast-growing company that equips corporations across Europe with data-driven research about technology and innovation market, competitor insights, and the fastest-growing technology fields. Start-up E combines data from over 300.000 tech companies in Europe and North America with analysis and validation to serve their clients. Start-up E helps big corporations by finding the best digital solutions, technologies and innovations for their development needs. Corporate partners of Start-up E are in various industries like banking, construction, energy, insurance, e-commerce, health, food and more.

The company was founded in 2015 by two co-founders who were experienced for many years in the corporate venture, startup, and technology scene. The company actually started to operate from 2016 and the first year was more about seeking the business concept. Current CEO explains their initial idea evolution that:

> *"We had some initial ideas on how to create the business and value for the startup scene, investors and corporations. During 2016, we decided to only focus on serving corporations in tech and innovation. The reason for this pivot was to have a more clear customer segment, so we can communicate our value proposition to customers in the best possible way."*

Start-up E founders decided to take the segment of corporations to focus on and create an offering based on their needs. 2016 onwards, they started to sell partnerships for large corporates and the focus was to implement Europe and North American-wide tech solution research. They had five big corporations as their first clients and partners for 2017. CEO states that:

> *"Basically, 2017 was the first operational year for the company and that was also the year of fast learning and service/concept development. It also helped us to deepen the understanding of our corporate partners and their specific needs in the tech and innovation scene. So, we could adapt to those and understand how we can use the data pool, tech research, and tech case validation to deliver value for them."*

The product development of Start-up E was shaped by customers upon understanding their needs. The first service with first pilot customers was on tech solution research and analysis in 2017 and it was the only service until the fall of 2018. After gaining some experience and insights from customers, Start-up E introduced new services when launching the tech market research and tech investment research, strategic level products. CEO tells on the development:

> *"It started from the discussions with our corporate negotiation partners. What we learned was that many of them actually were not ready to start to look for tech solutions or meet those startups yet. First, they needed more information and more strategic insights from the market itself in their own focus areas to understand the market better. Later, they are capable of making strategic decisions on what kind of solution to look for. Then, we have launched a couple of other products from the interactions with clients."*

Start-up E had one main challenge from the eye of its CEO at the early stages which is lacking a reference. CEO claims that:

> *"Lack of references sums up everything. A young company with not much validation around the service, everything is related to references. When you have high-quality references, other negotiation partners understand that there is something valuable you can deliver. The more references from different industries you have, it tells the story to negotiation partners."*

In addition to the lack of references, the challenge for Start-up E was also a matter of creating a new market, especially in Finland. For Start-up E, it was not about taking a slice of a ready market since there were no direct competitors in the Finnish market. CEO asserts:

> *"In Europe, we have some competitors but when it comes to Finland there was no direct competition. It has been about creating the market on the national level and deepening our understanding of the field. We also made wrong assumptions about how the customers are ready for services like ours. Our data-driven research services are really different from what our clients are used to. That challenged us because we first introduced a new way of doing as well as tried to sell at the same time."*

Although Start-up E has faced challenges, first pilot customers were not difficult to get. The first five pilot customers Start-up E had as a yearly partner during 2017. The first sales deal took only a couple of months. First sales were usually a combination of cold calling and some networks. CEO states:

> *"Actually, there were no big challenges, we were really open about the fact that this yearly partnership concept is new and we believed that it will generate value during the year for them and their needs because it's mutual learning."*

Pilots of Start-up E were all paid from the beginning. The business model was based on yearly partnership and the initial pricing was relatively low as the main focus was on developing and growing their service along the way. CEO explains:

> *"It was a fixed price for them, just for being able to get partnerships and for us being able to operate for the collaboration year. We decided to serve and design this one product concept to try with that price at the very early stage."*

The pricing of Start-up E has been changing after collecting references. CEO tells:

> *"After generating more value and developing the services, the price point has been evolving."*

At first, only the yearly partnership model was available which is still valid. Upon development of new services, Start-up E has adjusted more towards project-based partnerships and priced the services separately. The company has got more project-based customers than the yearly partnerships, but both options are still up and running.

The sales cycle is varying from two weeks to two years because the negotiation partners of Start-up E are in different stages of utilizing emerging tech & innovation as well as digital transformation. CEO describes their journey with customers and product development:

> *"It is all about finding the right timing with the corporate, then adapting to their needs with our selection of products and services. So that is why we have been developing more services so that we have more attachment points to adapt to their needs."*

Start-up E has received really good feedback according to the CEO. Thanks to high customer satisfaction, Start-up E has acquired some customers through word of mouth. Start-up E founders have been active with the biggest corporations in Finland and they have been creating those connections strongly which became helpful later. CEO asserts that:

> *"Some client knows someone from the negotiation partner and of course, there is a strengthening relationship. We have had international customers too. However, we have been first focusing on developing the service and product portfolio so that it is as efficient and valuable as possible for the client base. It is easier on the national scale, naturally."*

Start-up E has been doubling its number of customers and revenues since its first year of sales and aiming to double the last year during this year. Although this is the case, the CEO does not believe that they have found the high growth momentum. CEO claims that:

> *"I think we have not had that hyper-growth. As an entrepreneur, I always seek for more and I do not think we are there yet"*

Between 2016 and 2018, it has been very much hands-on sales with cold calling and meetings. Later, it evolved based on referrals and introductions made by network partners or advisers, or through events. In 2018, Start-up E started to put more efforts and resources to scaling. The first half was still a lot about learning and in the second half, Start-up E started to scale its operations as well as its team by hiring marketing experts. CEO states that:

> *"We are learning more about different opportunities on the marketing side on how to generate leads and using multiple streams to harvest new leads for sales."*

In the first quarter, it was more about building the strategy around marketing for the first time for Start-up E. There has been a lot of work done on building the fundamentals before they begun an experimentation cycle of growth hacking. They started from updating and recreating the website and sales decks, reactivating newsletter to clients, creating CRM system, tracking analytics and more.

Later on, they started two-weeks growth hacking sprints testing various lead acquisition channels like paid advertising, inbound and content marketing, landing pages, cold calls, personal branding, chat and lead generation form on its website, outbound email automation and others. The team was understanding the customers deeper by mapping and creating customer personas. In parallel to these, there is another track going on which is partnerships with players in the market where many of those do not have a data approach. Thus, Start-up E is now trying to find partnership opportunities with those companies. After various revenue streams and marketing activities, growth hacker of Start-up E states that:

> *"In marketing in a growth company, you need to target different streams. Because you do not know where the lead will come from so you need to test and streamline different things. Even though some might not get you leads, you need to look like an actual company. So you need to keep up with communications."*

CEO asserts that:

> *"Now marketing is affecting us a lot. We believe that now we have at least a service and product offering that we can scale with. The marketing team started strongly to test many different streams. The second quarter more than doubled our base of new leads. It has been a crucial part of enabling scaling of our company."*

Meanwhile all this has happened, Start-up E team has developed another business line on the side of the research service business, a software as a service business model, a platform which will be another significant part of Start-up E during the year of 2020.

5.6 Start-up F

The story of Start-up F has started with a research project at Aalto University. Founders of Start-up F were master's students and they applied to join a research project for their theses in 2008. Aim of the research was investigating how people use new social media and similar types of platforms in a living lab environment. There was an idea of building a service for the campus. Original idea was to offer and ask for small help in the campus through an online platform.

The team started being excited about some lean startup methods and knew user-centric design. Thus, they were asking students about "what kind of favors they do to each other and what they need." The team quickly formed a marketplace where people could sell their old items. People could also ask for small favors like help for moving or a group for studying or even ride-sharing. It was also possible to borrow items not only selling. The research team tried to put everything in one place. The campus marketplace has got several thousands of users. According to COO:

> *"One of those critical moments, the first success with the marketplace, was that the course for all freshmen students about the computer systems of the university had included this service. It was part of the obligatory exercises that here you can find old course books and sell your own. In this way, we got one successful marketplace running."*

When the research project was ending, the co-founders were inspired to become entrepreneurs and started wondering about that, after seeing the opportunity says COO that:

> *"We have this one working university marketplace and software has been licensed with open source license in the research project so we could use it. We worked part-time researchers three days a week, and we were starting our own enterprise two days a week, and basically, we were improving the same product five days a week."*

Co-founders started trying to find clients from January 2011 onwards. Naturally, the first idea was that other universities might need this as well. The first sales meeting was at Jyvaskyla University of Applied Sciences (JAMK) and the decision did not come for a long time. Co-founders were not sure what should be the price for their service. They invented the first pricing on their way to the first sales meeting in JAMK and used the same price for the first year. JAMK did not become a client eventually. COO asserts that:

> *"The universities were very slow and they did not really need a marketplace. Student unions typically did not want to spend money on that. We spent a lot of time*

> *in sales discussions. Maybe many people in the universities were interested as they saw the working example from Aalto. It was nice for them and they wanted to talk. Someone would need to accept and that was often unclear, who and which department should pay for this. It was hard to find the person who would make this happen, actually."*

The first paying client of Start-up F was actually a homeowner's union. Start-up F made a deal with the national-level union to start a local sharing marketplace for each association. Start-up F first built it in a few places and then extended where there were more than a hundred of homeowner associations in Finland. The first meeting with the homeowner union was in August and it took a while to get to the first sale. In fall 2011, co-founders officially launched the company, when somebody was really paying. However, the homeowner union deal lasted for two to three years until they noticed that not so many homeowners associations were using it.

