

Management of service innovations in start ups

Riku Hagroos

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Author(s) Riku Hagroos	
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<p>This thesis studies how mobile app start up companies in the Helsinki region manage their service innovation. This is achieved by sending a survey to applicable businesses. The Secondary objectives of this thesis are to determine the underlying reasons for innovation in start ups, what tools and models start ups use to manage service innovation, where start ups get the funding for their innovation activities and finally, if and where start ups get support and advice regarding non-financial activities.</p> <p>The theoretical framework presents the reader with relevant literature relating to the research objectives. The framework is then compared and analysed in relation to the answers gained from the survey. The theoretical framework is divided into two separate chapters.</p> <p>A questionnaire was sent to applicable start up companies in the Helsinki region. On top of the basic information, the survey asked about the funding start ups receive, whether they participate in any programmes for SMEs and how open or closed start ups are in relation to open and closed innovation model. The answers received are analysed in the empirical chapter.</p> <p>The fifth and final chapter provides the reader with the conclusion and findings, and suggestions for future research for start ups. Lastly the author makes a self-evaluation about the thesis process.</p>	
Keywords Innovation, Start up, Management, Service, Open and closed innovation	

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1 Introduction

This chapter gives general view on the subject and what this thesis aims to accomplish and why it is relevant. It also provides delimitations to the scope of this study, what this thesis covers and what it does not study. Key concepts related to this research are clarified. And lastly, the structure of this thesis is presented.

1.1 Background

As advanced countries continue their move towards service-led economies, in leading countries such as the USA and UK, service sector already creates over 75% of wealth and 85% of the employment. (Tidd & Hull 2003, 9). In Finland, private and public services account for just over 70% of GDP, with private services amounting to about half of the total. While the total GDP growth in Finland was 1.1% annually, between 2003-2013, private service production grew, on average, at the rate of 2% per annum. (EK 2017.)

To keep up with rapidly changing consumer needs and demands, companies must spend resources to come up with new solutions to keep themselves competitive. Many of those companies are start-ups, small to mid-size companies “working to solve a problem where the solution is not obvious and success is not guaranteed”. (Neil Blumenthal, Forbes 2013.)

New service innovations continue to influence my and everyone else’s life and this topic could also be important regarding my future career as most new job openings are in small and mid-size companies, which also covers most start-ups.

1.2 Research question

The aim of this thesis is to study how service innovations are managed in start-up companies in the mobile app business in Helsinki area.

To reach that goal, the research question can be worded as follows:

How do start-up companies creating mobile apps manage service innovation?

To get a deeper understanding of the subject, the investigative questions are formulated as such:

IQ 1. What is the underlying reason for innovation in start-ups?

IQ 2. What tools and models do start-ups use to manage service innovation?

IQ 3. Where do start-ups get the funding for innovation?

IQ 4. Where do start-ups get non-financial support?

Answers to questions above are gathered from a survey sent to Finnish start-up companies operating in service sector.

Table 1 below presents the theoretical framework, research methods and results chapters for each investigative question.

Table 1. Overlay matrix

Investigative question	Theoretical Framework*	Research Methods	Results (chapter)
IQ 1. What is the underlying reason for innovation in start-ups?	Chapter 2.1 and sub-chapter 2.1.1	Literature review and Questionnaire	Chapter 4
IQ 2. What tools and models start-ups use to manage service innovation?	Sub-chapters 2.2.2 and 2.3.1	Literature review and Questionnaire	Chapter 4
IQ 3. Where do start-ups get the funding for innovation?	Sub-chapter 2.3.2	Literature review and Questionnaire	Chapter 4
IQ 4. Where do start-ups get non-financial support?	Sub-chapter 2.1.2	Literature review and Questionnaire	Chapter 4

1.3 Demarkation

This thesis will study service innovation management in start-up companies specializing in mobile apps. Companies studied in this thesis are based in Helsinki area. Theoretical part will cover service innovation management in general term, because innovation management is such a broad topic with many subsections. This thesis will only focus on service innovations. Organizational and marketing innovations will not be studied. IQ 3 will focus on funding related to development on innovative services.

1.4 International aspect

While this thesis studies service innovation management of start-up companies based in Finland, the models, tools and the theory behind those are universal applicable. Start-up companies covered in thesis have a global service offering. Also, their source of funding can be from a foreign country, although, the author suspects that in case of Finnish start-ups, the funding is mainly from Finland.

1.5 Benefits

Because this study aims to research the innovation management in start-up companies, it is possible that it also gives insights on how Finnish start-ups are managed in general and what trends exist in start-up management if any. This information could be helpful for start-ups themselves and for entrepreneurs interested in establishing a business.

While innovation management and start-up companies themselves are fairly studied subjects, this thesis focuses on a specific region, namely Helsinki area, and on a specific area of business, mobile apps, which makes this thesis unique.

For the author, this study provides deeper knowledge about the subject which might prove beneficial in the future.

1.6 Key concepts

Start-up can be defined as a “company that is in the first stage of its operations. These companies are often initially bankrolled by their entrepreneurial founders as they attempt to capitalize on developing a product or service for which they believe there is a demand.” (Investopedia 2017.)

Service refers to intangible products, for example accounting, banking or insurance services. “No transfer of possession or ownership takes place when services are sold, and they (1) cannot be stored or transported, (2) are instantly perishable, and (3) come into existence at the time they are bought and consumed.” (Business dictionary 2017a.)

Innovation is the introduction of something new, an idea, method, product or service. (Merriam-Webster 2017.)

Innovation can also be defined as “the process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need.” (Business dictionary 2017b.)

Management refers to the organization and coordination of the activities of a business in order to achieve defined objectives. (Business dictionary 2017c.)

APP, short of application, is “typically a small, specialized program downloaded onto mobile devices.” (Dictionary.com 2017.)

Open innovation is concept by Henry Chesbrough in which an organization also seeks to find external sources of knowledge, information and resources, on top of internal sources, to drive innovation. (Oxford-review.com 2018.)

1.7 Thesis structure

Chapter 1, the introduction, describes the goals of this study and provides a general information about the content. This chapter discusses the international aspects of the study, potential benefits and the key concepts relating to this thesis. Delimitation or what is and what is not studied in this thesis is also presented.

