Stockholm School of Economics (SSE)
Institute of Marketing & Strategy
14 May 2018

Bachelor Thesis

The Product Development and Adoption Process of Tech Startups

The Phenomenon of Tech Startups Developing New-to-the-world Products

Abstract

Tech startups that launch new products in new markets commonly operate in conditions of high uncertainty and a majority of these fail in an early stage. To survive and succeed, the way product development is conformed and executed plays a large role. In light of new technological advancements, the literature on the fairly modern, experimental approach of product development, building on early product testing, is complemented in this thesis. This thesis investigates the new product development process and the product adoption process of two tech startups in Sweden. The analysis verify the use of experimental approaches in tech startups. The authors explain these findings by the startups lack of resources and the ineffectiveness of extensive planning in uncertain environments, which drives them to adopt a more experimental approach.

Keywords: Technology (tech) startup, education technology (edtech), sports technology (sportstech), product development, diffusion of innovation, new-to-the-world product, product adoption process

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Acknowledgements

First of all, we would like to thank our supervisor Per Andersson for his guidance and support throughout the writing process. Through your optimism and ability to make us look at phenomenons in new perspectives, your help has been invaluable throughout this semester.

Secondly, we would like to thank the two tech startups in focus, PT Online and Albert, for their invaluable contribution to, and willingness to be a part of, this thesis. The important insights gained from the co-founders of Albert, Arta Mandegari and Salman Eskandari, laid the very base for this thesis and through continuous deep interviews with the co-founders of PT Online, Tom Liljefors, Marcus Sühr and Simon Goot, this thesis was possible. A sincere thank you for taking your time and sharing your stories, insights and experiences with us. We would also like to thank Douglas Stark at SSE Business Lab for his invaluable insights.

Thirdly, we would like to thank our families for being such a great support during these three years and during this final semester at the Stockholm School of Economics. By being there for us, you have allowed us to focus on our studies and finishing our bachelor thesis.

About the authors

The authors are the B.Sc. students Denise Sandquist (denise.sandquist@gmail.com) and Emil Lundberg (lime3645@gmail.com). This thesis is the final assignment at the 3-year Bachelor of Science program in Business & Economics at the Stockholm School of Economics (SSE), Sweden. The authors have been friends since the very first semester at the Stockholm School of Economics and except for both being multilinguals, speaking a total of six languages, and having lived and studied abroad, they also share the common interest for martial arts.

Their passion and curiosity for marketing, new technology and entrepreneurship led to the writing of this bachelor thesis, which ended up being as much work as a passion project.

Definitions

Edtech	Short for educational technologies. The study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources.[1]
New-to-the-world product	Products that total around 10% of new product launches and create entirely new markets, e.g., the Internet and the video game console.[2]
Sportstech	Short for sports technologies. Sportstech can be divided into several categories. In this thesis, the focus is on "Fitness & Companion Apps" and the subcategory "Workout Guides" that help guide users through their workouts and can be great substitutes for personal trainers.[3]
Startup	A young company that is just beginning to develop. Startups are usually small and initially financed and operated by a handful of founders or one individual. These companies offer a product or service that is not currently being offered elsewhere on the market, or that the founders believe is being offered in an inferior manner.[4]
Tech startup	A company working with a purpose of bringing technology products or services to market to solve a problem where the solution is not obvious and success may not be guaranteed.[5] The company delivers new technology products or services or deliver existing technology products or services in new ways.[6]

[1] Richey, R.C. (2008). "Reflections on the 2008 AECT Definitions of the Field". *TechTrends*. 52 (1): 24–25., Accessed (2018-04-15)
[2] Jobber, "Principles & Practice of Marketing - 6th Edition", p. 387, (2010)
[3] Definition of the Sports Technology Ecosystem, https://sportstechinvestments.com/2017/09/04/definition-of-the-sports-technology-ecosystem/, Sport technology investments, 2017, Accessed (2018-04-06)
[4] Fontinella, Amy, What exactly is a startup?, Investopedia, 2017, https://www.investopedia.com/ask/answers/12/what-is-a-startup.asp, Accessed (2018-04-16)
[5] Tech startups, What are tech startups?, https://techstartups.com/what-are-tech-startups/, Accessed (2018-04-16)
[6] FundersClub, What are tech startups, https://fundersclub.com/learn/tech-startups/overview-of-tech-startups/what-are-tech-startups/, Accessed (2018-04-16)

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1. Introduction

Today the digitalisation is transforming industries and has enhanced the flexibility for both workers and employers, boosting productivity and enabling greater work-life integration all over the world.[7] As the number of digital technology solutions are increasing, so is also the number of technological companies founded, commonly known as tech startups. These are companies that create a viable business model around a digital product and bring new or existing technology products, services or platforms to the market. The solution for the problem that the tech startups are trying to solve is not obvious and success not guaranteed, making the tech startup a risky business. The global tech market is growing and is expected to grow by 4% in 2018, reaching the amount of $3 trillion.[8] However, the success rate is low and 75% of all startups fail.[9] Entering a new market with a new product is considered being the most risky option, as the entry strategy is not based on the core competences of the business. It can however be the most rewarding.[10] To counter the high risks associated with startups, new principles of product development have emerged. The conventional detailed planning associated with the development of new products are being replaced by agile and experimental approaches where early testing and proofs of concepts play important roles.[11]

New product development is regarded as one of the most important factors, not only for the survival, but also for the success of the company. This is true in especially fast paced markets, such as the tech industry.[12] With this background, the authors have found this problem area being very interesting and decided to investigate in it further in order to gain more insights.

[7] World Economic Forum, http://www3.weforum.org/docs/WEFUSA_DigitalMediaAndSociety_Report2016.pdf, Accessed (2018-04-16)
[8] Bartels, Andrew, Global Tech Market Will Grow By 4% In 2018, Reaching $3 Trillion, Forbes, 2017, https://www.forbes.com/sites/forrester/2017/10/18/global-tech-market-will-grow-by-4-in-2018-reaching-3-trillion/#535e4a9312c9, Accessed (2018-04-16)
[9] Blank, Steven, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything, Accessed: 05-05-2018
[10] Jobber, "Principles & Practice of Marketing - 6th Edition", p. 373, (2010)
[11] Blank, Steven, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything, Accessed: 05-05-2018
[12] Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378, (e.g., Ancona & Caldwell, 1990; Clark & Fujimoto, 1991; Dougherty, 1990; Zirger & Maidique, 1990)

1.1 Research Gap

The product development research field has been extensively investigated, resulting in a vast amount of research, but is also fragmented and hard to get an overview of. More specifically, within this research field there is a lot of focus on organizations' work with their product development and two general models are suggested:

1. *Product development relying on vast planning and overlapping of development stages*
2. *Product development building on experimentation, testing and iterative approaches*

At the time of the research review, this second model of product development was suggested as a future research area as it had limited empirical research and the understanding was incomplete.[13] Throughout the literature review it is obvious that in more recent years there have been attempts to fill this research gap, however the authors of this study believe that there are still contributions to be made to fill the gap. This is especially due to the new technology introductions, such as smartphone applications, that in a fast pace are altering the traditional market conditions and bring new points of view to the research field.

1.2 Background & Pre-Study

In order to familiarize themselves more with the Swedish tech startup industry and obtain a profound understanding of the different challenges that Swedish tech startups face, the authors conducted a pre-study. The pre-study consisted of deep interviews with the founders of the Swedish educational technology startup Albert, Arta Mandegari and Salman Eskandari, and the CEO of the Stockholm School of Economics' startup incubator SSE Business Lab, Douglas Stark. The reasons behind this was that Albert had created a new-to-the-world product, a math help app called Albert, which was perfect for the purpose of this study, and Douglas was an independent person, not personally involved in a tech startup, possessing vast knowledge and insights of how tech startups work. The main insights gained from the pre-study is hereby presented in this section.

[13]Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378

"Albert is a personal, digital math teacher. He is there for you all the time, everywhere."
Arta Mandegari, Co-founder & CEO of Albert

Albert, a math education app that partly uses artificial intelligence in order to customize the learning, can be downloaded via the company's website, Google Play and App Store for a price of 99 SEK per month with a free seven days trial period. Albert's mission is to function as a personal, digital math teacher that provides customized math help for children of 5 - 17 years. Albert, who is personalized as a cartoon figure in the app, helps with material correspondent to what children learn in Swedish elementary schools. Salman Eskandari, was previously working as a math teacher in Gothenburg and had identified a large need for math help. When the question *"How could we clone Salman so that more students could get help?"* arose between Arta and Salman, it was the start of the creation of Albert. After having discussed with professors, teachers and other researchers in the area and conducted a market research, the two founders contacted developers and the development of Albert started.