The idea of Start-up F was more towards B2B in the beginning and co-founders also thought about the companies that may be using internal flea markets online. They got some pilots and some other plans to make it real. The first 10 clients were all different, ranging from homeowner union to local congregation of the church, some universities and some cities. COO tells that:

> *"During 2013, we started getting a few contacts from entrepreneurs who had an idea to implement but they did not have funds to hire developers to build it from scratch. They asked us to modify things with reasonable costs to become a different kind of marketplace. We helped the entrepreneurs to build that. We were not very coherent in one segment and that led us to try a freemium model more towards the B2C market. When we started getting some other similar requests, we realized that here is a group of people with a problem and our solution would help them. That was when we started shifting our focus to entrepreneurs, for anyone starting a local sharing marketplace."*

After the freemium model and shift towards more B2C, Start-up F got many people on the free version but almost no one was moving to the paid version. There was some interest but it went down pretty quickly and they did not get enough momentum. Therefore, people did not want to invest. Start-up F was trying these both approaches, still trying direct selling to organizations and trying freemium model. COO admits that:

> *"It was not going too well in sales but we got some early funding, both through university and by participating in startup incubator Start-Up Chile where I was spending nine months in Chile in 2012. That helped us to get more international*

and we renamed the company as Start-up F in 2012. In Chile, I tried to sell to the local universities but it was again very slow and not so much interest. In 2013, I remember that we did not have any more money to pay salaries and could cover the costs of running the services. There was a third founder but then he decided to leave the company to study."

Start-up F had mainly challenges with sales and funding. According to COO:

"Finding customers and sales have been one big challenge that comes first. Also, the earliest model of Start-up F did not have much luck with investors. Another problem in some companies with the earlier model was thinking that employees are probably going to use that someday. If there was not a single person excited to really market the service in the organization, that typically would not work. That was better with an entrepreneur who wanted to make it a business. Probably why the entrepreneur marketplace has been more successful."

Two co-founders started thinking about what they should really do to get things going. Founders have been discussing with the investors throughout the year but investors did not want to invest in the original concept and they warned Start-up F about things that founders also noticed like the public sector being very slow and they were not convinced. After starting to focus on entrepreneurs, founders talked with this new model to the investors where the first one was Reaktor Polte. According to COO:

"They actually started listening to this story much better whereas we have this first client and a few more leads, and they said that there is something to it. They invested a relatively small sum but something. That helped us to keep going and see if there is anything coming out from this approach."

With the support of TEKES, a total of €120000 funding was targeted towards building a better product and focus on sales. During that year, they got from one client to over twenty with the new model and that was enough to validate for another funding. In 2014, Start-up F got a bigger investment round then with Reaktor and Lifeline Ventures. Then, they implemented PayPal payments where Start-up F became actually usable in many countries of the world. COO shares that:

"December 2014 was when we speak about that having like the relaunch of Start-up F because it was usable almost globally."

After validating a market and growing to some level, during 2016-2017, the rate of growth was slowing down and Start-up F founders started thinking beyond and they have recently created Start-up F Flex. With product development, the early focus of Start-up F Go was only on starting entrepreneurs that do not have anything existing and they want

to get started without coders. With Start-up F Flex, they could offer to ones who are further in their business and would want to hire a developer and customize things but want to save money and not build everything from scratch. Founders felt that they should try to focus on marketplaces also being successful, not only they are started says COO:

> *"Also, one reason encouraging us to build Flex was to allow good cases to keep growing and we were also seeing people with good cases sometimes migrating away from Go because of some limitations"*

When it comes to retention of customers of Start-up F, the first customers with the old model stayed a few years typically but it has not been a repeatable process. Some entrepreneurs quit really quickly in three or four months after seeing that it did not work as they expected and some stayed years. The average lifetime has been around eight to ten months. One challenge has been keeping the clients for Start-up F admits COO that:

> *"Our business is at the very core of marketplace startups and marketplaces are hard business models to set up. It is easy to get some interest but to really get enough service fees so that you can pay your own bills, you really need quite a lot of volume and getting there already requires a lot of work. Many people with an idea start and they notice that this is not going as fast or as easy as thought and give up. I think converting people to become customers and then keeping them were the main challenges."*

There is not much referral effect from the clients for Start-up F. COO asserts that:

> *"Still, many who come to us tell us that they had this idea and they talked with a friend and heard about us. I think word of mouth is important and has been good since we were early in the market. We do also have an affiliate program but that has never brought a very big sum. We have not had that much maybe network effect."*

Start-up F had a long difficult outbound process at first. After getting inbound entrepreneur contacts and switching to the freemium model, Start-up F has shifted towards inbound strategy. One of the high growth momentum for Start-up F was after the launch of 2014. Start-up F got some press coverage with global payments and investments on TechCrunch and few different places. That generated inbound traffic for Start-up F and they started to be seen by the entrepreneurial audience. Additionally, Start-up F has been lucky in terms of getting attention as they have been quite early in this market to establish the brand early on.

They were getting traffic thanks to spreading the word around from organic channels and through organizations in sharing economy. Although Start-up F did not do paid ads in

the beginning, they tried different paid advertising tactics later. Start-up F sometimes has been doing A-B testing and the marketing team has been looking for rather similar things for multiple years. They have been writing the Marketplace Academy and Start-up F guide book to help people succeed in their marketplace business and to establish a thought leader position in the sharing economy. They managed to become quite well known in the world of the platforms. One challenge has been to find out where the marketplace entrepreneurs are. According to COO:

> *"We have been thinking we should start a discussion forum ourselves. We have found some marketplace groups on Facebook, but most people are not on those. People with marketplace ideas are scattered around in different segments and reaching those people is difficult. That is why targeted marketing is very hard for us. That is why we were aiming more to be easily found when somebody starts to look for how to create a marketplace. We have the Marketplace Academy so that they would land on one of the articles and then find out that there is also software that makes it easier."*

In addition to Marketplace Academy, Success Stories that tell inspiring stories of successful cases help Start-up F to get more traffic and trial customers. With the launch of Flex, Start-up F has been growing slightly more towards the direction that they could also serve bigger companies. COO further explains that:

> *"We have not been chasing them especially and they require a little bit different process to work with. Canon approached us and we took a while to discuss the terms so that they agreed because we have been more used to smaller companies. Now, we are opening again back to the big organizations that we actually started with. Instead of earlier an internal flea market idea, if some bigger brand wants to venture into the sharing economy, creating a marketplace can be with Start-up F Flex."*

Start-up F has a well-established funnel for Go product after years of experience and the company started more looking at the funnel of Flex recently. COO explains that:

> *"There are some corporate clients in the funnel but basically we use the same process. Also, they have a little bit more demands like more documents about the terms and security. However, the idea is that currently no cold calling, mainly because we do not have such a good list of who to call and we got enough inbound so the resources we have for sales go into those. We also use some drip emails. After people start the trial, they will get some scheduled emails as automated*

campaigns. There is no difference if they are entrepreneurs or bigger corporations, they get the same communications."

5.7 Start-up G

Start-up G is a growth company that offers pricing-as-a-service with its auto-dynamic pricing algorithms based on real-time demand. Over ten years ago, one of the co-founders of Start-up G, prepared to book a flight for Easter and noticed that they had already been sold out. Selling tickets at a price below what buyers would be willing to pay looked like a welfare loss, loss of revenues for sellers and utility for buyers. Therefore, he started thinking about factors that companies could use to better react on demand. Having studied quantitative finance, he found the challenges involved: factors are hard to identify and they tend to change over time.

Later, the co-founder went on to develop an algorithm that does not need to predict demand but is based on demand itself. He decided to apply for a patent for his algorithm in the U.S. in 2010 and the patent was approved in 2017. The patent included the pricing algorithm that is the core of services today. Although the idea arose from research conducted already ten years ago, the company was founded in 2016. The current CEO of the company, states that:

"The basis is the algorithms based on demand. Our pricing engine is not trying to forecast future demand or making any rule-based pricing models etc. Only the actual demand is the king in our model"

Common challenges faced by the company were mainly to validate if the idea and algorithms would really work in real-world as well as product-related challenges. Also, they needed to go to the customers' place for first pilots due to the technological level of computing services. Until the current CEO joined the company, there were a few pilot customers from their network and there have not been any organized sales activities.