Chapter 2, theoretical framework, provides information on start-ups, service innovation and innovation management. This chapter also discusses literature and theoretical models related to previously mentioned subjects.

Chapter 3, research methods, talks about what is being studied and how that information is gathered.

Chapter 4, data analysis, presents the data collected from the survey and analyses it in relation to theory provided in chapter 2.

Chapter 5, findings and conclusion, reports and discusses the results of the data analysis.

2 Innovation management in start ups

This chapter explores the literature on start-ups, innovation management and service innovation. This chapter also covers some tools and models used to manage service innovations. Chapter 2.1, gives quick overlook of what a start-up company is and what makes a start-up. Sub-chapter 2.1.1 gives insight on to what is needed for a start up to be successful. Sub-chapter 2.1.2 studies where a start up can get non-financial help. Chapter 2.2 and its sub-chapters gives information about mobile apps and four dimensions service innovation model. Chapter 2.3 and its sub-chapters provides knowledge about open and closed innovation models and where start ups can seeks capital to fund their innovation activities.

Below is the illustration of what is being studied. It must be noted that the financial aspects of the previously mentioned theories and models are emphasized.

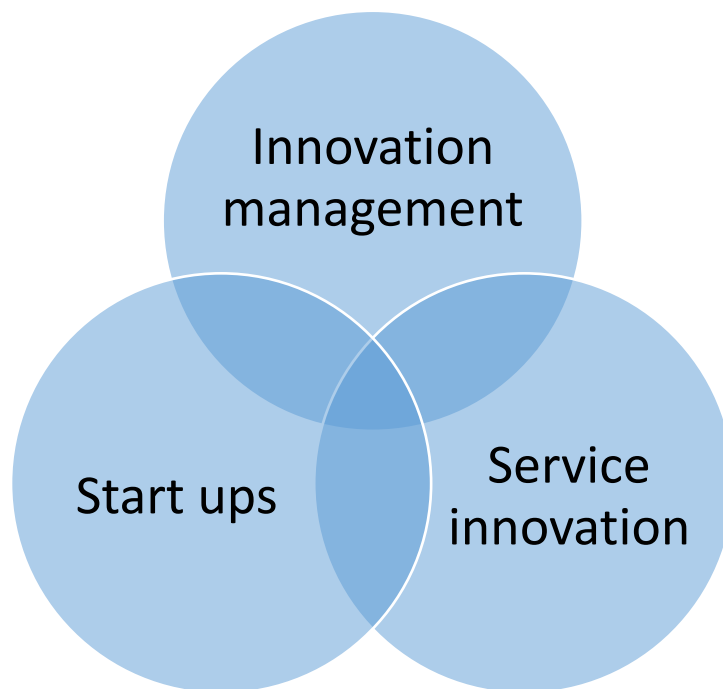


Figure 1. Venn diagram of research subject

2.1 Start ups

Start up. A term you hear often, but which actual meaning is not that easy to explain. You might think of a small company or a business which has just started operating, but that could also include businesses like plumbers, hair saloons or fast-food stands. Next, you might think of a small tech company and you admittedly would be correct more often than not, but what actually separates a start up from other small businesses or even from other tech companies is that one of the main goal of a start up is to attain a fast level of growth. (Graham 2012.)

The definition of start-up, according to oxford dictionary is “the action or process of setting something in motion.” Which is a very descriptive definition because start up company is just that, a newly-found business which seeks rapid expansion of growth.

This thesis focuses on start up companies in the Helsinki region who specialize in the creation of smartphone apps. This thesis aims to study how start ups manage their innovation process, which innovation models they use, if and where they can get help about non-financial issues, where start ups can get funding to innovate.

According to a report published by Startup Genome, Helsinki ranks as the top city in the world when it comes to how well start up entrepreneurs, investors and experts are connected and networked. Helsinki (and the rest of the metropolitan area) is particularly good at connecting start ups with research centers such as universities and polytechnics. The business fields where start ups of Helsinki region excel are artificial intelligence, health and wellbeing technology and games. What Finnish start ups should improve on is the level of practical and theoretical knowhow. (Business Finland 2018.)

The funding of Finnish start ups and other businesses in their early stages have continued its steady growth and totalled 650 million euros in 2017. In comparison, a year before the funding amounted to just shy of 600 million euros and the total funding has more than tripled in ten years. It should be noted that especially international investors and venture capital is starting to find Finnish start ups. International investment increased to just over 200 million euros, a respectable 33% increase from the previous year. (Business Finland 2018.)

In Europe, the situation is just as you might have expected with most of the fastest growing start ups being in Germany, France and UK. The top three sectors where start ups grew the most were technology, support services and construction sector. The amount of

foreign investment into start ups have steadily increased as funding from Asia has climbed and new investors, such as South Africa, have also stepped into the European start up markets. (Financial Times 2018.)

European Startup Monitor published a report in 2015 in which it recognized four major start up hotspots in Europe. Those were in Berlin, London, Paris and surprisingly in Tel Aviv. Across Europe, the average age of a start up is 2.5 years and the average capital raised is 2.5 million euros. European start ups are heavily focused on technology and especially in digital economy. Average start up company in Europe employs just over 12 people and is planning to hire more within the year. (European Startup monitor 2015.)

This thesis also tries to find out why do people become start up entrepreneurs. Literature on what gives the spark to innovation often talks about two factors, pushing and pulling factors. The pushing factor usually comes from technological drivers which enable entrepreneurial people to come up with something entirely new, or, a person with a good idea and the means to transfer that idea into a sellable good or service. The pulling factor model on the other hand argues that the innovation is just an answer to a need that already exists in the markets. In other words, according to the push model, providing new, innovative goods and services creates demand for them and the push model is the other way around, market success of innovative goods and services are because there already exists demand for them. (Entrepreneurship review 2010.)

2.1.1 Start-up as emergent organization

What gives people entrepreneurial motivations and especially motivation to innovate is a complex question, as there are several factors which affect people's decision to, first, start a business, and second, to have innovative ideas to which could make their business stand above the rest.