One of the main goals behind the creation of Albert was to make math help possible for all children, regardless of the family's purchase power. The price of 99 SEK per month was set by looking at other prenumeration services, such as Spotify and Netflix, asking focus groups and with the novice that it should "not cost more than a Big Mac & Co.", since this was something that the founders believed that all Swedish families could afford. Focus was on what people would pay for a prenumeration service, rather than what other math help programs and apps costed. According to Douglas, many tech startups tend to use Spotify and Netflix as a benchmark when setting the prices for their app, tech product or service.

"We are 100% data-driven. We get instant feedback from customers and can respond immediately. If we want to try something new, we can quickly see if it works or not."
Arta Mandegari, Co-founder & CEO of Albert

One of the main goals with the pre-study was to determine how a tech startup differentiates itself from other startups. One interesting insight was the constant connectivity and flow of feedback that Albert received. The startup was instantly receiving data on who, when and from where the app was purchased. Albert also used this system to quickly try the interest for

product extensions. By e.g., simply stating on their website that Albert for 5th grade was available, they could easily measure the interest for this type of product extension. People who had shown interest would be contacted directly about that the Albert version for 5th graders was not yet available, but offered to try Albert for free for another grade until the 5th grader version was fully developed. This allowed Albert to make agile and well-weighted decisions. According to Douglas, it is particularly important for a tech startup not to wait too long until launching a new product and spend too much time on product development.

"Tech is changing quickly and it is important to be fast. You do not want to launch your product and then realize that it is not really what the market wants."
Douglas Stark, CEO of SSE Business Lab

After obtaining this information the authors could observe that the product development, due to tech products' agile nature and fast changing market, was a particularly complex and important area, that the authors wanted to investigate further. After making this observation, the authors were now focusing more on the stages after the product development in the second phase of the deep interviews. The initial hypothesis had formed that it would be more difficult for a tech startup than for an already established company to sell its product, due to the tech startup's lack of experience and core expertise. The newly developed tech product would also, due to its non-physical nature, require more explanation in the marketing process than a physical product that could be seen and tested. When discussing the above hypothesis with Arta and Salman they responded that as Albert was a new company, it is was not only important to market the product Albert, but also the image of the company Albert.

"I believe we have succeeded quite well with branding Albert as a company. However, we could have been better on explaining what the product, Albert, actually does."
Salman Eskandari, Co-founder & CEO of Albert

The complex situation of a tech startup positioning itself on a new market and simultaneously successfully market its product, fascinated the authors that identified this as a problem area they wanted to look further into. After the pre-study had been made and the problem areas and research gaps clearly identified, the choice fell on focusing solely on one Swedish tech

startup and through a qualitative phenomenal approach conduct several deep interviews in order to gain insights. Due to geographical reasons, as Albert is based in Gothenburg and the authors in Stockholm, the choice fell on PT Online as company of focus. PT Online is a Swedish tech startup within the sportstech industry with many similarities with Albert, offering customized training through a digital personal trainer, based in Stockholm.

1.3 Purpose & Research Questions

Based on the presented research gaps and problem areas, the purpose of this study was to analyse how a sportstech startup, PT Online, devised and developed its product development when launching a new-to-the-world product. By analysis of PT Online, a tech startup, along with existing theories in academia on product development, the intended result of this study was to find insights in the processes of how startups bring new products to the market.
This was accomplished by examining the following two research questions:

1. What does a tech startup's product development process look like?
2. What does a tech startup's product adoption process look like?

1.4 Research Outline

To answer the research questions, a qualitative phenomenal research method was adopted. A pre-study of Albert was conducted followed by more in depth interviews with PT Online, on their choices and initial decision making processes within positioning and marketing. The pre-study served the purpose of adding initial understanding in the companies' strategies and choices, where these were further investigated in literature and theoreticized in order for the main study to become more thoroughly conducted.[14] The use of the abductive method of multiple case studies allowed the process of theorizing and investigating empirics to be carried out collaterally and continuously throughout the study.[15] The scope of the study was in this way conforming to the unfolding findings, leading to the conclusion that it was empirically driven. The study was derived from primary data collected through interviews with representatives from the companies and complemented with expert interviews.

[14]Dubois, Gadde, Systematic combining: an abductive approach to case research, Journal of Business Research 55 (2002) 553 – 560
[15]Dubois, Gadde, Systematic combining: an abductive approach to case research, Journal of Business Research 55 (2002) 553 – 560

1.5 Delimitations

When studying difficulties among tech startups there are several approaches that can be taken as the field of study is broad. However, the approach of this study was to investigate deeply rather than broadly, why the focus of the thesis was limited to the product development that builds on experimentation, testing and iterative approaches in tech startups. As tech startups by the nature of their product are more agile, especially in terms of rapidly changing product characteristics compared to physical product startups, it was deemed necessary to make a distinction by adding the word "tech" to the startups to distinguish them from physical product startups.[16] This thesis and its result may therefore be of less relevance in terms of research contributions to physical product startups. The product development process was also researched at the domestic market of Sweden at a startup without internationalization activities. Even though PT Online did not outrule future internationalization, there were no current processes or plans of significant relevance, which made the timeframe of this study outrule any further investigation of the effects of internationalization.

1.6 Expected Contribution

The theoretical contribution of this thesis was intended to be the identification of patterns for the internal product development process for tech startups. The aim was that the findings of this thesis could be used in future research for comparative purposes to expand the research knowledge of product development process in tech startups further. As a single case study the thesis might not necessarily generate generalizable findings in all researchers opinions,[17] but the dense and detailed descriptions could be used as a database by people to evaluate the degree of transferability of the findings.[18] In this way, the authors of the thesis aspire to contribute to the understanding of tech startups product development process.

[16]Blank, Steven, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything, Accessed: 05-05-2018
[17] Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.
[18] (Lincoln & Guba 1895) referred in (Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.)

2. Literature Review

In this chapter, the role of product development and current literature is presented. Literature reviewed within the subcategory of the stream *disciplined problem solving* by Brown and Eisenhardt, deemed to be of most relevance to this thesis, is also presented.

2.1 Importance of Product Development

Product development is seen as an important function for survival and success for companies, especially in fast developing markets where competition is tough.[19] It is the mean by which companies adapt to market changes, diversify business from competitors and reinvent themselves.[20] Product development is a potential source of competitive advantage for many firms.[21] Plainly, it can be viewed as a major core competence and crucial for firm survival.[22]

2.2 Product Development Literature Overview

The literature that exists within the field of product development is fragmented and vast. As there is not much literature intermesh, it is difficult to get an overview of the field of study. However, a categorization of three streams of product development can be identified, being: *product development as a rational plan*, *communication web* and *disciplined problem solving*. Of these streams it is particularly the disciplined problem solving that is focused on in this thesis. In contrast to the other streams of research, which have more in common with the management research field, the stream of problem solving focuses more on the actual process of product development. Within this stream there are two types of models for product development organizing. One of them is product development that rely on extensive planning and overlapping of development stages, being more suitable for stable products in mature markets. The other one is product development that builds on experimentation, testing and

[19] Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378, (e.g., Ancona & Caldwell, 1990; Clark & Fujimoto, 1991; Dougherty, 1990; Zirger & Maidique, 1990) p.344

[20]Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378, (e.g., Schoonhoven, Eisenhardt, & Lyman, 1990 p344)

[21] Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378 (Brown and Eisenhardt, 1990)

[22]Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378

iterative approaches, being more relevant to products with little predictability and uncertain settings. It focuses on experiential design and iterative testing and is of more relevance in this thesis, as the focus lies on tech startups which are noted for their unpredictable settings.[23]