Since the current CEO joined the company, she has started organizing sales processes more systematically. One of the first steps was to take a CRM tool. Sales process included cold calls and marketing automation that helped them to track open, click and response rates. Having an appointment would be to get some kind of a pilot idea and later introducing that idea and piloting, and getting a contract upon the pilot. During the first sales meetings and negotiations, Start-up G has faced some challenges to convince its potential customers. CEO states that:

> *"Because the idea was so new and unique that you really need to prove its value and it is sometimes very difficult to get the customers to understand the value we could offer. That is one difficult part and the other one is the technical part. Many customers still have old CRM or ERP systems that are not able to update prices automatically"*

Another challenge was to show results and tell anything proven until the company got its first customer reference. CEO claims that:

> *"It is easier now as we have had customer cases and we know that our model is working extremely well. For example, Kotipizza is our public reference and we have very good results. Number of home deliveries has increased 17% and revenue has increased more than 13%. We have other very good references as well unfortunately all of them are not public. We can really show that our pricing engine is working in real life. But when you stated in the beginning, you do not have those"*

Since the current CEO joined the company, she tried different approaches to get customers through paid pilots after having a few free pilots. CEO explains further on that:

> *"The first two ones were free and more product development pilots but now the target is to do only paid pilots to show the value to get acceptance by the customers and they later learn and want to expand it"*

The first sale story of Start-up G comes from a paid pilot as well after a long process involving cold calls, lots of emails and networking at events. CEO recalls the experience that:

> *"I sent another email to him after meeting at a gala event and he organized a meeting with three different directors. They liked our idea. We had a pilot last spring and now they are our commercial customer. So in all sales, whether you are working in a startup or corporation, you shouldn't give up. This was a good example that I did not give up"*

Sales cycle of Start-up G varies heavily based on the customer and its segment due to service being very unique and new for customers to get used to the idea and accept applying it. CEO states that:

> *"Sales process is quite long because pricing is strategic and decision makers are usually high level directors. The whole process of getting a commercial contract is quite long. I have noticed that it might be on average six months before you get the deal closed"*

The initial idea of Start-up G was based on long scientific research, thus the idea has not changed directly but its implementation is still varying with customer negotiations. One of the elements changing is the pricing of the service and how they approach pilots. CEO explains that:

> *"We realized very quickly that we are not earning so much from pilot cases. In the beginning, different customer pilots and the results are more important than revenue"*

Pricing model has been decided but it took some time to find the right pricing model after different models have been tried CEO states that,

> *"What we have noticed is that customers are more willing to pay a fixed price on a monthly/yearly basis although we were thinking/aiming a commission model to be more suitable"*

Customer segments of Start-up G have been also defined based on a simple assumption of volatile demand and not changed since the beginning. Target segments are transportation, consumer products, Ecommerce, wholesales products, raw materials food and ticketing in all kinds of entertainment segments as a big segment. CEO tells that:

> *"Those are very good that have been since the beginning already. Then, there are new segments like HR business and media. There are certain conditions like volatile demand and a lot of things to price, online sales channels and of course the ability to price automatically. Basically, almost every product or service can be priced dynamically"*

Some first pilot customers did not continue buying the service because either they did not have the system to price their products automatically or their own pricing processes were not ready. Although some pilots did not result in continuation, there were many positive feedback and learnings for the company. Among one of the first pilots and the first customer, Kotipizza has helped Start-up G to gain press and media visibility through big newspapers. CEO tells that:

> *"The biggest media companies made news about us because Kotipizza made a press release that they will try dynamic pricing in their home deliveries"*

Upon this good news, the company has got attention from other companies as well and it resulted in their first inbound customer recently. The impact of the first reference case and very successful cases is not possible to quantify easily by the company but Start-up G has enormously benefited from its first customer thanks to their press influence. CEO asserts that:

> *"I would say that it is crucial and very important. Because last year, for example, when we met some venture capitalists at Slush and we did not have that many references, all of them said that a very interesting unique idea but there is a need for references before they are interested in to invest. Now, our situation is totally different. We have references, we have proved that our model is really working and we have managed to bring added value to our customers"*

Since Start-up G has got its proof of concept, the company has started to gain more customers easier and grow at a faster pace than before. Company has a lot of new ongoing pilot customers and commercial customers. There are several reasons leading to the growth of the company and CEO explains their growth reasons and further plans that,

> *"Now, we have customers and we have managed to build processes and more effective ways of doing business. We continuously need to learn very quickly and change if something is not working"*

Start-up G is doing active outbound sales and marketing. Customers mainly get in touch with the company through its website and salespersons or CEO. Targets of the company in the next years are entering into Nordics and European markets while growing in Finland.

6. SYNTHESIS OF RESULTS AND CROSS-CASE ANALYSIS

6.1 Initial Sales Challenges of Case Companies

Case companies were asked about their initial challenges during the interviews. Most companies have had very similar and common challenges. Therefore, challenges are grouped under four categories similar to the introduced framework in the literature that are product, business, team, funding, and environmental. The sales-related challenges shared by companies are shown in the following table.

Table 12. *Sales-related Initial Challenges of Case Companies*

Companies	Challenges
Start-up A	Validation of the market after testing out several events and building a showcase Bootstrapped and not funded thus needed to survive mainly with sales
Start-up B	Dependence on physical product and its price, finding scalable business model, international market entries, long sales cycles Lacking marketers/salespersons and the money/funding for hiring talent
Start-up C	First idea did not get any validation, users are old Early investment caused team to focus on the product development than getting customers
Start-up D	Many interest not resulting in deals, lack of paying customers, not ready product to show, lack of proof of concept and reference
Start-up E	Lack of reference, understanding customer needs Bootstrapped and not funded thus needed to survive mainly with sales
Start-up F	Long sales cycles, Lack of ownership and advocacy by buyer, Retention of customers, Not focused target segment The target segment of public institutions was undesired by investors
Start-up G	Validation of the idea if the algorithms would really work and lack of reference-proof Ability of customers to implement the tool on their systems Lack of sales person prior to CEO Funding was also challenging without having customer cases

In addition to listed challenges, there were some other challenges brought up by start-ups. Common sales challenges were mainly around being a new company with no history and lacking a reference. Apart from the significance of the first customer, there were challenges in convincing in negotiations, sales competences of the team, long sales cycles, and some other minor challenges.

6.2 How First Sales Made

Since most of the companies have struggled with getting their first sales and they pointed out the importance of having a reference and proof of concept, it is important to review how they got their first sales. One important element was defining the right target customer segment for companies to get sales. Table 13 categorizes target segments of case companies for first sales.

Table 13. *Target customer segments of case companies for first sales*

Customer Segment for the First Sale	**Public Institutions & NGOs**	**Large Corporations**	**SMEs – Startups**
Companies	Start-up B, Start-up F, Start-up C	Start-up E, Start-up D	Start-up A, Start-up G*

Start-up B targeted public primary education schools. Start-up F was born from a research project in university thus they wanted to spread it to other universities. Start-up C was also targeting municipalities and private care homes. Therefore, these start-ups were facing long decision-making processes caused by bureaucracy. Start-up E and Start-up D operate in very similar domains of digital transformation and targeted mainly corporate customers at first where Start-up D has later also moved to the SME segment. They were both facing the major challenge of lacking a reference when facing the customers. Start-up A has started and mostly continued with small events around the world since large events usually have their own tool. Start-up G was also negotiating and targeting small businesses at first and they moved to larger companies after proving the concept.

Sales methods used by start-ups varied in the interviews. The following table summarizes and groups the sales methods of case companies for the first sale.

Table 14. *Sales methods of case companies for the first sale*

Methods for the First Sale	**Cold calling & email**	**Network & Events**	**Order & Research**
Companies	Start-up D, Start-up G, Start-up E	Start-up C, Start-up B, Start-up E*	Start-up A, Start-up F

Most often companies start with cold calling and emailing to potential customers which is an old yet still efficient and working method for sales. Start-up D, Start-up G, and Start-up E used this method for getting their first customers. In addition to that, Start-up E had met with those customers during some events or reached out from their network as well. Similar to this, Start-up C and Start-up B had met with customers first at events and followed up after seeing their interest.