Helsinki based think-tank, Demos Helsinki, have compiled a report on factors which affects the creation of entrepreneurial ecosystems and entrepreneurship. This report is called Factors Shaping Entrepreneurial Ecosystems and the Rise of Entrepreneurship. Writer of this report, Aleksi Aaltonen, provides ten generic factors affecting entrepreneurship. Some of these factors are related to product architecture and development. These factors will be covered only if they are also applicable to services or to the scope of this thesis. Also, one of these factors is funding which will be excluded from the list below because it is covered more in depth in another chapter. The remaining factors are:

1. Regional context for entrepreneurship.

Aaltonen points out that there are regional differences which facilitate, in good and in bad, the growth of start ups and other entrepreneurial endeavours. Aaltonen divides these into three separate categories.

First, cultural, institutional and demographic differences. Cultural aspects play a huge role regarding people's predisposition to become entrepreneurs. For example, it is often thought that high levels of individualism is needed for innovation, but according to studies, some types of collectivism can also accelerate innovation. Other factors related to innovation are human capital, the amount of young and educated people, high population density and labour mobility.

Second, geographical proximity and industrial cluster affect how knowledge and new ideas spread and it also helps building networks between start ups.

Third, governmental and public interventions, means the indirect ways that governments and local officials can try to influence the growth of new businesses. This is usually done through legislation, regulation and funding. (Aaltonen 2016, 16-18.)

2. Knowledge, learning and resource acquisition.

Although start ups must begin with plenty of knowledge and ideas, start ups must also collect and create vast amount of new knowledge. To do this, start up companies must be able to gather and refine information both from within the company and also from external sources. (Aaltonen 2016, 20.)

3. Founders and founding conditions.

Success of a start up is often dependent on the founders of the start up, because the skills, talents and knowledge they bring to the table are especially important in the beginning, because often those are the main assets that a newly founded start up has. The required composition of skills, knowledge and talents varies depending on the external environment. For example, when start up is operating in familiar markets, experience trumps talent, but in uncertain and unfamiliar markets, talent tends to be more important. (Aaltonen 2016, 23.)

4. Innovation and product development.

New innovations are mainly the result of having high technological resources, good understanding of potential customers and their needs, to which other companies do not respond sufficiently and from research done in universities. Surprisingly, how innovative a start up company is, has negative correlation with its survival in the long term. Also, the uncertainty of the markets decreases the amount of risky innovation projects a start up is willing to take. (Aaltonen 2016, 26.)

5. Product architecture.

Different platforms have become their own ecosystems, where there exists other complimentary software products and services, instead of just standalone software. These platforms usually have owner who controls the platform and its main components. Complementors, who create services, like apps, to the platform and users, who purchase access to the platform and to the services it provides. (Aaltonen 2016, 28-29.)

6. Marketing.

Because start ups often lack broad range of products and service offerings, they don't have usually have a lot of experience in marketing, let alone a separate marketing department. Nevertheless, strong marketing is crucial for the success of a new business. For a highly competitive markets such as smart phone apps, how the service is presented and how good the user interface is, can either support or block the consumer assessment of the application. (Aaltonen 2016, 30.)

7. Intellectual property.

Start ups are often founded because of innovation acquired through research and the want to commercialize it or because the founders have an idea which they think sells. There are several ways a start up can use their IPs, for example, they can be patented and kept from others from using it, sold, or pooled, which can give access to other, complimentary IPs. (Aaltonen 2016, 31.)

8. Start up strategy.

Aaltonen points out that any business have to consider at least two strategic issues when entering new markets, Timing and the reactions of those already in the market. Company must also consider what kind of market they are entering into. For example, being first in a market might sound good and sometimes is, but being the first also means that there is

increased risk involved, because the first mover has to learn the market and bet on a technology which might not be the winner in the end. One must also take into consideration the reactions of those already in the market. A start up with a new, market disrupting product or service may force others to take action. Bigger companies can diversify their business and thereby decrease their overall risk but a newly founded start up company must often rely on their superior product and service offerings. (Aaltonen 2016, 33.)

2.1.2 Start-ups and non-financial support

-Governmental organizations such as finpro, now Business Finland, provide non-financial help for companies in Finland, start ups and as well as other businesses, new and old, have several different places where they can get help with financial and non-financial issues. This sub-chapter covers the non-financial help start ups can get. The financial help will be covered in other chapter.

Business Finland, formed in 2018 when Tekes and Finpro merged, on top of expertise services, they offer services which aims to help companies to access new markets and to internationalize their business. They also have different programs with a specific focus for example, Bits of health, a program for companies who use digitalisation to promote health and to diagnose illnesses. (Tekes 2017a.)

ELY-keskus or the centre for economic development, transport and the environment, are regional centres which offers advice on business management, business development and innovation, training and updating the skills new and existing employees. They also offer expert services. (ELY-keskus 2017a.)

Enterprise Finland, which is part of the Enterprise Europe Network or EEN for short, offers some of the things as ELY-keskus, such as advice and training, but they also offer recruitment services and platform to network with other businesses in Europe. (Enterprise Finland 2017a.)

In its 2017 Finland's country review on innovation policy, the OECD made the recommendation that Finland should shift its focus to more radical innovation projects. The review also stated that the support now provided for small and medium-sized companies, should be changed from providing innovation grants and other financial support to creating opportunities to network with larger corporations and give increased access to test laboratories and research infrastructure. (OECD 2017.)

2.2 Smartphone apps and service innovation

The following sub-chapters present basic information about smartphone applications and their main monetization models. The second sub-chapter studies Pim den Hertog's 4 dimensions service innovation model. The model aims to reveal the factors which affect the emergence and creation of innovation.

2.2.1 Mobile apps

Mobile application, app for short, is a software which can be accessed through mobile device such as tablet, smartphone or smartwatch. The main operating systems through which apps are offered are Google's Android and iOS by Apple. The variety of different apps is extensive, customers can download everything from games, entertainment apps such as Netflix and Spotify to apps which track your health.

Most apps can be downloaded and used freely, without paying, though in this case the monetization is often made through advertising. Apps can obviously be obtained through one-time purchase. Also, the monetization model can be such that the basic app itself is free to use but customers can purchase additional features to complement the base application. (Sanoma 2018.)

In 2015, the worldwide revenue in mobile apps was about 70 billion dollars, and by 2020 the total revenues are expected to grow almost threefold, to about 190 billion dollars. (Statista.com 2018.)