2.3 Iterative Testing

There is empirical support to the idea that an experiential approach to product development results in a faster development process. Product design generated by improvisation, iteration and testing, frequent milestones and strong leadership are the main drivers behind the faster process. This approach builds on *accelerated learning,* which is achieved through testing, repetition, directing leadership and milestones. Emphasize is put on the use of real time interaction, improvising and flexibility, especially for products where uncertainty is great. The reason why testing and iteration is helpful in uncertain and unpredictable settings is since it allows for a rapid generation of opinions, understanding and for the function of frequent milestones. Furthermore, multifunctional teams speed up the product development process as the mixture of heterogeneous expertise allows for development steps to be integrated. In this way, marketing activities, technical aspects and manufacturing can be connected through the different expertises represented in the team. Consequently, this results in faster product development as potential problems can be identified and dealt with early in the process.[24] Similarly, research on the lean startup approach suggests that when commercializing products under extreme uncertainty, often the case for tech startups, an experimental approach should be adopted to faster bring new technology to the market. Research states that developing a full product is risky as failure results in wasted resources, time and little learning. Instead, learning and validating must take place simultaneously without wasting resources. This is achieved by small scale product testing called MVP, *Minimum Viable Product*. MVP is adopted to test a product in an early stage, without adding all planned features of the product, to measure the market traction using different metrics. In this way, a marketing hypotheses can be tested, which accelerates learning and increases development efficiency.[25]

[23] Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378
[24] Kathleen M. Eisenhardt and Behnam N. Tabrizi, Accelerating Adaptive Processes: Product Innovation in the Global Computer Industry, Administrative Science Quarterly Vol. 40, No. 1 (Mar., 1995), pp. 84-110
[25] Moogk, Minimum Viable Product and the Importance of Experimentation in Technology Startups, Technology Innovation Management Review, 2012

3. Building the Theoretical Framework

In this chapter, relevant theories and previous academia considered useful in order to gain insights to the research questions are presented. In order to answer the first question: *What does tech startups' product development process look like?*, the authors conducted research within the product development field and for the second question: *What does a tech startup's product adoption process look like?*, research within the *diffusion of innovation* field was conducted. The models within these areas combined present the theoretical framework used to analyse the empirics of this thesis. When addressing the first research question, the following models and concepts were used:

(3.1) Minimal Viable Product and Perpetual Betas

This concept explains a product development approach popularized by the lean startup, together with the concept of Alpha and Beta testing. These concepts were chosen to explain parts of PT Online's product development process structure.

(3.2) Design Thinking

This is the Hasso-Plattner-Institut concept of designing solutions. This concept is used to complement the MVP concept and explain the initial phases of PT Online's product development process presented in the empirics chapter.

(3.3) Diffusion of Innovation Process

The models *Consumer Adoption Curve,* the *Product Life Cycle Curve* and *Roger's 5 Factors Model* are used to give explanatory value on how a product's adoption process look like.

3.1 Minimum Viable Product and Perpetual Betas

MVP is the smallest, least resource demanding representation of a product that is deemed to resonate with the target audience. The name itself explains the concept: it is the minimum effort, money and time spent on developing a product that is still viable to test a market hypothesis. The purpose is that without investing too much resources into the idea, being able to test its potential in the market. This is a concept which is of great importance in today's

software product management. However, it is also applicable in other departments, such as the tweaked version *Minimum Viable Promotion* with the same implications. A strong advantage with this concept is that it allows for many ideas to be tested within a short time and with limited resources.[26]

Other similar concepts originating from the software development is prototyping and Beta testing. The concept prototyping is used internally within an organization to verify that a product or idea is possible and enable early feedback. Beta testing, which is the release of software to a limited group of users for testing, also have similar practices in marketing, e.g., pilot programs and campaign test markets. This differs a lot from traditional practises of marketing that involve immediate release without real world testing. To promote continuous innovation, market hypothesis should be tested regularly by allowing touchpoints to be viewed as MVPs and having their initial releases being treated as Beta tests. With today's modern technology perceptual Beta testing in products and marketing touchpoints are also possible. This denotes continuous testing that, opposed to releasing a final version, keeps evolving in the direction of the market. This allows for any part of the marketing to be changed incrementally to match the market circumstances.

These concepts, in the following order: prototyping, Alpha testing, Beta testing and perceptual Betas are referred to as a pipeline for continuous marketing innovation. By screening new initiatives at each stage of the pipeline new ideas will be generated more steadily, which can lead to competitive advantages.[27]

3.2 Design Thinking

Design thinking is a solutions providing methodology that aims to develop customer centered solution based identified needs.[28] The process of design thinking has five stages that are further explained below: empathize, define, ideate, prototype and test.

[26] Brinker, Scott, Hacking Marketing : Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016
[27] Brinker, Scott, Hacking Marketing : Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016
[28] Muller & Thoring, Design thinking vs Lean startup: a comparison of two user-driven innovation strategies, 2012

Empathize

The empathize stage focus on understanding the problem. A solution should be derived from the understanding of the user or consumer. By observing, listening and engaging with people, an understanding of their values and motives can be developed. These insights are important to designing in order for the solution to resonate with the contemplated users.

Define

When learnings have been made about the contemplated user and the knowledge area has been well explored it is time to move to the definition stega. In the definition stage the scattered insights from the target group is focused into a narrowly defined problem. The narrow definition of the problem facilitates more focused solution design process. As the insights of the contemplated user is put together a better understanding of the user arise.

Ideate

After the problem is clearly defined, the next step is to find a solution. Through ideation, a wide array of possible solutions are identified. This can be achieved through various techniques, such as brainstorming. Prototyping can also be seen as a way of ideating as the moving from thought to more tangible display might generate other ideas in the process. The goal is to use the understanding of both the problem and the user and combine it with creativity to find possible solutions. Here, the collective expertise of a team can be helpful to find a solution. The assessment of the idea should be kept separate from the generation of the idea to avoid inhibiting the flow of ideation and to facilitate outside the box thinking.

Prototype

Following the ideation stage is the stage of prototyping. Ideas should be turned into prototypes in order for them to be further assessed. The goal is to have the idea become more tangible so that it can be closer examined and experienced. This might spur new ideas or find problems with the idea which was not thought of earlier. The creation of a prototype should not be time or resource consuming as the idea is to test a product or solution fast and cheaply, the function of the prototype is to progress the ideation, not create a semi complete product.

Test

After prototypes has been created the next step is to start testing. In the testing stage the objective is to get feedback on prospected solutions. When a product or solution is being tested a new level of insights is uncovered, unexpected insights might be attained that lead to a greater understanding of the user. Further understandings of the problem might lead to the conclusion that not only was the solution not right, but also the definition of the problem was wrong which allow the market alignment to be corrected. In this way, the testing leads to more learning and understanding which in turn lead to a better design.[29] [30]

3.3 Diffusion of Innovation Process

In order to effectively commercialize a new product and choose its target market, it is important to understand the *diffusion of innovation* process, a theory that explains how, why and at what rate new ideas and technologies are spread.[31] Roger also created *Roger's 5 Factor Framework* to illustrate what drives rapid market diffusion and consumer adoption. Models related to the theory are explained in detail below.

3.3.1 The Consumer Adoption Curve

According to Roger, the key when launching a new product is to understand the characteristics of the *innovators* and *early adopters* and aim to target them first.[32] Roger created the *Consumer Adoption Curve* that divides all people on the market into different categories based on their characteristics.

Innovators

Venturesome people who like to be different, willing to take a chance by trying an untried product. In consumer markets they tend to be younger, better educated, more confident and financially affluent, why they can afford to take the chance to buy something new.[33]

[29] Plattner, An introduction to process thinking process guide, Institute of design Stanford, 9/5/2018
[30] Dam, Siang Design thinking, 5 Stages in the Design Thinking Process, Interaction design foundation, 2018, Accessed 08-05-2018
[31] Jobber, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)
[32] Jobber, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)
[33] Jobber, David, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)

Early Adopters

Somewhat venturesome, but in need of comfort of that someone already tried the product before them. They have similar characteristics as the innovators and "filter" the innovator accepted products and popularize them, leading to acceptance by the majority of buyers.[34]

Early and Late Majorities

The bulk of the customers in a market. The early majority are usually cautious and like to see new products prove themselves before purchase. The late majority are even more cautious and sceptical and willing to buy only after the majority have tried the new product.[35]

Laggards

Usually tradition-bound people. For them, the new product needs to be perceived almost as a traditional product in order to be considered for purchase. In consumer markets they are often the older and less well-educated people of a population.[36]

3.3.2 The Product Life Cycle Curve

The *Product Life Cycle Curve* (Appendix 2) can provide a basis for segmenting the market for a new product. Combined, the *Consumer Adoption Curve* and *Product Life Cycle Curve* clearly show at what stage a customer group usually buys a new product (Appendix 3).

3.3.3 Roger's 5 Factor Model

Roger's 5 Factor Model (Figure 1) illustrates what factors are important in order to facilitate effective customer adoption. The factors are explained in more detail below.