On the other hand, Start-up A and Start-up F are companies that started based on an order to develop such tools for customers, a university research group in the case of Start-up F and partner company in the case of Start-up A. Although Start-up A was partnering with an event organization company, it was already sold and implemented in some other events earlier than the event of its partner. Those sales were brought to Start-up A mainly by its partner through their network as well. After the research project has been done, Start-up F started a company upon seeing some other interest. Their first customers were mainly through cold calling and emailing as well.

In addition to sales methods, the interview results shed light on the approach of companies while trying to get the first sales. The following table categorizes those different approaches case companies utilized.

Table 15. *First sales approach of case companies*

Approach for First Sale	**Free Pilots**	**Discovery / Co-creation Pilots**	**Direct sales / Bidding**
Companies	Start-up G, Start-up C	Start-up E, Start-up B	Start-up D*, Start-up A*, Start-up F

Upon understanding case studies, one can notice that each company had somehow a different approach to find their first customer and develop their product. These can be grouped as discovering opportunities while co-creating with customers, offering pilot projects to gain trust, and direct sales or bidding. In addition to these groups, it could be seen by start-ups that giving discounts for first customers was a common practice too.

Also, some start-ups have combined different approaches yet the table shows the most used approach.

For example, Start-up A had its partner company paying first for making a tool yet they did not use it at a partner event which was a big scale event to test a new tool. Therefore, the network of partners was used and the first events were somewhat pilots although they sold directly with a prototype tool and they did not have certain pricing at the time. So until the partner event, it was a discovery period to understand customer needs with different pilot events and develop a product based on those needs and understand the value of the product to price it for future events. Start-up F also sold it directly to a home-owner union.

Start-up G and Start-up C sold a pilot project to their first paying customers and still continues offering pilots to make customers understand the value. However, it is seldom to have continuous customers for Start-up C case due to its current business model.

The first paying customer of Start-up D was through bidding. However, Start-up D actually approached the first pilot project with an industry giant for discovering opportunities and needs to develop their idea on how AR could help in the industry. Similarly, Start-up E and Start-up B had the idea of co-creating with the customers to discover how they can help on needs of customers by understanding by time.

One of the questions was also on the process and time for getting sales. The following table summarizes the time spent until getting first paying customer by case companies.

Table 16. *Time spent for the first sales*

Time	**1-3 months**	**3-12 months**	**12+ months**
Companies	Start-up A, Start-up B, Start-up E*, Start-up D*	Start-up F*	Start-up C, Start-up G

Start-up D got its sale right after company founded and it was a bidding process. No certain time shared for negotiations but first pilots and when they started working on this idea within previous R&D company was already longer than a year however upon founding Start-up D they got their first customer in 3 months. Start-up E got its sale after 3 years of being founded but it started operating with the current idea after 3 years so it actually got a few months since the pivot as well. However, they were searching for a long time to figure out what to offer and how to charge customers and the company had already some other streams that no detailed information available nor shared except knowing that start-ups and investors were charged as well.

Start-up C got its first customer in less than a year since the company was founded however, information is not certain when they started the first negotiation with that customer and idea and product development was earlier than when they founded the company. Start-up G also did not have any sales expert in the team thus it took long for the founders to get a paying customer until the CEO joined although they have had pilot projects from their network.

Start-up F got its first sales and then founded the company but negotiations with other potential customers had started at the beginning of the year. Negotiations with the first paying customer, however, took a couple of months. Start-up A had its partner company ordering the tool and helping with sales thus it was easier and quicker for them to find first customers within a few months. Start-up B also got interest of a customer from an event and started piloting very quickly.

One key important element in sales is the price. Especially, when there is a new product or service offered to the market, it might be difficult to understand the value and decide on a price. Table 17 groups the decision making logic of case companies for pricing their products.

Table 17. *Pricing decision logic of case companies for the first sale*

Pricing Decision	**Interviews/Surveys**	**Benchmark**	**Made–up Value & Negotiations**
Companies	Start-up A, Start-up D*	Start-up C*	Start-up G, Start-up E, Start-up F, Start-up B*

Most often methods to decide a price were interviewing customers, benchmarking the competitors in the market and value-based made up pricing based on negotiations. For example, Start-up A first asked customers and later evaluated both opinions of customers and market prices to price its own service. Start-up D has also mainly interviewed its customer contacts at lower level of management by talking how much it would worth to decision makers however they have made up a price and they decided on the value their product creates. For the first paying customer, they made bidding thus they actually decided how much features and value they should deliver for that price.

Start-up C first made up the price based on the competitor prices and later felt it was too much after negotiating with the first customer although they got the sales with that price which was within the limits of the customer budget.

Start-up B has had first made up a price and sold with that price. After some time, they made a survey and they noticed from schools that their product was perceived as more valuable thus they raised the price. Start-up F had made up their first price and later they were testing different pricing and raising prices online based on new features after they moved to the entrepreneur segment. Start-up G decided the price based on customer size although their intention was a commission-based model from the sales. Start-up E has decided to give low price to get customers first and later raised its price based on the results and references for future customers.

6.3 Current Status of Start-ups

In addition to analysis of challenges, first sales and growth story of case study start-ups, it is important to analyse current status of the companies to draw sophisticated conclusions in the end by analysing differences. It is important to review the snapshot of pivots companies have experienced so far in their journey. The following table summarizes the pivots of case companies.

Table 18. *Pivots of case companies*

Pivots / Companies	**Product**	**Business (Revenue/Pricing model)**	**Target Segment**
Start-up A	Event Matchmaking → Bootmatch + Agenda Workshops →	Pricing, Business Model (upcoming monetization model of data or ads)	Startup – Tech Events → B2B Events
Start-up B		Robot + SaaS → + Workshop and Hackathons	
Start-up C	E-learning platform → Training → E-learning	Workshop → per Caregiver → License*	Carehome → +Caregivers → +Family and relatives
Start-up D	Smart Glass / HoloLens → Mobile App	Different business models yet now SaaS	Still changing - experimenting
Start-up E	Added new services based on customer needs	Yearly subscription → +Project Based	Investors + Startups + Corporates → Corporates
Start-up F	Custom internal marketplace → Marketplace building platform → +Customization and self-development	B2B → B2C → B2C+B2B A-B Testing price Marketplace for public institutions and companies → Marketplace Platform for Entrepreneurs → Companies who want to tap into sharing economy	University → Homeowner unions → Associations-Companies → Entrepreneurs → +Companies
Start-up G	NA	Pilot → Commission → Subscription	Volatile Demand Sectors - changing - experimenting

Since the case studies tell most of the pivots story in detail and table gathers them in one place together, it is unnecessary to repeat the stories and reasons for pivot. In general, customer demand and needs have driven most of the companies and scalability problems of business models challenged companies to change to different directions.

Based on the framework provided in the literature, it is important to analyse current situation of companies in the lifecycle. The next figure illustrates companies in the lifecycle.

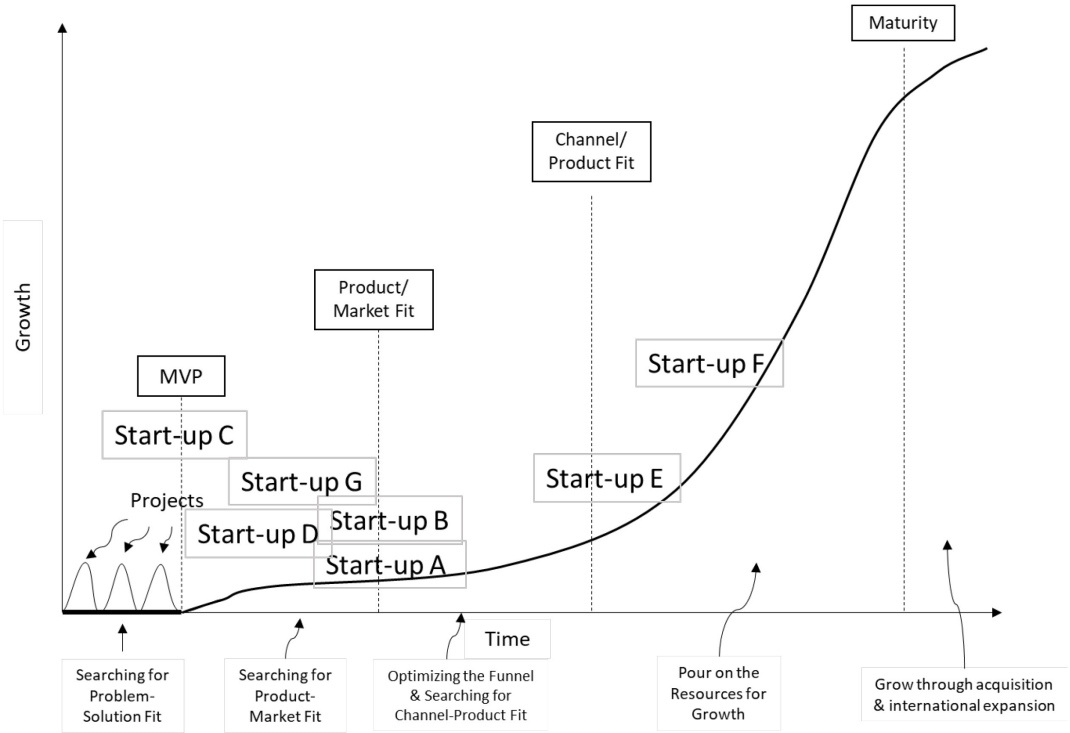

Figure 18. *Case Study Companies on the Growth Curve*

As it can be seen, most of the case companies are actually at their early stages of growth still between MVP and channel/product fit. Start-up C is the least advanced case since it has not yet functioning online platform and have not figured out its scalable business model. Start-up G and Start-up D has just proven their MVPs working and constantly piloting with new customers and trying to find their best target segment to scale.