2.2.2 4 Dimensions service innovation model

In his 2010 book, *Managing Service Innovation: Firm-level Dynamic Capabilities and Policy Options*, Pim den Hertog presents a four dimensional model of service innovation and how those four dimensions link with each other. The four dimensions as den Hertog provides them are: The service concept, the client interface, the service delivery system/organization and technological option. Den Hertog argues that changes in one or more of the dimensions could provide a new innovation in a service. It should be noted that the four dimensions model is somewhat applicable to product innovation and more importantly, there exists some overlap between the four dimensions.

The service concepts dimension. Unlike with manufacturing innovations, service innovations are often very intangible and it is these intangible characteristics, such as new locations, marketing targeted to specific target group, brands that make conceptual ideas to usually occur with service innovations. (den Hertog 2010, 6.)

The client interface dimension refers to the interface which customers use to interact with the service or the service provider. Client interface can be anything from mobile apps and websites to self-scanning checkouts. (den Hertog 2010, 8.)

The service delivery system/organization dimension covers the organizational side of service innovation. It is about organizational adjustments within the company which enable employees to perform their duties. Thought connected with the second dimension, service delivery system dimension is useful to businesses in more traditional fields of service business, such as fast food companies. (den Hertog 2010, 9.)

Technological options dimension, new inventions especially in the information and communication technology sector is what made the introduction of smartphone apps possible. It should be noted however that technology is not a prerequisite of service innovation, although new technologies often drive innovation. (den Hertog 2010, 10.)

Along with the above mentioned dimensions of service innovation, den Hertog provides five patterns of service innovation. These patterns are supplier-dominated innovation, innovation within services, client-led innovation, innovation through services and paradigmatic innovations.

Supplier-dominated innovation refers to situation, where new inventions made by external suppliers are spread to service businesses, who in turn use them to serve their customers better. For example, smart-TVs has enabled service providers like Netflix to reach larger audiences. (den Hertog 2010, 12.)

Innovation within services or rather within service firms. These kinds of innovations can be technological, non-technological or both. New banking services for example are innovations which are created within service firm. (den Hertog 2010, 14.)

Client-led innovation is innovation born out of customer need. For example, environmentally friendly and socially responsible services are important to today's customers and service providers are answering to that demand. (den Hertog 2010, 14.)

Innovation through services is how service businesses affect the innovation process happening in their client company. This kind of innovation often happens through personnel contacts or through software custom-made to the client company. (den Hertog 2010, 15.)

Paradigmatic innovations is the rarest and most complex of the patterns. This pattern requires completely new technology and that the technology has profound effect in actors in the value chain. Introduction of smartphones is an excellent example of paradigmatic innovation. (den Hertog 2010, 16.)

2.3 Innovation models and funding of innovation

Following sub-chapters cover two topics. First sub-chapter studies two different innovation models which run counter to each other, open innovation and closed innovation. The second sub-chapter presents various ways a start up company can get capital to fund the development of its innovation.

2.3.1 Open vs closed innovation

In his 2003 book, *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Henry Chesbrough calls the “old way” of innovating closed innovation. This way of thinking highlights the self-reliance of a company. “It is a view that says successful innovation requires control”. Innovation is done in-house because that is the only way to make sure that quality is up to par. Chesbrough provides six rules of closed innovation:

1. Get the smartest people in the field to work for you.
2. To profit from new innovations, you must research and develop them yourself.
3. If we invent it first, we will get to the market first.
4. First firm on the market wins.
5. By leading the competition in R&D investments, we will come up with the best ideas and will also come to lead the markets.
6. We should make sure that we are the only ones who should profits from our intellectual property rights.

The logic behind closed innovation is that by investing in innovation and R&D, a company would inevitably create technological breakthroughs which would allow them to bring new types of products and services to the markets, or give access to new markets altogether. This would lead to increase in sales and profits which in turn would allow the company to invest more in R&D and innovation activities. Once a company makes a significant technological breakthrough, they would immediately apply for a patent preventing others from benefitting from their intellectual property rights. (Chesbrough 2003, 20.)

In the figure below, the closed innovation model is presented as the “boundary of the firm”, where ideas flow within the firm and feasible ideas are moved through the research process into development and finally into markets. This model aims to eliminate “false positives”, ideas which may appear interesting or have profit potential in the beginning, but which, in the end, do not have what it takes to survive the screening process.

(Chesbrough 2003, 22.)

The reasons for the shift from closed innovation model, a model which worked extremely well in the 19th and 20th century, to open innovation model were multifaceted but one of the top reasons was declining job security. Earlier, people often worked for one employer for their whole working careers, which made it easy for the employer to keep knowledge and ideas within a company. Also, the increase in education meant that there were more trained people around to socialize and network with each other and ideas and knowledge started to flow to outside of the companies also.

People with knowledge and ideas started to realize their own value and the outside options they had. If a company would not provide the funding needed to commercialize the discoveries, the scientists and engineers who made them could just as easily start their own start-up business, which could pursue the commercialization of a product or service with the help of outside funding.

It must be added that the failure rate of start ups was, and still is great, but those start ups who became successful achieved an initial public offering or were bought of at a good price. It is also noteworthy that successful start ups often would not reinvest into those fundamental discoveries which made them successful. Instead, start ups would seek technologies from external sources to fill their gap in knowledge rather than to fill that gap within the company. (Chesbrough 2003, 22-24.)