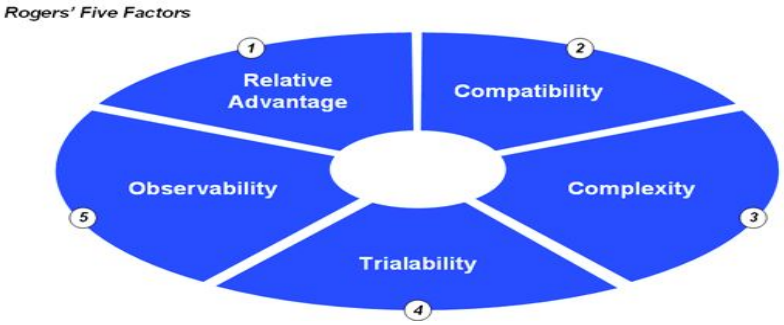

Figure 1: Roger's 5 Factor Model

[34] Jobber, David, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)
[35] Jobber, David, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)
[36] Jobber, David, "Principles & Practice of Marketing - 6th Edition", p. 403, (2010)

Firstly, it is the new product's differential or *relative advantage* compared to existing products that determines its speed of adoption. The more added benefits that it offers to a customer, the more the customer will be willing to purchase the product. The differential advantage can simply be psychological, as a status symbol for the elite for example.[37] Secondly, it is the new product's *compatibility* with the values, lifestyles, experiences and behaviours of consumers that determines its speed of adoption. Thirdly, its *complexity* affects its diffusion rate, as products that are complex and difficult to understand take longer to be adopted. Fourthly, the new product's divisibility or *trialability* affects its speed of diffusion, as products that do not inquire heavy trial costs have a more rapid diffusion. The fifth product characteristic is communicability or *observability*. If the benefits and applications of the new product can be readily observed or described to target customers, adoption is more likely to be faster. If product benefits are difficult to quantify or long-term, the diffusion may take longer. It is here important that marketing management does not assume that what might be obvious for them are not necessarily obvious for the customers. A communication strategy that allows potential customers to become aware of the innovation, understand and be convinced of its benefits does therefore need to be devised.[38]

3.4 Summarizing the Theoretical Framework

To answer the first research question: "*What does a tech startup's product development process look like?"* the theories of product development are used: *Minimum Viable Product* and *Design Thinking*. The concept of MVP together with the the Alpha and Beta testing concepts are used complementary to the *Design Thinking* concept to simultaneously identify and analyse the product development process stages of PT Online. To answer the second research question: "*What does a tech startup's product adoption process look like?"* the models of *Consumer Adoption Curve, Product Life Cycle Curve* and *Roger's 5 Factor's* curve are used. The two first models are used when analysing the segmentation of a new product's market and the latter when analysing the factors that PT Online uses when decreasing the diffusion of innovation and increasing product adoption.

[37] Jobber, David, "Principles & Practice of Marketing - 6th Edition", p. 404, (2010)
[38] Jobber, "Principles & Practice of Marketing - 6th Edition", p. 406, (2010)

4. Methodology

In this section of the research methodology and approach are explained, ending with a discussion of the quality of this thesis.

4.1 Methodology

The lack of available data combined with the complexity and variety of possible empirically outcomes, made the choice to fall on a qualitative research method. The qualitative research method allows circumstances and context to be taken into account and is therefore suitable to increase understanding of the studied object.[39] A single case study was chosen as the approach as it enables a deep and detailed study to explore the complex specific nature of the particular case.[40] The empirics were generated through deep interviews in the pre-study.

4.2 Research Design

4.2.1 Choice of Research Approach

The approach used in this thesis can be referred to as the concept of systematic combining, which can be explained as a nonlinear, path-dependent process of combining efforts with the ultimate objective of matching theory and reality. It can further be explained as the process of alternating the generation of framework, analysis and data. The process, of moving between research activities, allows for better understanding of the empirics and theory. Consequently, it makes a suitable approach for an abductive case study. The approach of systematic combining have also led to a continuous evolvement of the theoretical framework throughout the study, as empirical findings and interpretations of such, have redirected the search of further empirics. An example of this is the pre-study findings and the discovered limitations in the availability of data, which directed the focus of the study to PT Online. This derives from the systematic combining approach, in which observations can lead to realization of unforeseen findings that are further explored in interviews.[41]

[39] Yin, Robert K, Qualitative research from start to finish, 2011, 1st ed. The Guilford press, 2011.
[40] Stake 1995 referred in (Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.)
[41] Dubois, Gadde, Systematic combining: an abductive approach to case research, Journal of Business Research 55 (2002) 553 – 560

4.2.2 Data Collection

The sole source of empirical data collection used in this thesis are interviews. A total of nine interviews were conducted with the mean length of 40 minutes per interview, whereof three with Albert and six with PT Online. As different people were interviewed, the use of semi-structured interviews was a beneficial approach as the authors only had one chance to interview each individual, with the exception being Arta in the pre-study of Albert, who was interviewed twice. The semi-structured interviews allowed the interviewees to frame their knowledge in their own way, but still permitted the authors to guide interview topics to the areas of interest.[42] [43]

During the interviews, the same questions that addressed already covered aspects were asked to different persons in the startups. This allowed for triangulation, referring to the procedure of combining sources of evidence, while shifting between analysis and interpretation. Triangulation enabled double-checking of data and verifying of the findings, creating an opportunity to reveal unknown dimensions of the research problem.[44]

4.2.3 Data Analysis

The interviews were recorded and partially transcribed, the parts that lacked relevance to the research were not transcribed. The transcribed data were read multiple times in order to keep the observations fresh in memory and facilitate the process of relating observations to the research questions as well as to reach new insights. The data was manually coded into themes and informal memos were written to save the ideas.[45]

4.2.4 Quality of Study

Validity

Internal validity refers to match between research observations and theoretical ideéas. There can be separations between observations and theoretical ideas due to misinterpretations of observations, especially due to the short time frame of the research conducted in this thesis.

[42] Bernard 1988 referred in (Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.)
[43] Qualitative research guidelines project, Semi-structured interviews, http://www.qualres.org/HomeSemi-3629.html, Assessed: 05-05-2018
[44] Dubois, Gadde, Systematic combining: an abductive approach to case research, Journal of Business Research 55 (2002) 553 – 560
[45] Yin, Robert K, Qualitative research from start to finish, 2011, 1st ed. The Guilford press, 2011.

However, in order to mitigate this problem, respondent validation was conducted by providing the interviewees with a review of what was recorded as observations which allowed for some degree of confirmation of its validity. [46]

Another measure was taken to increase the validity was the use of triangulation, which means that data is collected from at least three different sources. In the case of this study the same questions regarding product development were asked to triangulate the product development process and increase the validity. However, the sources where all verbal in contrast to the ideal triangulation method, which uses three different types of sources. Therefore the risk that the sources are not independent cannot be neglected.[47]

Transferability

A common critique towards qualitative case studies often involve the transferability of the results, which is criticized for not being generalizable to the greater mass of similar objects.[48] However, researchers in favor of the qualitative case study methodology argue that the point of a case study is not to generalise the results, but about achieving deep rather than broad understanding. If the results of the study can be transferred to another case is furthermore an empirical question. Therefore, a thick description of the research phenomena should be provided to people who can use the information to evaluate the transferability to other settings.[49] Further, according to Yin, the important question is not whether the results can be generalised to other contexts, but rather how well the theoretical claims are, which are derived from the results.[50]

[46] Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.
[47] Yin, Robert K, Qualitative research from start to finish, 1st ed. The Guilford press, 2011.
[48] Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.
[49] Lincoln & Guba 1985 referred in (Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.)
[50] Bryman, Alan. *Social research methods*. 3rd ed. Oxford: Oxford university press, 2008.

5. Empirics

This chapter presents the empirical findings from the deep interviews conducted with the founders and employees of PT Online, a sportstech startup based in Stockholm and incubated in the Stockholm School of Economics Business Lab. After having conducted the pre-study on Albert and drawn the conclusion that it could be challenging to conducting several deep interviews with a company that was geographically far away, the choice fell on PT Online: a digital personal trainer instead of a digital math teacher. As Albert, PT Online was also entering a new market simultaneously as it was creating it. Users that had been using a physical personal trainer or a training app before, but also people completely new to training apps, were all attracted by PT Online's concept with customized training.