Start-up B has actually passed product/market fit in Finland and currently optimizing its channels for better sales and growth internationally. Start-up A is at the product market fit stage and having early stages of continuous growth. Start-up E has been a bit more advanced by growth hacking and experimenting different channels they have been optimizing its channels mainly. Start-up F is the only most advanced and scale-up case among the other case companies and they have been in the later stage of growth.

7. RESULTS AND DISCUSSION

7.1 Overview of the Problem and Framework

The technology plays a major role in the disruption of traditional business (Zervas et al., 2015) and the competitive environment (Yoo, 2010). Start-ups hold a big portion in disruptive innovations according to Srinivasan (2014) as well as contributing to global wealth and economic growth significantly (Gauthier et al., 2019). Access and cheap ways of getting into target markets enabled by predominantly expanding internet connectivity and mobile devices make entrepreneurship attractive for many. Previously made definitions of start-ups by Ries (2011), Blank (2006), Graham (2012), Thiel (2014), and Wang et.al. (2016) encompass a common definition of start-up term as

> *"…new companies that have an innovative and valuable solution and aim to grow fast with a scalable business model under extremely uncertain and resource-limited conditions…"*

Software startups provide an excessively diverse amount of new services and products. Sutton (2000) describes software start-ups with a lack of operational experience, means and capabilities, and the existence of impact from various groups, and constant alteration of technologies and markets. Paternoster et al. (2014) highlight the most prevalent attributes of software start-ups as inabilities, novelty, fast progress, inexperienced organization, third party reliance, and time pressure. One of the most recent and progressively adapted software products and services is the software-as-a-service (SaaS) model. Laatikainen and Ojala (2014) review the existing definitions of SaaS as a scalable and adjustable application used through the browser with multi-tenant hosting capability. According to Luoma and Rönkko (2011), customers benefit from outsourcing the operation and maintenance of identical software of usually high volume and on-demand price.

In spite of very promising and advanced conditions, there is a high rate of failure for start-ups. Depending on different research analyses the rate of failure changes from 60 percent (Nobel, 2013) to 90 or even more (Startup Genome, 2019). Research on the failure of start-ups is missing although the majority of start-ups fail (Paternoster et al., 2014) as well as the research on start-ups (Hokkanen, 2017). Potential start-up founders can on the other hand benefit from the knowledge on challenges of past start-ups to advance smoother in their journey (Wang et al., 2016). Therefore, this thesis research study focused on the very early stage of start-up development to shed light on the initial challenges and best practices, especially from sales perspective.

The widely accepted framework developed by MacMillan et al. (1987) categorizes challenges under four aspects as product, finance, market or business, and team. This study also contributes by adding environmental and legal challenges to the existing framework. Understanding customers and the market to find a repeatable business model that can scale is often a major challenge. According to Blank (2006), usually the failure in start-ups results from missing the customers and proving the business model than developing the product.

Blank (2006) states that most of the start-ups have trusted the Technology Adoption Life Cycle model by Rogers (1983) in sales and marketing as well as Moore's "The Chasm". The technology adoption life cycle introduced a model of different customer groups during the acceptance of a new innovative product that are innovators, early adopters, early majority, late majority, and laggards. Moore (1991) contributed to this model by inserting gaps between customer groups to illustrate the difficulty of moving along the curve where the biggest gap is called "The Chasm" between early adopters and early majority to move from early markets to mainstream markets. Each group has various needs and habits thus these cracks between different customer types appear. Moore (1991) claims that most sales and marketing methods used in the early market are not applicable in the mainstream market which makes crossing the chasm a substantial challenge resulting in tragedy without being usually realized.

However, Blank (2006) asserts that the existence of the business is dependent on customer development even before reaching to any chasm. He presents customer development stages as discovery, validation, creation, and company building where the first two are focusing on the early market of technology adoption. Similarly, Ries (2011) proposes phases as finding problem-solution fit with validated learning and experimentation, finding product-market fit with build-measure-learn cycles and latter as growth and scaling. The study by Giardino et al. (2015) reveals that getting the first paying customer is perceived by the majority of startups as their top key challenges. Thus, the "Startup Chasm" is at the very beginning of the lifecycle. The following figure presents the framework built based on Moore's (1991) "The Chasm" and Blank's (2006) "Customer Development".

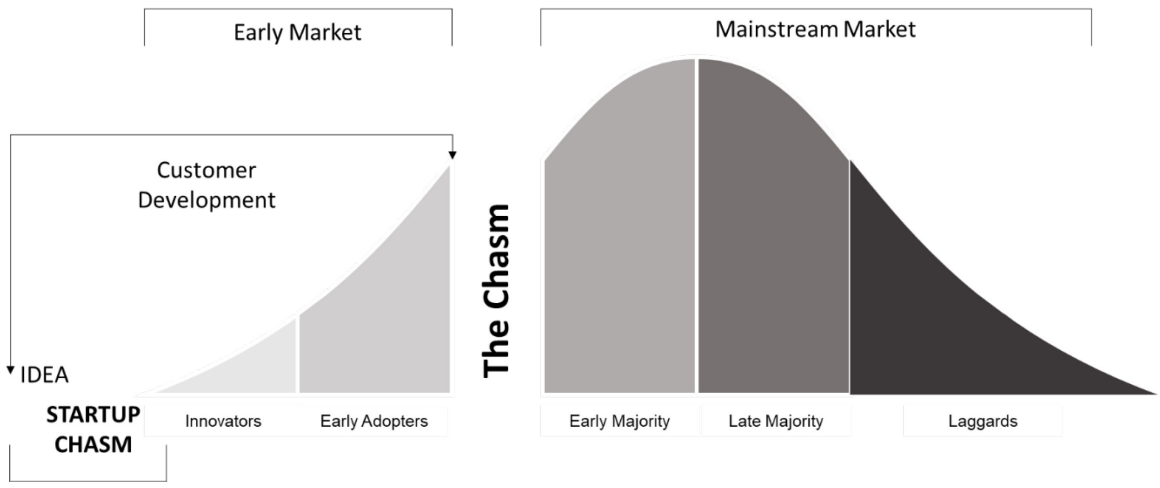

Figure 19. *Theoretical Framework The Startup Chasm (adapted from Blank, 2006 and Moore, 1991)*

The biggest challenge lies at the start of the customer lifecycle and has more significance than the chasm between the early and mainstream markets. To find the first customer and moving to the next stage requires various adjustments and changes. Blank (2006) and Ries (2011) both highlighted the need for validation of initial ideas and introduced iterative processes which introduced pivoting. According to Ries (2011), a pivot is changing the tactics to reach the same vision. He further points out that the original business ideas are altered by around 70 percent of start-ups. Therefore, start-ups may face different growth trajectories than a smooth technology adoption cycle path based on their iterations and pivots at the early stages. The customer development process can show various oscillations for each startup. Figure 20 illustrates an example path as the second part of the framework.