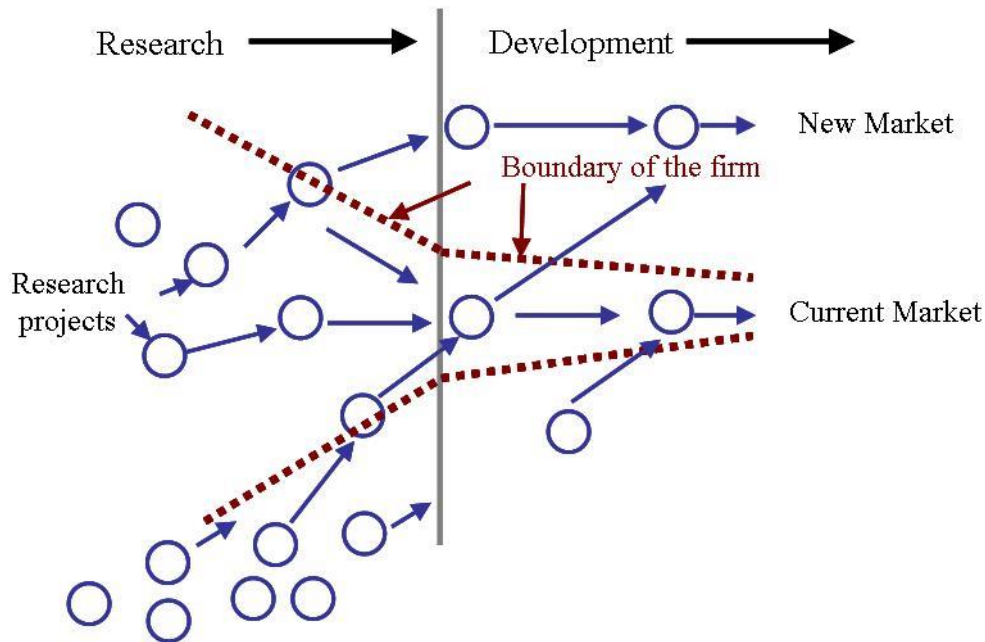


Figure 1. Open and Closed Innovation by Henry Chesbrough (Blog.econocom.com. 2018.)

Open innovation model, on the other hand, asserts that companies should cooperate with other firms and gather ideas and resources also from external sources for new product and service development. (Tidd 2014, 1.)

The concept of open innovation originates from Henry Chesbrough, who has written several books on the subject. Open innovation model can be seen as an expansion of the closed innovation model in the sense that it still allows and encourages companies to develop their own ideas into viable products, but it also emphasizes the benefits which a business can reap if and when they open up also to external sources of ideas. In contrast to closed innovation, open innovation starts from the assertion that knowledge and information is plentiful, as opposed the closed innovation model where knowledge is scarce and to be guarded. (Chesbrough 2003, 26.)

The principles of open innovation contrast those of closed innovation. As presented by Chesbrough, they are:

1. Not all of the smart people work in the company. They can also be found outside of it.
2. To profit from R&D, external sources can be just as valuable as internal R&D in value creation.
3. A company does not have to research a technology to profit from it.
4. Developing a strong business model is more important than getting to a market first.
5. Those who will make the best use of both external and internal ideas will win.

6. A company can make profit from their intellectual property when they allow others to use it, and a company can also make profit with IP of others.

From financial perspective, the access to external R&D can reduce costs and provide monetary resources to be used elsewhere. Developing a stronger business model makes it easier for a company to “capture” value rather than to create it. Value of intellectual property rights can vary and are often dependent on other factors as well, for example, brand, logistics and production network and other complementary products and services. (Tidd 2014, 9.)

Chesbrough also points out that the open innovation model thrives with high mobility of labour, close cooperation and communication with sources of ideas and skilled people, like universities and when venture capital is easily accessible. The factors mentioned above are also those which have given rise to numerous start up companies.

Open innovation has also been criticized from its overly simplistic approach, Paul Trott and Dap Hartmann have argued that there is a “false dichotomy” between open and closed models and that the models should be thought of as a continuum rather than a divide. Also, a study done on over a thousand German manufacturing and service firms discovered that “returns from open innovation are greatest when firms maintain their internal research capacity, employ a dedicated incentive system for innovation and advocate strong cross-functional collaboration” (Tidd 2014, 7-8.)

2.3.2 Funding of innovation activities

Just like for getting help for non-financial issues, start ups usually need outside funding to reach their goals. Luckily, there is plenty of avenues to choose from, many of them being the same organizations which offer help in all issues relating to start up companies. This subchapter talks about how and where start ups get funding to innovate.

After its formation on January 2018 Business Finland is the single largest publicly funded organization offering both financial and non-financial help to start ups and other SMEs. Though the main aim of funding they offer is to help start ups to globalise their business, they still offer funding for other innovation related activities as well. Tempo funding service, for example, is for testing the functionality of a business concept. Innovation vouchers, so start ups can buy outside knowledge and skills if they need it. This can mean anything from research from universities, completing demos and prototypes to getting legal help with intellectual property rights. There are different condition which have to be met

before being eligible for most of the services offered, such as being a small company and less than 5 years old. (Business Finland 2018.)

Crowdfunding is funding from a large number of investors each of who provide small amount of money. This form of capital raising is often used to fund the development of indie video games and other digital programs and services. (Investopedia 2018.)

Within European Union, there are a lot of programs and agencies offering funding in the EU to help start ups and SMEs to come up with new innovative products, services business models etc. Two of the largest EU financiers of innovation activities are program called Horizon 2020 and European Structural and Investment Funds (ESIF 2017.)

Horizon 2020, for example, is an EU funded program which start in 2014 and is going to run until 2020. With almost EUR 80 billion of funding, it is the biggest EU innovation program ever. It is aimed at SMEs with the goal to ensure that European businesses maintain industrial leadership nanotechnologies, advanced materials, advanced manufacturing and processing, biotechnology, information and communication technologies and space technologies. The funding is provided both directly and indirectly. (Horizon 2020 2018.)

Business angels/investors are private parties who invest in companies. For example, the Finnish Business Angels Network (FiBAN) together with Finnish Venture Capital Association publishes annual action report. In 2016 business angels invested about 53 million euros into 324 start up companies. (FiBAN 2018.)

Other ways to finance innovation include for example, personal loans and savings and public grants. There is also several publicly funded agencies, such as Finnvera, who act as guarantors for loans.

3 Research methods

This chapter presents and explains how the study was conducted. It will also analyse the results gained from the questionnaire. First, the research methodology used will be presented, this contains information about the objective of this research and the methods on how this topic is researched. Secondly, the validity and reliability of the study is discussed and how it affects the results. Thirdly, this chapter talks about the order of how the study was conducted.

3.1.1 Research methodology

The goal of this thesis is to study how service innovations are managed in Helsinki based start ups who specialize in smartphone applications. The objective is to find answers to the following questions: why do start ups innovate? What kind of models they use to manage their service innovations and have they received any help, financial or non-financial, in running their business.