"PT Online is your digital personal trainer and tells you what to train, wherever, based on your personal needs. It calculates your training for you."
Tom Liljefors, Co-founder & CEO of PT Online

PT Online has developed its business model around an exercise software application, which can be used in smartphones and similar devices. It can be downloaded through App Store and Google Play for 99 SEK per month with a seven days free trial period. With its over 700 instruction short movies for different exercises, the app provides customized training schedules and exercise guidelines. The training can be customized since the app asks the user to fill in an initial diagnostic test and by continuously collecting user data, individual training schedules can be made. PT Online aims to be just like a personal trainer who would tailor the trainings for its clients based on their personal needs. Thereof, PT Online's slogan: *PT Online - The app that calculates how you should train*.

In the empirical study the authors identified five stages to illustrate PT Online's product development journey, as well as the tech startup's segmentation and value proposition. Like the pre-study, this chapter remains descriptive, while the next chapter aims to analyse the presented empirics through the theoretical framework.

5.1 PT Online's Product Development Journey

5.1.1 Stage 1: The Idea

Before the idea of the PT Online app was born, there was a website with the same name that was run as a side-project by the co-founder Daniel. The website functioned as a platform where people could receive customized training schedules from personal trainers in exchange for a fee. It was through this platform that Daniel and Marcus, licensed personal trainer, established contact in October 2016 and started to discuss how to improve the concept of the website. At the same time, Marcus' friend Tom, graduate from the Stockholm School of Economics in 2015, heard about the project and became interested. Together, Tom and Marcus started to brainstorm and discuss possible concept changes. In November 2016, Tom conducted a market analysis of the training industry, particularly in Sweden, and was convinced of that if they could come up with a good enough concept to individualise the training schedules, there was a lucrative market waiting. During this period, Tom and Marcus came up with the idea to build an app that based on an algorithm would match individual data input with training attributes, resulting in dynamic and customized training schedules.

5.1.2 Stage 2: Testing of the Idea

In stage two, Tom and Marcus started to build the algorithm using Excel. They could work extensively on testing the algorithm in Excel by varying the input data, which in practice meant the creation of simple profiles with different characteristics, thought to mirror different people. One profile could for example be a 35 year old woman, who's purpose with the training was to lose weight. After feeding the algorithm with information, training schedules were generated to match the different profiles. Marcus would then evaluate these to see if they were suitable for the person. After observing that the algorithm worked, Tom and Marcus started to look for developers to start to turn their idea into a product.

5.1.3 Stage 3: Product Development

In this stage Christian, designer and freelance consultant within social media marketing and growth, joined PT Online. Christian was a member of the network Young Entrepreneurs of

Sweden, through which he acquainted Simon, programmer and owner of a software development firm in Dalarna, Sweden. Simon, Nicklas and Mark, the latter two also developers who worked with Simon, followingly went to Stockholm to meet up with Tom and Marcus. After the development discussions all three programmers had become co-owners of PT Online and the first prototype development started. Christian draw the basic design that was coded into a software and Marcus fed more exercises into the system, expanding the database of exercises. Simon and his team were articulate about that only the foundation of the app should be developed, as past experiences had taught them that the core functionality was the most important and that not all functions should be developed in an early stage, but could be added in later stages through updates. It would be waste of time and resources if it turned out that the customers wanted something else. This, the non-developers agreed with.

"It is first when you test it, that you will really know if it is worth keeping."

Simon Goot, Front-end Developer & Co-founder of PT Online

When the algorithm had been turned into a software, its core functions were tested internally, resulting in a lot of bug fixes and a better and more stable software. After this, the design was improved and the product was sent out for testing within the team and among family and friends for feedback. The PT Online team kept records of all the incoming feedback they received. There was vast feedback on functions that did not execute properly and bugs, but also suggestions for improval. During this first testing period, lasting between 3 - 4 months, the team simultaneously fixed problems and kept testing the product, building a Beta version. In May 2017 the Beta version and the new PT Online website were finally finished.

5.1.4 Stage 4: Public Testing

The tech startup was now ready to release their first public version of PT Online. The overall feeling among the developers and non-developers was that there was still more that could be improved on the product, but that it had reached a stage when it was still good enough to be released to the public: the developers pressed for the app to be released with as little unnecessary features as possible, basically a core product, to avoid wasting time on developing functions that in the end might not be appreciated by the users.

"If you are not uncomfortable releasing it, you have waited too long."
Simon, Front-end Developer & Co-founder of PT Online

PT Online quickly started to receive users, around 300 - 400, during the summer and even a few companies signed up. This was a confirmation for the team that the concept was viable. They started to test basic, general social media marketing on e.g., Facebook, Instagram and through their own website towards different target groups. They also tried to reach out to companies and introducing their app, which gave good results.

PT Online received an announcement of more financial aid in the summer of 2017, spurring further software development. They made extensive improvement plans, setting the time frame to four weeks. The public test version generated a lot of feedback on the customization of training schedules, the video player in the app and the overall user experience. The feedback was ranked and queued so that the developers worked on the most urgent problems. Simon and his developers now worked on rebuilding the whole design of the application. He built a prototype using the program Invision, used to create digital prototypes, allowing him to make a rough design of the layout. He then had the different pictures linked to each other in order to create a clickable prototype that could be experienced first hand on a smartphone. After four months of programming, the PT Online team had finished half of the planned improvements, including discontinuation of the web version and the publishing of exercise articles. The improvements had taken much longer to execute than expected and dealing with App Store had been complicated and bureaucratic, taking valuable time.

5.1.5 Stage 5: Launching Version 2.0

In the end of December 2017, the PT Online team believed they had made enough function and design improvements and the 2.0 version was finally released. Until the first half of January 2018, a large part of the budget was spent on marketing: an ads campaign in the metro was set up and a video commercial recorded and ran intensively on PT Online's social media platforms. From the first release of version 2.0 until today, bug fixes are consequently executed and user experience improvements are continuously made. Feedback in the form of comments on the application download page are assessed and feasible ideas are put into the

queue record for development. As of today, May 2018, the PT Online app is very much the same, but has gone through several improvements, counting from when it was first released.

5.2 Segmentation

When launching the 2.0 version, PT Online had acquired more knowledge about the users than when launching the 1.0 version, due to its constant collection of user data. This knowledge could be used when constructing the marketing campaigns in the release of version 2.0. By continuously collecting user data and acquiring new customers, PT Online's understanding of their core segments increased.

5.2.1 B2C

When releasing and marketing version 2.0, PT Online aimed to segment their users more than in the launch of version 1.0 and the digital marketing had been aimed very broadly. By analysing the users that took the time to finish the app's initial diagnostic test and what users that had visited the website and clicked on something, two main segments could be distinguished: The first group was females in the age of 25 - 40 years. They worked out to feel good and the main reason for them to use PT Online was the flexibility to work out anytime and wherever. They were not particularly interested or knowledgeable of training and enjoyed having an app teaching and telling them what to do. The second group was men in a slightly younger age than the first group. They worked out mainly to look good and to be able to perform better on their job. They did not appreciate spending too much time on the initial test, but were impatient to get started quickly with the training.

In the launch of 2.0 both segments were specifically targeted in online marketing campaigns and it was clear that a smaller percentage of the second group that did not spend much time on the initial diagnostic test did not convert as often after the free trial period and finished their subscriptions more frequently. Due to being a tech startup with limited financials, PT Online therefore decided to focus on targeting the group that spent more time on the initial diagnostic test, which may not had to have to be the case if the startup would have had stronger financials and could have focused on retaining both segments. As PT Online both had received feedback from users who wanted a longer initial diagnostic test to make the

training more individual and users who wanted a shorter one since they were not interested in performing time consuming flexibility tests, this was an interesting insight for the company.

> **"*The people who first start to use your product does not necessarily need to be the ones representing the big mass.*"**
>
> **Tom Liljefors, Co-founder & CEO of PT Online**

Tom admitted that it was a challenge to target this perhaps unlikely group of people who were not as interested in training, but he also saw the positive side of it: PT Online could now come in as the app that easened the training for these people, who wanted a more flexible way to workout, far away from the eyes of other people on the gym. With an including approach, PT Online therefore started to put greater emphasis on becoming a "kinder" training option, taking away the stress and "must do" around training. While some people become triggered by comparing themselves to others and setting up high goals, PT Online was now focusing on satisfying the group who would just feel stressed by these features.

5.2.2 B2B

After having understood their target segment more, PT Online has unil today tried several marketing approaches in order to reach this segment. The latest one that have shown a prominent start is the B2B marketing and segmentation. After having segmented different companies into three categories: *1. "Committed"* - large companies that have a benefit portal in which PT Online is included as an option, *2. "Medium non-committed"* - companies with 40 - 200 employees without a benefit portal but offering their employees wellness grant and *3. "Small non-committed"* - companies with below 40 employees without a benefit portal but offering their employees wellness grant, PT Online decided to focus on category 2.