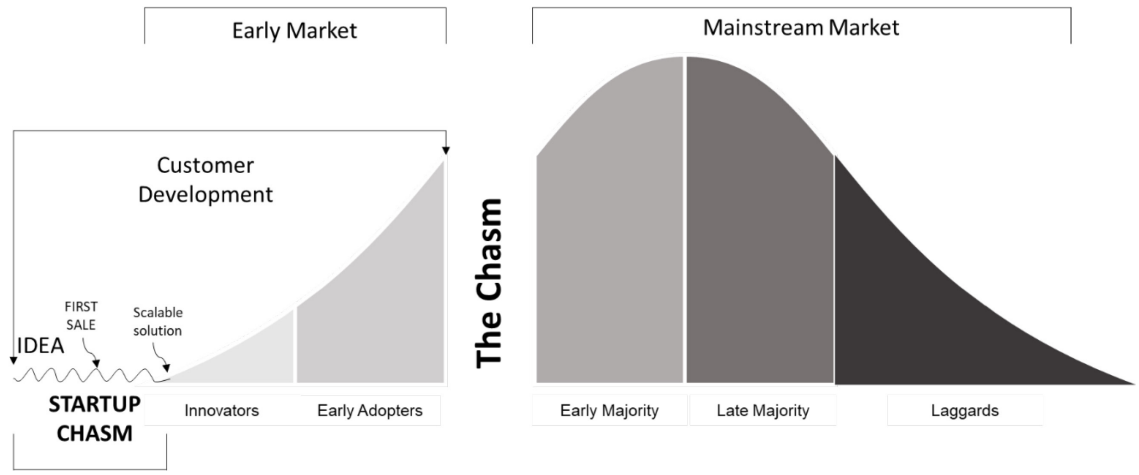

Figure 20. *Iterations in The Start-up Chasm*

The growth of each start-up differs from each other and might not pursue a similar shape. From the financing aspect, this figure also illustrates multiple valleys of death for start-ups in line with pivots and customer growth. Blank (2006) asserts that the gentle pattern of the adoption cycle results is a risky perception of getting customers as a matter of executing sales. The next section will provide a reflection on the case studies according to the theoretical framework proposed by this thesis.

7.2 Reflection of the Cases in the Framework

Previously, case companies were introduced in chapter 1.5 and chapter 5 has presented constructed the case studies based on the semi-structured interviews. Since case companies were focused on a niche segment of B2B SaaS start-ups, evolution, benefits and business models of SaaS were explored in chapter 3. According to these theoretical concepts and case studies, most of the start-up companies in this study can be seen as fulfilling the SaaS criteria whereas only a few of them had not yet advanced in their journey thus lacking pure SaaS model or software currently. The main theoretical framework of this study as summarized in the previous section proposed that start-ups struggle significantly at the very beginning of their journey, facing the “Start-up Chasm”, start-ups iterate and pivot rapidly based on customer needs and growth of start-ups is wavier than a linear or smooth curvy line. This section thus analyses these aspects in those case studies briefly.

This thesis study first highlighted the first sales or customer acquisition as the biggest obstacle, the Start-up Chasm in other words, in start-up development as described in previous section and earlier in chapter 4.3. According to theoretical framework explored in chapter 4.2 on challenges of start-ups, the next figure illustrates start-ups perception among four main dimensions as team, product, business or market, and funding or financing.

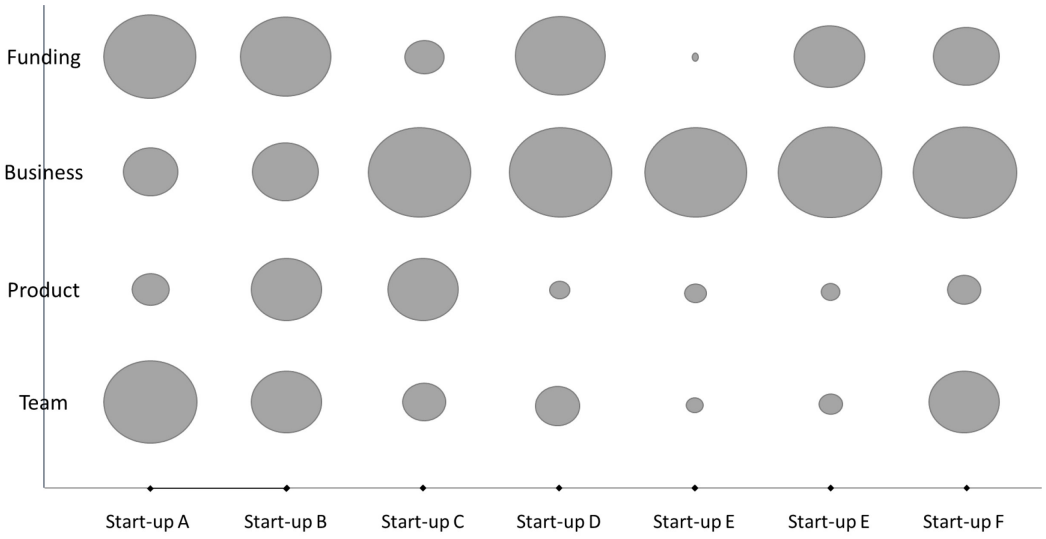

Figure 21. *Significance of Challenges Perceived by Case Study Companies*

The figure above clearly points out that business-related challenges play a major role in the success of start-ups. In section 6.1, it was mentioned that case companies were emphasizing the impact of lack of references and difficulty of getting customers until the first sale. In section 6.2 first sales stories were further explored from sales cycles, target customers, sales methods and approaches, and pricing perspective. All these were implying the changes start-ups have been through which were theoretically introduced in section 4.1 referred as pivoting and analysed in Section 6.3 in Table 18 showing three major pivotal groups, product, business, and target segment. These pivot aspects and respectively case companies are presented in the next figure.

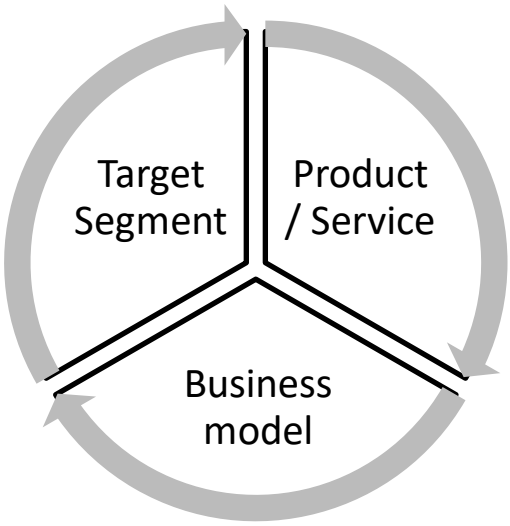

Figure 22. *Pivot aspects and their relations*

The figure above represents that changes in one aspect are often interlinked with other aspects thus causing changes in those elements as well. Most of the companies experiencing multiple changes to find problem-solution fit through trial and error or validated learning experimentations further point out the iterative process creating fluctuations in the framework in section 4.3. The next figure shows one example of a growth path of a start-up and integrates the case companies into the framework with respect to their stages.

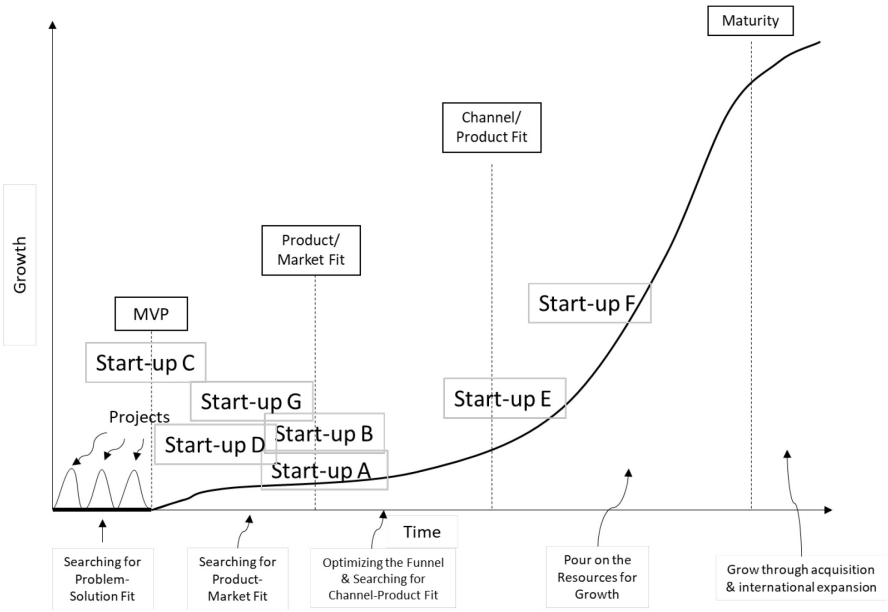

Figure 23. *Case Companies in the Growth Curve*

The final implication of the figure above is that start-ups experience different iterative processes to grow. The next section of the chapter analyses and discusses the results of the study.

7.3 Discussion of the Results

According to the results of the previous section and the empirical study of this thesis, the theoretical framework of this study can be seen as validated. The following figure summarizes the key findings of the study.