The data is gathered through an online questionnaire which is then compared to theoretical framework, which is compiled from literary and online sources.

The figure below illustrates the research methods and their relation to the research questions.

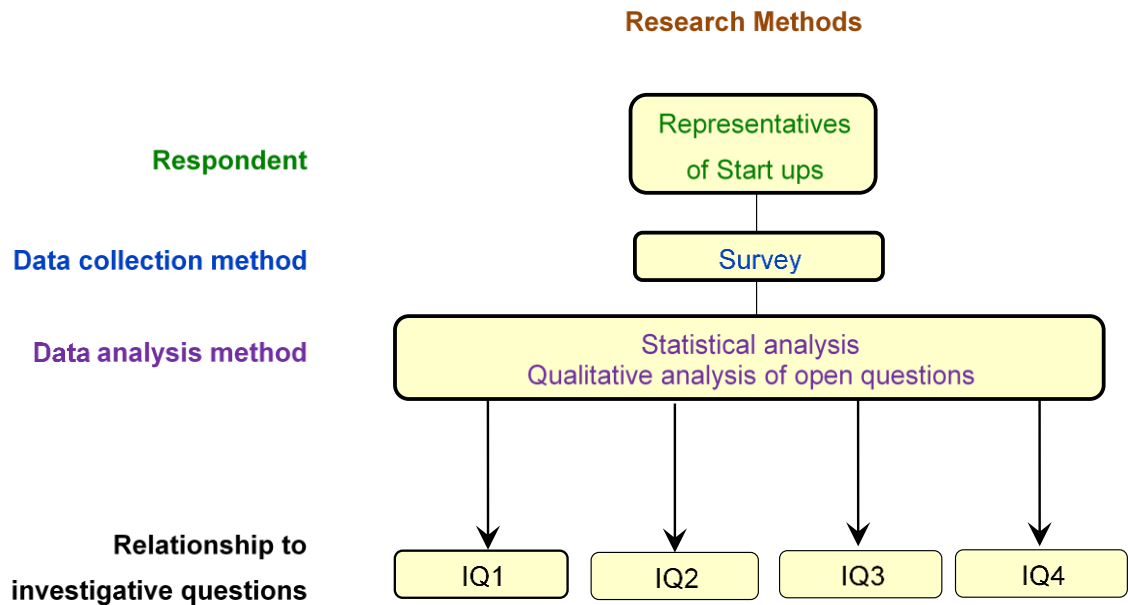


Figure 2. Research methods.

The planned methods for data analysis were statistical analysis and qualitative analysis for open ended questions. Because of the low response rate, statistical analysis cannot be made. Instead, the mixed method research is used. Mixed method can be summarised as follows:

“Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches.”

(Denzin, K. & Lincoln, Y 2011, 285.)

The questionnaire was sent only in English.

The survey was compiled in webropol and was sent to 45 eligible start up companies in Helsinki region (Helsinki, Espoo and Vantaa). Of those 45, only 2 answers was received. It must be added that further 18 people did open the questionnaire but failed to give their answer.

3.1.2 Reliability and validity

The questionnaire was intentionally kept as short as possible as not to “scare” away potential respondents. Questions themselves were easy to understand. Because the survey was sent in English only, there is a possibility of misunderstanding of the questions. Although the author believes that to be nearly non-existent possibility.

Because of the very poor response rate, the validity of this research is likewise very poor. In other words, the findings in this thesis cannot be generalized to apply to other start up companies.

3.1.3 Results

The questionnaire is divided into two separate parts; Basic information and Innovation management. The basic information section asks background information about the respondents and the company they represent, why the business exists and what is the fundamental reason for innovation in the company. Innovation management section seeks information about innovation management in the start up company and what kind of financial and non-financial help the business has received if any.

4 Data analysis

As mentioned in previous chapter, only two businesses out of 45 replied to the questionnaire. Those companies were Pockethunt and Mesensei Oy. Over half of the companies to whom the survey was sent specialize in mobile games, and this author had the suspicion that the respondents would also be mainly from that area of business. This suspicion proved to be false.

For Pockethunt, the respondent was the Co-founder of the business, with 10 years of expertise in the industry and 3 work years in the company. According to their answers, the business has between 5 and 9 employees and their field of business is creating applications which help in recruiting.

For Mesensei Oy, the respondent was their Co-founder and CEO, who has 20 years of work experience in the field of business, and also 3 years with the current start up company. As with Pockethunt, Mesensei also has between 5 and 9 employees and they focus on making business applications.

4.1.1 Goal of the business & reason for innovation

After the basic questions, it was surveyed whether the business seeks to answer to existing demand or if their aim is to create a need by their service offering.

For Pockethunt, their aim is to create demand to their recruitment application.

On the other hand, Mesensei already has customers and they are trying to answer existing demand.

The next question gives answer to the first investigative question, what is the underlying reason for innovation in the company? Respondents could choose multiple choices and give an open ended answer if they wanted.

Pockethunts answer was that their reason for innovation is to offer services which answer to customers needs. This is in line with their previous answer.

Mesensei chose all of the given options, larger market share, cost reductions, to offer services which answer to customers needs and to increase productivity.

With hindsight, the author points out that the question should have been made in different way. The better way would have been to ask the respondents to rank the answers from most important to least important.

Seventh question of the survey asks where companies get their funding for their innovation activities. The options are public or private investment, combination of both or from some other source.

Pockethunts innovation activities are funded by private investors. Mesensei innovation activities on the other hand are funded by both public and private investors.

4.1.2 Open and closed innovation

Questions from eight to eleven focus on how, if at all, start ups cooperate with third parties in their innovation endeavours.

Question eight asks whether the company cooperates with other parties to do R&D, with question nine delving deeper and seeking to find which those other parties might be; Universities, Other businesses or start ups, Consulting agencies or fourthly, some other parties.

Questions ten and eleven concentrate on the fourth investigative question and question ten asks if start ups have received business advice from organizations who specialize in starts ups and SMEs, and if they have received business advice, what kind and from who. Question eleven asks whether the company has participated in innovation programmes provided and funded by the Finnish government or the EU, and if they have, what kind of program or programmes.