PT Online's strategy is to make people use their wellness grant to pay for a subscription, on an individual basis and not through their company, which PT Online has discovered is a much faster and less bureaucratic process than if the company was to sign up. The new selling and marketing strategy is based on cold calling companies, whereupon the PT Marcus, travels to the company and holds an educational presentation for the staff about training.

During the last 15 minutes he demonstrates the app and the deals that the staff receives if they choose to sign up. Employees are offered 30 days for free and the company packages are divided into packages of one month, seven months or one year, of which one year is the most beneficial. PT Online had noticed that a seven days trial was too short of a time to get started, why a one year subscription was a better deal for both parts: psychologically, people had signed up and committed for something, but due to the long subscription period and as they were using their wellness grant to pay for it, they still did not feel too pressured and forced to use it.

5.3 Value Proposition

At current, PT Online has three unique selling points: *1. Personal adapted training / Training on your conditions, 2. 700+ instruction movies* and *3. Train wherever and whenever you want to*. The current challenge is to make people understand the value of PT Online. When discussing PT Online's value proposition and whether they consider the next best alternative to be another training app or a physical PT, Tom answered that the competitive advantage of PT Online is its software that individually can adapt the training and make it more fun than other training apps, e.g., Eight Fit or Freeletics.

> "***PT Online is more profound, challenging and developing - even over time.***"
>
> **Tom Liljefors, Co-founder & CEO of PT Online**

The next best alternative could therefore arguably be a physical personal trainer as well. Tom does however mention one of the main difficulties with communicating PT Online's competitive advantage: people on the Swedish market do not know what Eight Fit, Freeletics and other training apps are. PT Online therefore needs to spend time on educating people on the mere concept of what a training app is and its benefits. Based on the insights above, PT Online therefore realized that there is need for thorough explanation in order to successfully reach a segment that is not even particularly interested or knowledgeable about training.

6. Analysis

This chapter is divided into two main parts, the first one being a descriptive analysis of the startup product development process in order to answer the first research question "*What does a tech startup's product development process look like?"*. The second part of this chapter analysis and describes PT Onlines's product adoption process in order to answer the second research question: **"***What does a tech startup's product adoption process look like?"*.

6.1 Tech Startups' Product Development Process

PT Online's and Albert's product development journeys have been studied in this thesis with the aim to explore the product development process within a tech startup. Expanding on the story of how the product has been developed in PT Online, the product development process is followingly analysed based on the theories found in the theoretical framework to answer the research question: "*What does a tech startup's product development process look like?"*.

6.1.1 The Product Development Stages

6.1.1.1 Stage 1: Inspiration

The first stage in the product development process of PT Online is the initial understanding of a need. The seed of the idea spawned from observations and interactions made through the preceding website with the same name. PT Online had important insights to the need of potential consumers through one of the founder's profession as personal trainer, as much of the understanding of the consumers' needs was already acquired by years of professional engagements with clients. Therethrough, deep knowledge on the customer needs was present from day one. Through interaction with users on PT Online's initial website the understanding could also become more specific of what need consumers sought to satisfy.

Utilizing the inherent field expertise and making sense of user interaction lead to what could be defined as a "point of view". That is, a specific defined user need described as a problem to find a solution to. PT Online developed the hypothesis that people want help to exercise,

but more on their own conditions. The needs that PT Online strived to find a solution to narrowed down to a core problem, how to provide mass customization of personal training.

6.1.1.2 Stage 2: Ideation and Small Scale Testing

To satisfy the identified need of training customization, ideas of different concepts were actively generated through brainstorming. This facilitated the utilization of the groups' collective expertise to develop the ideas.[51] The idea to have an algorithm deriving the appropriate training schedule based on input data built into a smartphone application was adopted. To create a proof of concept a prototype was built using Excel. This achieved two things: firstly, it confirmed the feasibility of the concept and secondly, it made the idea more tangible so that more feedback could be generated.[52]

In this way, prototyping can also be viewed as a way of ideation, as the increased tangibility of the product spurs new ideas and forces decisions to be taken on matters previously not addressed, thus progressing the development of ideas. The prototype later served as a blueprint for the development of the actual software. Being able to share the prototype with the developers also increased the effectiveness in PT Online's communication of the product, as the prototype more directly showed what they actually had in mind. Thus, the prototype not only increased the early feedback but also facilitated product specific communication.[53] [54]

During this process, a small effort of a market assessment was performed by PT Online. However, the unpredictable nature startups often operate in might cause rigid methods of forecast to be less effective. First of all, many startups operate in uncertain environments and sometimes in whole new markets that cannot be screened in the same way as traditional product developments processes suggest. Secondly, the idea might change down the road or develop in new directions as test are performed. Due to the high uncertainty of the product traction it is difficult to estimate a potential future value at such early stage.[55] This could

[51] Dam, Siang Design thinking, 5 Stages in the Design Thinking Process, Interaction design foundation, 2018, Accessed 08-05-2018
[52] Brinker, Scott, Hacking Marketing : Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016
[53] Dam, Siang Design thinking, 5 Stages in the Design Thinking Process, Interaction design foundation, 2018, Accessed 08-05-2018
[54] Brinker, Scott, Hacking Marketing : Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016
[55] Moogk,Minimum Viable Product and the Importance of Experimentation in Technology Startups, Technology Innovation Management Review, 2012

explain the small effort of market screening and the weak impact of the screening results on the product development process that were observed in PT Online.

6.1.1.3 Stage 3: Alpha Testing

When the Excel prototype was coded to a software the idea was made more tangible, which allowed for testing. The past experience of the product developers helped guiding PT Online to focus on the core functions of the product. PT Online set out to test the product in a very early stage in a closed setting that can be defined as Alpha testing. The Alpha testing served as the first internal testing of the product. It enabled the basic functions to be assessed internally and soliciting feedback from a larger amount of people. Although only a few trusted outside the company got to participate in the test, it still generated a lot of valuable insights derived from the product testers' feedback. The Alpha test can also be viewed as a pre-beta test to determine whether the product, tecniqually, would be viable to be released as a Beta. The minimal design of the product should not infringe on the viability. Without the technical viability, the product might fail in measuring the traction in the market, being too poorly built to function as a fair representation of the future product.[56]

Thus, the Alpha test generated two important benefits:
1. It solicited outsiders' feedback to generate new insights about the product
2. Potential flaws where uncovered safely without risking real users to prematurely discard the product because of technical errors

6.1.1.4 Stage 4: Beta Testing

Once the Alpha testing was complete and the necessary improvements and fixes had been carried out, the next step for PT Online can be defined as Beta testing, a larger test for the product in an open setting. PT Online used the first viable version of their product to get it out on the market. In this way they could measure the traction on the market without wasting time and resources on things that would not sell. This approach is typically referred to as MVP, Minimum Viable Product. This MVP release through Beta allowed PT Online's market hypothesis to be tested without developing the product to its full potential. If PT Online would have kept developing their app and adding more features before launching it to

[56] Brinker, Scott, Hacking Marketing: Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016

the public, it would have meant that they could have entered the market with a more complete product with more functions.
However, the completeness of the product says nothing about the actual reception that these features would have got. In this way, providing the market with products can be viewed as a gamble, as resources and time are used on products and features that the outcome is uncertain of. Only after the release it would be clear if resources were wasted on developing something not desired by the consumers. By only using the minimum time and resources needed to get the product working testable, a smaller amount of resources and money are risked.

Additionally, for a small tech startup like PT Online, there are not even resources enough to keep developing until the product would be considered "done", which is another possible reason why the MVP approach was adopted. Besides the time and resource savings made possible by this approach, there were also benefits in terms of market insights. Instead of having to guess or estimate a product's possible interest on a market it was tested by a MVP to measure the traction. This led to important insights and understanding of the markets susceptibility to the overall concept.

PT Online's Beta version worked as a MVP and generated important significant insights about their product market fit. They e.g., discovered that there was no need for a web version of the product, as the smartphone app simply could supply the same information. This resulted in the removal of the web version and other attributes of the product, previously expected to be conducive. This effectively directed the focus of resources and development to evolve the features that were valued by the consumers.