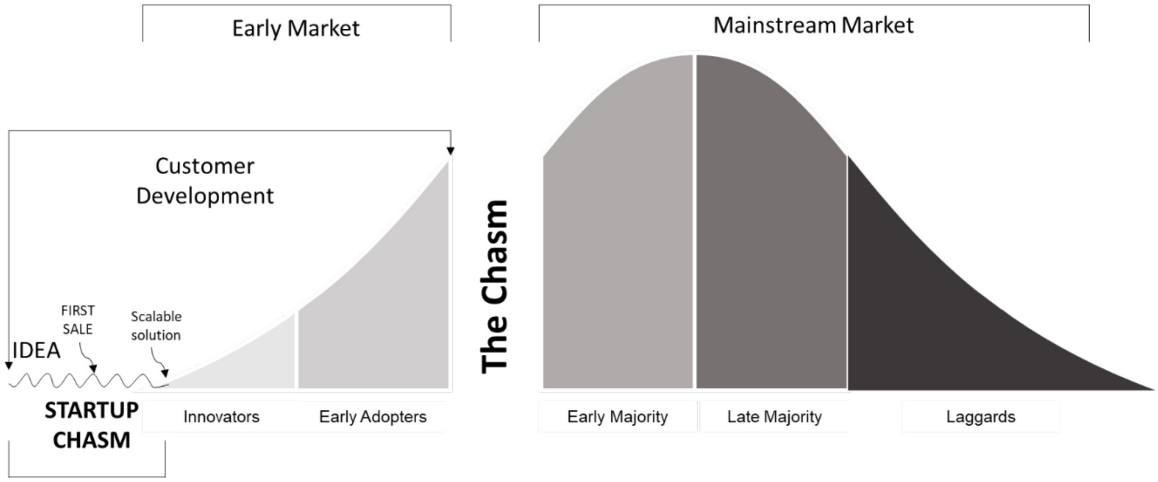

Figure 24. *Theoretical Framework: The Start-up Chasm and the Iterations*

First, the study proves that getting the first customer is a key challenge perceived by start-ups at the very top similar to the study reported by Giardino et al. (2015). Therefore, the Start-up Chasm can be introduced as a new concept at the very beginning of the lifecycle in comparison to the chasm by Moore (1991). Almost all, six out of seven, companies in the study highlighted the challenge of first customer and its impact on their business and growth.

Additionally, the growth of start-ups is wavier than a linear or smooth curvy line as it was earlier proposed by financing or technology adoption lifecycles (Blank, 2006; Honkkanen, 2017). Even after the first sale, financials and growth of start-ups might be fluctuating and there is a risk for failure regardless of initial sales made. All start-ups in this study have changed their approach from their initial ideas.

Lastly, start-ups possibly attack any segment that can generate revenue as a result of an iterative process than focusing on a niche at first until they find product-market fit (Blank, 2006; Ries, 2011) whereas Moore (1991) and common marketing literature propose a segmentation and targeting a niche approach. This comparison is shown in the next figure.

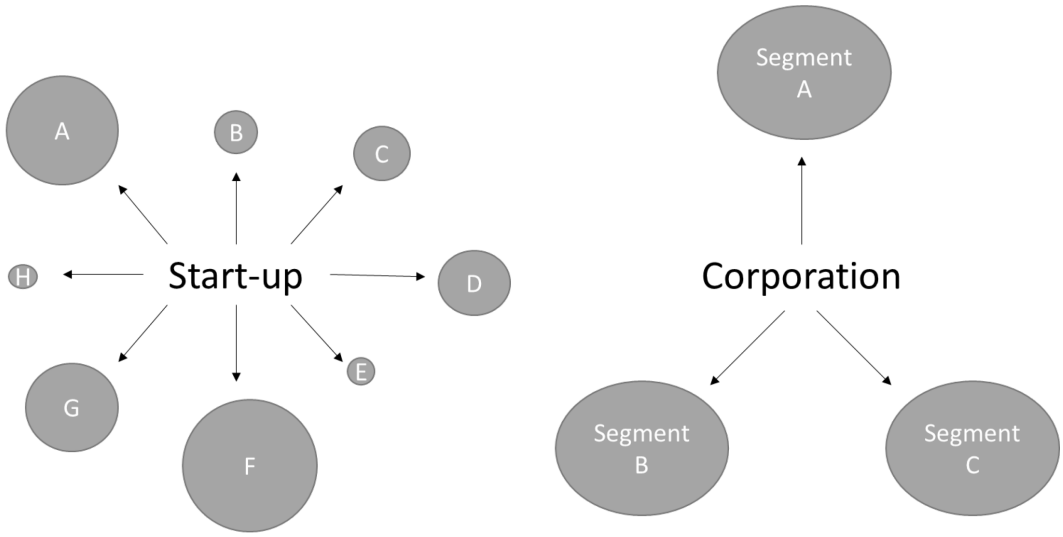

Figure 25. *Customer Segmentation Comparison of Start-ups and Corporations*

Most often corporations have established segments and invest their resources heavily on them to grow. On the other hand, start-ups usually learn by experimenting and trying different segments. The resources spent in both approach is also varying where corporations invest all major resources into one segment and start-ups learn by iterating from small resources and increasing their marketing efforts later. Figure 26 illustrates this difference between traditional marketing and start-up marketing.

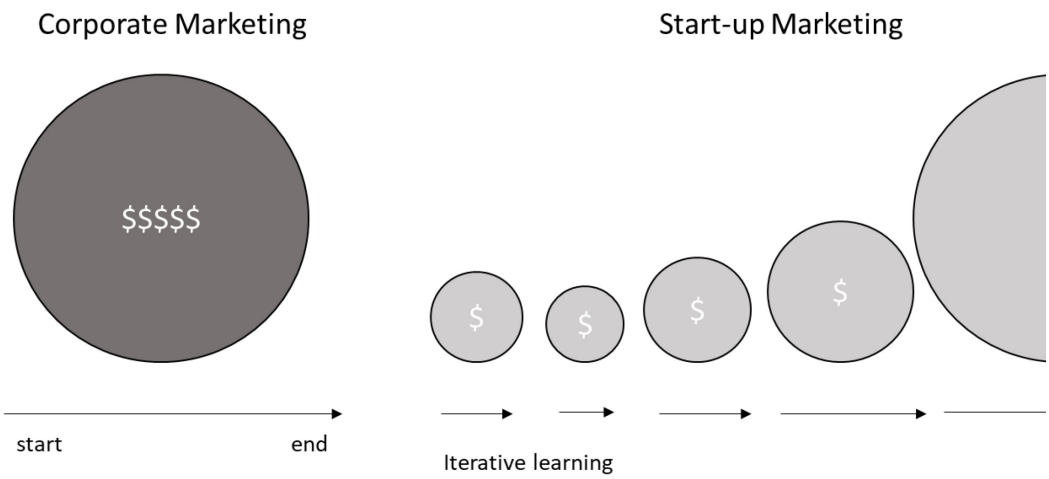

Figure 26. *Corporate marketing budget vs. Start-ups marketing budget*

Overall, it is possible to summarize that the empirical study has justified the theoretical framework.

7.4 Limitations and Further Research

In spite of the supporting empirical results drawn for the framework, there are some limitations to this study as well as further research aspects. This section will briefly address and examine these limitations and aspects to be researched in the future. Limitations of the study can be mainly grouped around four dimensions as lack of literature, selection of case companies, research methodology, and the niche focus of the study. Figure 27 illustrates the limitations of this study.

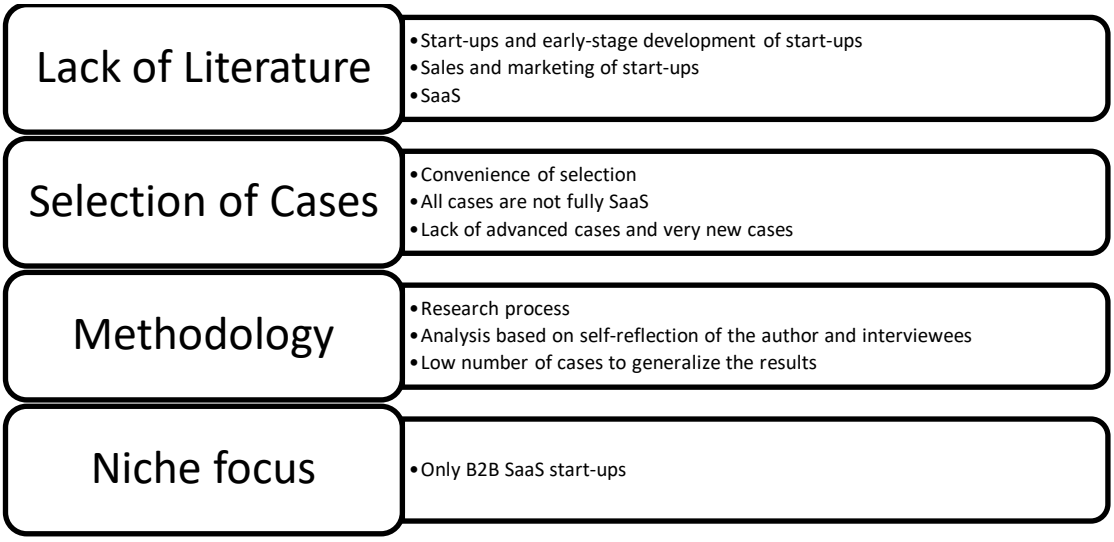

Figure 27. *Limitations of the Study*

The figure above represents the limitations in both the theoretical and empirical part of the study as well as the methodology. First, there is a scarcity of resources academically on start-ups especially their early–stages. Also, the literature on sales and marketing of start-ups and the SaaS field are not yet fully explored although entrepreneurship was widely discussed and the SaaS model has been present for more than a decade. Secondly, this study has solely focused on B2B SaaS start-ups niche thus there is no evidence that these results and the framework are applicable to other types of start-ups.