Pockethunt answered that they do cooperate with consulting agencies to do their R&D, and that they have not received any business related advice from governmental or non-governmental organizations, nor have they participated in any publicly funded innovation programmes.

Mesensei also collaborates with third parties, but unlike Pockethunt, they have much wider range of entities they cooperate with in their innovation. Mesensei chose all three given options, universities, other businesses and start ups and consulting agencies. They said that they are in touch with business accelerators and incubators. In their answer to the tenth question, Mesensei said that they continuously receive business advice from

aforementioned business accelerators and incubators, and also from investors and mentors. Mesensei emphasized that “Constant dialogue is vital for innovation and staying relevant.” In addition, Mesensei has also received innovaatioaseteli from TEKES and has participated in Tempo programme which is also provided by TEKES.

Question twelve, which is also the final question of the survey, presents the respondents with different statements and asks how much, or little, they agree with them. The statements are based on the characteristics of organizations who use either open or closed innovation model.

Table 1. Characteristics of open and closed organizations

	Pockethunt	Mesensei
1. Not all of the smart people work in the company. They can also be found outside of it.	Strongly agree	Strongly agree
2. To profit from new innovations, you must research and develop them yourself.	Neither agree or disagree	Strongly Disagree
3. A company does not have to research a technology to profit from it.	Agree	Strongly agree
4. Developing a strong business model is more important than getting to a market first.	Disagree	Disagree
5. By leading the competition in R&D investments, we will come up with the best ideas and will also come to lead the markets.	Disagree	Disagree
6. We should make sure that we are the only ones who should profits from our intellectual property rights.	Neither agree or disagree	Disagree

Both respondents answered to the first claim that they strongly agree that smart people can be found outside of their company. This is in-line with open innovation model.

On the second claim, there was some difference with responses. Pockethunt said that they neither agree nor disagree with the statement that to profit from innovations, companies should research and develop them themselves. Mesensei strongly disagreed with the statement above.

Both respondents agreed with the assertion that company does not have to research a technology to reap profits from it. Mesensei's agreement was of the strong kind.

Mutual disagreement was found on the fourth and fifth statement, fourth statement being that developing a strong business model is more important than getting to markets first. Fifth proposition stated that by leading the competition in R&D investments, companies will come up with the best ideas and will also come to lead the markets.

The sixth statement was about intellectual property rights and asked if companies should make sure that they are the only ones who profit from their IPRs, to which Mesensei said that they disagree with and Pockethunt was more on the fence without giving a straight yes or no answer.

All in all, both respondents seem lean fairly heavily on the side of open innovation model, with Pockethunt being slightly more conservative on some issues. The answers received did not surprise the author, on the contrary this author suspected that start ups would be strongly for open innovation model.

The only surprising result was that both respondents disagreed that developing a strong business model is more important than getting to a market first. This runs counter with the tenets of open innovation. A strong business model is one of the few things where small companies can compete with bigger ones who already have established R&D departments and such. This could be due to the wording of the statement. If the claim would have been worded differently, for example, "First firm on the market wins." the answer could easily have been different.

5 Findings and conclusion

This final chapter of the thesis provides the reader with conclusion, suggestions for companies, ideas for future research and finally, the authors self-evaluation about the writing process.

5.1 Conclusion

This thesis sought to find an answer to the question, how do start-up companies creating mobile apps manage service innovation, with the four investigative questions being as follows:

IQ 1. What is the underlying reason for innovation in start-ups?

IQ 2. What tools and models do start-ups use to manage service innovation?

IQ 3. Where do start-ups get the funding for innovation?

IQ 4. Where do start-ups get non-financial support?

The chosen research method was to conduct a survey with the relevant population and then to compare the answer gained to the theoretical framework formed from suitable literature and online sources.

As stated before, the answers received cannot be used as a general guide on start up companies due to the low response rate. Nonetheless, there was small divide between both respondent on cooperation with third parties, with one respondent relying on them only in some issues and the other one stating that cooperation and exchange of new information and ideas is vital to the success of a start up. This is fairly well in-line with the fact that Helsinki has especially well connected start up ecosystem, which connects start up entrepreneurs, research institutions and potential funders. As Aaltonen mentions, even though innovation is usually found it places with high individuality, and while in Finland this is certainly true, but it is also true that there is also a long tradition of collective action in Finland, so the cultural background creates a fertile land to start ups to grow and innovate.

While the responses gained definitely reveals that start ups are more on the open side of the open and closed spectrum of innovation, it should be pointed out that according the research, start ups have the best success when they combine elements from both innovation models.

In short, the answer to the question how do start up manage their service innovation, the answer based on the survey is, generally openly and in cooperation with other parties.

5.2 Suggestions

Because the results gained from the questionnaire are not reliable and more importantly applicable to start ups in general, it is very hard to give any helpful or meaningful suggestions based on the research.

Nonetheless, some insight can be drawn from the theoretical literature, which states that new and small businesses should be open to external stimuli regarding ideas, information and knowledge sources and funding. It is delightful to see that this is the case with Helsinki-based Finnish start up companies and entrepreneurs being the top of the world when it comes to interconnectedness. This is also a big factor when you are trying to increase the amount of foreign funding.

5.3 Future Research

Future research would be more valuable if it would focus on a more specified and narrow field. In hindsight, the scope of this thesis was too broad and as a result, it became bit of a lackluster. One topic which would interest me would be to compare start ups which participate in programs designed to help start up companies to start ups who don't take part in said programmes and see if there is any differences in how the two groups perform. This comparative analysis would give some information and value to start ups themselves and also to those entities who organize the programmes.

5.4 Self-evaluation

This thesis topic was hastily put together once I found out that my original plan to do a commissioned thesis would not happen. The topic itself is interesting and if I would have gotten more answers, the overall thesis would be a lot better, even with its obvious drawback, such as being too broad a topic.

The theoretical framework is a mixed bag in terms of quality, most of it being decent. The open and closed innovation part however, is a well-written chapter in my opinion, partly because of the quality of original literature.

The questionnaire itself had the potential to be better than it turned out to be but the absence of answers made it seem like it lacked any quality. Like stated above, high(er) number of answers would have given the option to do actual comparisons.