6.1.1.5 Stage 5: Commercialization and Perpetual Beta Testing

After PT Online had released its Beta the product was redesigned and updated to version 2.0. This is now being marketed as a more or less complete product. However, this does not mean that the product is actually complete. PT Online is continuously watching its touch points to make sure that everything is working. Beyond that they are responding to the customer feedback and enhancing the user experience. This can be seen as if the Beta testing is prolonged to endlessness. As long as PT Online is a profitable company there will therefore be a constant need to keep evolving in order to not be out run by competitors.

6.1.2 Concluding Remarks

PT Online's product development process starts with the inspiration of a potential product which is derived from the inherent knowledge of the consumer base, as described in the *Empathize* stage, followed by the problem definitions in the *Define* stage of *Design Thinking.* [57] The authors argue that one of the founders' occupation within the industry gives an advantage in defining of the need of the consumer. Furthermore, in the ideation stage the use of a prototype helped facilitating the ideation and internal communication of the product. The product was minimally designed for testing, which shows coherence with the MVP approach. Its viability was then evaluated in the Alpha test and the traction tested in the Beta stage.

Finally, the commercialisation of the product can be viewed as a perpetual Beta rather than a finished product.[58] The authors argue that the overall process of bringing the product to the market has similarities with both the MVP concept, software development originated concepts and the Design Thinking concept and can best be explained using all of the concepts rather than one in particular.

6.2 Tech Startups' Product Adoption Process

In this section, the authors explore the dynamic approach that PT Online uses to facilitate its product adoption process. PT Online's product adoption process is described and analysed based on the empirics and theories found in the theoretical framework, in order to answer the research question: *"What does a tech startup's product adoption process look like?"*.

6.2.1 Segmentation

6.2.1.1 Identifying the Innovators and Early Adopters

When launching the 1.0 version, PT Online was still not completely certain about its commercialization strategy, which can be explained by presence of too little information about its target market and what characteristics the app's *innovators* and *early adopters* would have. In order to push its newly released product from the introduction to growth

[57] Dam, Siang Design thinking, 5 Stages in the Design Thinking Process, Interaction design foundation, 2018, Accessed 08-05-2018
[58] Brinker, Scott, Hacking Marketing : Agile Practices to Make Marketing Smarter, Faster, and More Innovative, Wiley, 2016

stage, as illustrated in the *Product Life Cycle Curve*, it was therefore vital for PT Online to gain further insights of the characteristics of these two segments. When PT Online released its version 1.0 the product contained mainly the core features, as not too many extra functions were developed in order to mitigate the risk of that users would not want them in a later stage. The release of version 1.0 can in other words be described as a way for PT Online to acquire customers, obtain customer data and create a better understanding of characteristics that could be seen among its innovators and early adopters, in order to reach the growth stage.

6.2.1.2 Finding its Target Segment

Based on customer data, PT Online created two major segments: roughly put, women who completed the initial diagnostic test and men who showed less interest in completing the initial diagnostic test, but wanted to get started with the workout immediately. According to the *Consumer Adoption Curve*, innovators and early adopters make up about 16% of the market. The majority of the customers are early and late majority, making up respectively 34% of the market and a total of 68% together.[59]

The challenge for PT Online was therefore to distinguish whether the two identified groups showed characteristics to develop into these groups, characterized by being more cautious, sceptical and wanting products to be proven on the market. As Tom stated: "A company's innovators and early adopters do not need to represent the customer mass of a company".

After having followed up and analyzed the customer data, PT Online draw the conclusion that it was the group who spent more time on the initial diagnostic tests that turned into loyal customers. Absorbing the feedback about decreasing the initial diagnostic test for users to get started more quickly could therefore be a solution for acquiring more innovators and early adopters, but not a solution that would increase the retention rate on a long-term basis.[60]

6.2.1.3 Targeting its Target Segment

PT Online therefore decided to focus on the women, who worked out mainly to feel good, not willing to dedicate a major part of their life to training, but who needed an app to tell them how to work out, since they lacked the knowledge themselves. When comparing these to

[59] Jobber, David, Principles & Practice of Marketing - 6th Edition, p. 391 - 393, (2010)
[60] Jobber, David, Principles & Practice of Marketing - 6th Edition, p. 391 - 393, (2010)

Roger's description of typical innovators and early adopters, commonly being characterised as venturesome, young, more educated and financially affluent people, one can then notice that these do not seem to match. PT Online seemed to have found a target segment among its current users whose's characteristics were more similar to the characteristics of the *early* and *late majority* segments. This created a complexity for PT Online who needed to re-think its commercialization strategy and focus on targeting early and late majorities that usually purchase the product during its maturity stage, when it already has been accepted on the market. In order to facilitate effective customer adoption, PT Online in other words now had to turn the early and late majority into purchasing the product in its introduction stage.

6.2.2 Facilitating of Effective Customer Adoption

The following section is analyzed with the help of mainly *Roger's 5 Factor Model* and presented empirics in order to analyze and describe PT Online's process towards effective customer adoption. The five factors that are brought up are *1. Relative advantage, 2. Compatibility, 3. Complexity, 4. Trialability* and *5. Observability.*

6.2.2.1 Explaining the Relative Advantage

According to Roger, it is firstly a product's relative advantage compared to existing products that determines its speed of adoption.[61] Tom at PT Online mentions one of the challenges with the Swedish market that training apps are fairly unexplored and that people who know about training apps, or have a physical personal trainer, mostly are the ones who already are quite interested in fitness and do not correspond to PT Online's target segment. In order to effectively prove its competitive advantage, PT Online therefore needed and still needs to educate its target segment not only about the app and its functions, but also about training and what options that exist on the market. PT Online is handling this challenge by a proactive B2B strategy: by sending its personal trainer Marcus to talk about training, the advantages of training correctly and to have a personal trainer, PT Online provides its target segment with the tools to determine PT Online's relative advantage. Marcus can also explain in what way PT Online differs from other training apps; that it calculates how a person should train, and demonstrate the app. In this way, PT Online's relative advantage becomes clearer.

[61] Jobber, David, Principles & Practice of Marketing - 6th Edition, p. 403, (2010)

6.2.2.2 Making the Product Compatible

As compatibility with the users' values and behaviour is something that facilitates a product's customer adoption, PT Online is not adding any competitive and comparable features in the smartphone app after their target segment would risk to not appreciate the above features. One of the unique selling points that PT Online attempts to put forward is *training on your conditions* and *customized training*. PT Online understands that in order for a product to be considered as compatible with a person, the product features and its market communication need to be aligned, which increases the chances of customer adoption.

6.2.2.3 Turn Down the Complexity

As complex products have a higher rate of diffusion[62], PT Online works on improving the app's user experience. The tech startup has a constant list of feedback on things that need to be done and in order to not make any unnecessary extra functions, the developers try to keep it simple when adding extra features. By constantly working on facilitating the app's user experience and Marcus demonstrating the app, the complexity of the product decreases.

6.2.2.4 Increased Trialability

In order to encourage people to try their product, PT Online offers a seven days free trial for its B2C users and an even longer trial period for its B2B customers. As PT Online observed that seven days was a too short time to try the app, it has increased its trialability time for B2B customers, which decreases a product's speed of diffusion. Except for the 30 day free trial period that potential B2B customers are offered, the PT Online also offers better promotions on the app the longer the user signs up for. As new users have a longer period to try the app, the trialability increases.

6.2.2.5 Observable Results

According to Roger, the likelihood of faster product adoption is higher if product benefits can be easily observed and quantified.[63] As PT Online is a training app, proven results that the target segment would be interested in are e.g., improved health and a better physical and psychological condition. For PT Online, this is currently the most difficult factor to

[62] Jobber, David, Principles & Practice of Marketing - 6th Edition, p. 403, (2010)
[63] Jobber, David, Principles & Practice of Marketing - 6th Edition, p. 403, (2010)

communicate on to new customers, as product benefits are difficult to quantify as the tech startup does not want to have any tangible measurements of performance in the app. To simply be *the app that calculates how you should train* and what the actual result is can seem diffuse. In order to tackle this challenge, one of PT Online's unique selling points is that they have over 700 instruction videos of exercises recorded.

6.2.3 Concluding Remarks

By applying the *Adoption Rate Curve, Product Life Cycle Curve* and *Roger's 5 Factor Model* to the empirics, the authors can draw the conclusion that segmentation can be a challenging step for a tech startup without any prior core experience when launching a new product. In order to gain more knowledge about the target segment, the tech startup therefore needs to dare to put itself out there and e.g., launch a Beta version in order to collect customer data that can be analyzed. A tech startup's product adoption process seems to be strongly dependant on how quickly it determines its target segment and how well it adapts its commercialization strategy and continuous product developments according to it.