Thirdly, the findings of this study cannot be fully generalized similarly due to its low number of cases and companies being only Finland based although internationally operating. Additionally, empirical analysis is only based on the author's understanding and evaluation of the cases than validation interviewees or any other experts although case studies were approved by interviewees.

Also, since the empirical part is self-evaluated, it is very relative to the perspective of founders thus some might be happy to exaggerate and say customers were really satisfied and had high retention whereas some might be ambitious and modest thus expresses okay or good some aspects thus the comparison is not purely objective. Additionally, some of the interviewees have removed some information, wanted to hide some details, or have not provided any extra information when asked thus these circumstances limit the study to build equally comparable cases.

During the research process, interviewees from very early-stage start-ups were easier to reach and conduct an interview whereas founders from fastly growing start-ups or scaleups were more difficult to have an interview. Lastly, the selection of case studies was not done based on any sampling rule but the convenience of the contacts from the network of the author. Therefore, interviewees are connected to the author. In addition, the case companies appeared to be mostly at the beginning of their growth, therefore, there is a lack of advanced and very fresh cases which could provide different perspectives such as newer cases introducing more digital or marketing oriented sales stories in contrast to older and more advanced cases presenting more sales loops and pivots from their initial idea. As earlier mentioned, this study did not only interview pure SaaS companies but also companies that are closely related or seeking for a SaaS model. Therefore, SaaS has been evaluated broadly.

Apart from the limitations, there are aspects to be further researched to shed light more on start-ups early-stage development from sales and marketing perspective, and especially in the B2B SaaS field. The following figure presents these potential topics of research.

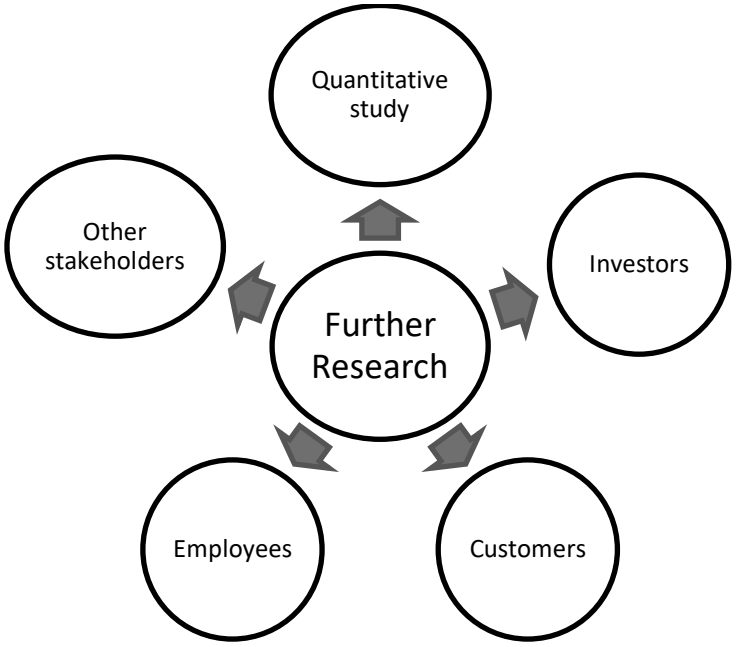

Figure 28. *Potential Further Research Topics*

Although this study cannot be fully generalized, there can be further quantitative testing. As mentioned, newer and older cases can also be included to explore different perspectives. Besides interviewing start-ups, the perspectives of stakeholders are can be examined in further studies such as investors, customers, employees, and other stakeholders of a few selected cases out of interviewed start-ups. First, investors could be interviewed to discover their perspective on the evaluation of start-ups in early-stages for their investment decisions and similarly tested quantitatively upon an exploration of the common themes. Secondly, initial customers of interviewed start-ups could be reached to gain an understanding of their decision making and how they decided to purchase the service from start-ups. Additionally, other team members either co-founders or early employees can provide insights on sales and marketing from a different perspective.

Lastly, other stakeholders such as start-up ecosystem or support organizations or suppliers of start-ups can give a different perspective, especially early-stage accelerators or public funding institutions viewpoints can be explored. Discovering innovative ways applied in the early-stage sales by combining both new digital tools such as AI and machine learning-powered and newer cases can totally expand horizons in the field. All these further research aspects are described based on the experience and perception of the author whose work has been heavily related to supporting early-stage ideas and start-ups. Some other aspects can certainly be discovered by other researchers based on the results of this study in the future.

8. CONCLUSIONS

Human life is changing rapidly and technology plays a major role in this by influencing the market conditions, competitive environment, and business strategies. Internet and the rapid diffusion of new technologies in recent decades made people become connected like neighbors. Online business models and new ways of business have been increasingly transforming even the most physical forms of business and the disruption was significant. One of the reasons for the disruption has been booming start-ups. Accordingly, the economic growth was dramatically boosted with the wealth produced by start-ups by new jobs and products and services. Remarkably, digital software startups hold a big share of these new products and services development.

Widespread internet connectivity and mobile devices make reaching markets accessible and inexpensive which leads to the creation of start-ups without huge efforts. There are challenges to the existence of start-ups although promising conditions and impressive examples. One of the major challenges of start-ups is the first customer acquisition that would pay for the solution. Validation to get funding and new customers and resources to create the business is done by the first sale.

This study was conducted to discuss the iterative process of how B2B start-ups eventually get their first sale and how the business ideas evolve until the scalable business models are found. For this purpose, literature was reviewed and a framework was designed. Based on the framework, interviews with start-ups lead to constructing case studies. These case studies were approved by interviewees thus the validation of the case studies was checked.

The most important findings of this thesis were the significance of the challenge to acquire the first customer and the iterative process until the first sale and even later. A new concept, the “Start-up Chasm”, at the very beginning of the technology adoption lifecycle was introduced by this study in comparison to “The Chasm” by Moore (1991). Nearly all case companies in the study emphasized the first sale challenges and its impact on their business and growth. Additionally, the growth and financials of start-ups are fluctuating even after the first sale. All start-ups in this study have changed their approach from their initial ideas. Lastly, start-ups do not target a specific niche segment but aim for revenue from any source as a part of the iterative process, and marketing resources are kept at a minimum level to learn from the iterations.

Despite the interesting results achieved from the empirical study in this thesis, there are some limitations such as four dimensions as lack of literature, selection of case companies, research methodology, and the niche focus of the study. The objective was limited to SaaS and due to the number of cases, this study cannot be generalized to all SaaS and other fields. Apart from the limitations, further research is needed to reveal more understanding of start-ups early-stage development from sales and marketing perspective, and especially in the B2B SaaS field. This can be done by a quantitative study to validate the framework in a larger scale both in SaaS and other fields. Additionally, stakeholders such as co-founders, team members, investors, customers, and both public and private ecosystem players can be interviewed qualitatively to uncover the detailed picture from different perspectives.

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APPENDIX A: LIST OF INTERVIEW QUESTIONS

Interview questions asked to each and every interviewee are listed below.

1. What was your initial business idea?
2. Did it change over time? How, why? What has become the final idea?
3. What were the common challenges at the beginning of your startup?
4. What were the challenges for getting the first customer to your product/service-feedback from your leads-negotiations?
5. How did you get the first sale? What were the methods you used to get the first sale?
6. Sales cycle? Deal size? Customer Persona? Sales approach-process? (Past vs. Now? comparison)
7. How many times have you pivoted/iterated/changed your business/revenue/pricing model to get the first sales? How have you tested different value propositions or prices?
8. Was the delivery a success? Customer Satisfaction? Retention? How long time your first customer stayed with you – is it still a customer? How did it help getting new customers as a reference?
9. Growth momentum? Sales cycle after first sales and currently? New methods used for getting customers? How did you scale your business after first sales? Did the methods change for getting new customers? When was the growth moment-product/market fit?