7. Discussion

The authors have in this thesis examined the product development process of the two tech startups Albert and PT Online, where the former served as a pre-study to the in-depth study of PT Online. The product development process observed in these two startups was found to have an experimental approach, where an idea was developed into a testable presentation of the product rather than relying on more traditional planning and screening approaches. The explanations to this can be several, but one of the more probable ones are the high uncertainty that surrounds startups, deriving from the fact that these startups aspire to bring new types of products to new markets. This forces them away from rigid approaches to adopt more agile methods, such as the concept of MVP.[64] This is shown to be a quicker product development to market approach,[65] suggesting what is true for most startups: resources are limited and time is money. Startups are known to be high risk investments and funding does not come easy.[66] Therefore it is necessary to quickly, without spending too much resources, create a product that can test the startups' market hypothesis and obtain a proof of concept. The observed startups also capitalize on the founders' backgrounds for deep understanding of the contemplated consumer needs, reducing the need to acquire external services for customer understanding, which additionally saves time. All together, the product development process in the observed startups showed fairly little long-term planning and vaste testing.

With regards to segmentation when conducting the commercialization strategy, this also seems to require an intensive form of testing. The tech startup might experience that their target segment does not correspond to what they initially thought. It can then either align product development and marketing towards the segment that seems to appreciate the product the most at the given time or change it towards another direction, continuing different strategies to target another segment. The faster a tech startup releases a first version of a product on the market, its chances for collecting customer data increases, which implies that it is one step closer to developing an effective product adoption process.

[64]Blank, Steven, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything, Accessed: 05-05-2018
[65]Brown, Eisenhardt, Product Development: Past Research, Present Findings, and Future Directions, The Academy of Management Review, Vol. 20, No. 2 (Apr., 1995), pp. 343-378
[66]Blank, Steven, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything, Accessed: 05-05-2018

8. Conclusions and Implications

8.1 Conclusions

The empirical findings in this thesis reflects the statement made by Moogk: "*The best learning for a startup comes as a result of experiments that test a version of a product against relevant metrics*." Although there were elements of product development that rely on planning and screening the empirics pointed to an experimental and agile product development approach within the startups. As argued by Eisenhardt & Tabrizi, the findings in this thesis points out that testing and iteration within the companies product development process seem to generate a greater understanding of the product market fit, thus being a great advantage to the product development process. The analysis shows that the product development process found in the studied tech startups use experimental approaches and testings such as the concept of MVP, Alpha and Beta testing. The overall process is composed of a few steps including the stages of inspiration, ideation, iterative testing and commercialization of a unfinished product. Furthermore, early launching of the product allows insights to be made about the users, which can facilitate further product alignment with the target group to increase the adoption rate.

8.2 Implications

The findings in this thesis suggests that it would be beneficial for startups operating in environments of high uncertainty to adopt an experimental approach. Instead of spending resources on extensive planning and forecasting, a MVP can be adopted to test the product's market fit and induce quick learnings that can be utilized to further adapt the product to the consumer needs. Further, the use of prototyping in a early stage can improve the internal communication about the product as well as facilitate further ideation. The findings in regards to segmentation and its role in a successful product adoption highlights the fact that the first customers of a startup are not always customers who represent the majority of customers that the startup is really looking for targeting.

8.3 Critique and Limitations

Despite the authors' attempt to keep the study's findings as generable and representable for tech startups all over the world as possible, a larger amount of deep interviews conducted with tech startups in different geographical areas not limited to Sweden, would validate and enrich this study even more. Due to this, findings and conclusions drawn in this study may not be completely representable for tech startups in all industries all over the world. Limitations of time, geography and the scope of this study, were contributing reasons why the authors were limited to produce a large quantity of deep interviews with more tech startups from different parts of the world and from more tech sectors.

8.4 Future Research

This thesis explored tech startups' new product development process and the product adoption process in a qualitative in-depth analysis of two Swedish startups. A quantitative research on the topic of tech startups would be of interest to research as it could facilitate the generalization of the findings into a greater extension. More research on the perceptual Beta and continuous testing after commercialization and exploration of tech startups continuous development process appears to be needed and would be encouraged by the authors, observing the world's increasing digitalisation and more tech startups constantly being founded. The number of tech startups that due to several reasons do not survive is large and with further research on tech startups and their product development and product adoption process, the authors are positive about that this number would decrease. Constant technology development in a fast pace environment allows customer behaviour to change, as people with an Internet connection and computer or smartphone are able to easily access a large number of new technological products. With a deeper understanding of the consumer behaviour that has developed with this new phenomenon, possibly differing from earlier typical observed consumer behaviour when the innovators and early adopters usually were the young, educated and financial affluent people, the authors believe that tech startups' product adoption process would be facilitated. The authors would therefore strongly encourage further research within this area, that they believe would highly increase the chances for the world to see the light and take part of even more life-improving technological products.

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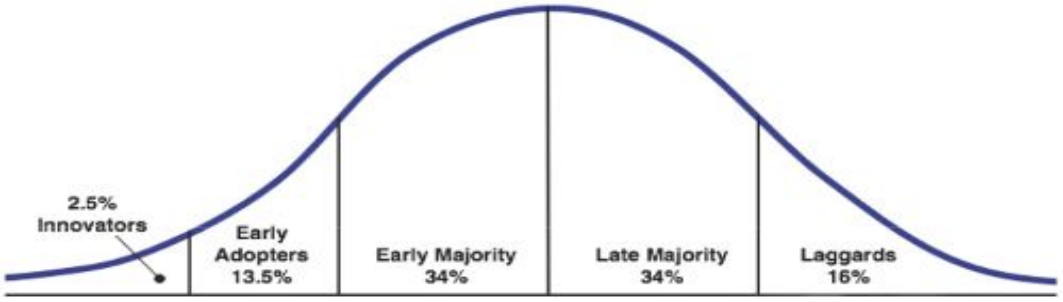
10. Appendix



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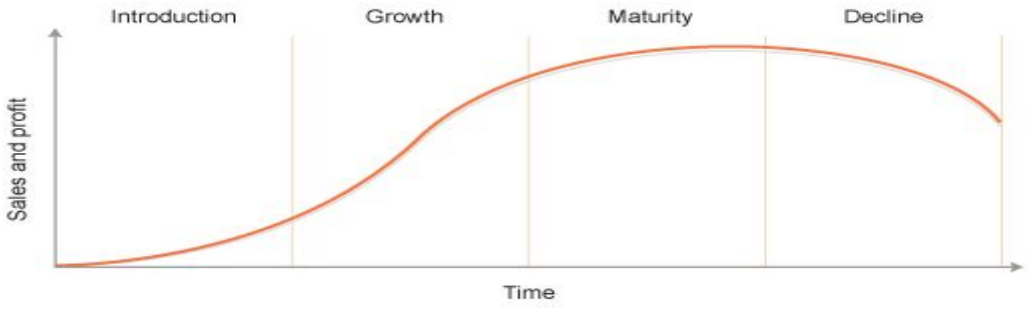
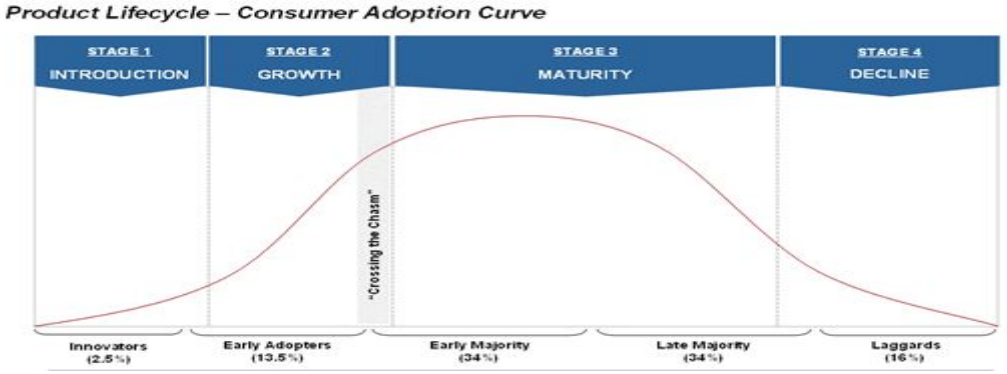
***Appendix 1**: The Consumer Adoption Curve*



[68]

***Appendix 2**: The Product Life Cycle Curve*



[69]

***Appendix 3**: The Product Life Cycle Curve and Consumer Adoption Curve combined*

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