If there is one thing I can say that I learned from this, it's to keep your research focus sharp and narrow. It is a lot easier to find more information about a specific subject than to cram in tons of differing information under a one larger topic.

Also, the writing itself wasn't as bad as I thought once I got started. For me, the getting started part was the much harder part.

References

Aaltonen. A. 2016. Factors Shaping Entrepreneurial Ecosystems and the Rise of Entrepreneurship. URL: <https://www.demoshelsinki.fi/wp-content/uploads/2016/05/Aaltonen-Factors-shaping-entrepreneurial-ecosystems.pdf> Accessed: 19 April 2018.

Business Dictionary. 2017a. Service. URL: <http://www.businessdictionary.com/definition/services.html> Accessed: 4 February 2017.

Business Dictionary. 2017b. Innovation. URL: <http://www.businessdictionary.com/definition/innovation.html> Accessed: 4 February 2017.

Business Dictionary. 2017c. Management. URL: <http://www.businessdictionary.com/definition/management.html> Accessed: 4 February 2017.

Business Finland. 2018. Information about innovation funding. URL: <https://www.businessfinland.fi/en/> Accessed: 7 March 2018.

Business Finland. 2018. Information about Start ups in Helsinki. URL: https://www.businessfinland.fi/en/whats-new/news/2018/helsinki-startup-scene-tops-in-local-connectedness/?ref=rns_tw Accessed: 10 October 2018.

Chesbrough. H.W. 2003. Open Innovation: The New Imperative for Creating and Profiting from Technology. Brighton. Harvard business school press.

Dictionary.com 2017. Definition of app. URL: <http://www.dictionary.com/browse/app> Accessed: 9 March 2017.

Den Hertog, Pim. 2010. Managing service innovation: firm-level dynamic capabilities and policy options. URL: https://pure.uva.nl/ws/files/1485795/80520_05.pdf Accessed: 24 January 2018.

Denzin, K. & Lincoln, Y. 2011. The SAGE Handbook of Qualitative Research, vol 4. Thousand Oaks. SAGE Publishing.

Elinkeinoelämän keskusliitto. 2017. Perustietoja Suomen taloudesta. URL: <https://ek.fi/mita-teemme/talous/perustietoja-suomen-taloudesta/3998-2/> Accessed: 20 February 2017.

ELY-keskus. 2017. Information about the services they offer. URL: <https://www.ely-keskus.fi/en/web/ely-en/> Accessed: 16 December 2017.

Enterprise Finland. 2017. Information about their services. URL: <https://yrittysuomi.fi/en/home> Accessed: 16 December 2017.

European Commission. 2018. Horizon 2020. URL: <http://ec.europa.eu/programmes/horizon2020> Accessed: 11 March 2018.

European Start up Monitor. 2015. Information about European start ups. URL: https://europeanstartupmonitor.com/fileadmin/presse/download/esm_2015.pdf Accessed: 16 October 2018.

FiBAN. 2018. Business angels. URL: <https://www.fiban.org/> Accessed: 11 March 18.

Financial Times. 2018. Information about European start up markets. URL: <https://www.ft.com/content/c8973158-3123-11e8-b5bf-23cb17fd1498> Accessed: 15 October 2018.

Graham, Paul. 2012. Want to start a startup. URL: <http://paulgraham.com/growth.html> Accessed: 13 November 2017.

Entrepreneurship review. 2010. Entrepreneurship from technology-push vs market pull. URL: <http://miter.mit.edu/articleentrepreneurship-technology-push-vs-market-pull/> Accessed: 18 May 2018.

Neil Blumenthal. 2013. Definition of start-up. URL: <http://www.forbes.com/sites/natalierobehmed/2013/12/16/what-is-a-startup/#49920b944c63> Accessed: 20 February 2017.

Investopedia. 2018. Crowdfunding. URL: <https://www.investopedia.com/terms/c/crowdfunding.asp> Accessed: 8 March 2018.

Investopedia. 2017. Start up. URL: <http://www.investopedia.com/terms/s/startup.asp> Accessed: 4 February 2017.

Merriam-Webster online dictionary. 2017. Innovation. URL: <https://www.merriam-webster.com/dictionary/innovation> Accessed: 4 February 2017.

OECD. 2017. Finland country review on innovation policy. URL: <http://www.oecd.org/finland/oecd-reviews-of-innovation-policy-finland-2017-9789264276369-en.htm> Accessed: 16 December 2017.

Oxford review. 2018. Definition of open innovation. URL: <https://www.oxford-review.com/oxford-review-encyclopaedia-terms/encyclopaedia-open-innovation-definition-explanation/> Accessed: 10 October 2018.

Oxford dictionary. 2018. Definition of start-up. URL: <https://en.oxforddictionaries.com/definition/start-up> Accessed: 18 May 2018.

Sanoma. 2018. Mobiilisovellukset. URL: <https://sanoma.fi/tietoa-meista/tietosuoja/tuotekohtaiset-tarkennukset/mobiilisovellukset/> Accessed: 15 May 2018.

Statista.com. 2018. Worldwide mobile app revenues in 2015, 2016 and 2020 (in billion U.S. dollars) URL: <https://www.statista.com/statistics/269025/worldwide-mobile-app-revenue-forecast/> Accessed: 14 May 2018.

Tekes. 2017. Information about services. URL: <https://www.tekes.fi/en/> Accessed: 16 December 2017.

Tidd, J. 2014. Open Innovation Research, Management and Practice. Series on technology management, vol. 23. London: Imperial college press.

Tidd, J. and Hull, F. 2003. Service innovation. Organizational responses to technological opportunities & market imperatives. Series on technology management, vol. 9. London: Imperial college press.

Appendices

Appendix 1. Questionnaire

Innovation management in start ups

Basic information

1. Company name? If you want to remain anonymous, leave this blank.

2. Respondent background *

Age

Gender

Position in the company

Work years in the industry

Work years in the company

3. Number of employees? *

> 5

5-9

10-24

25-50

< 50

4. What type of mobile apps does your business specialise in? *

Games

Business

Education

Lifestyle

Entertainment

Other

5. Does your business answer to existing demand or do you aim to create a need by your service offering?

Answer to existing demand

Create demand

6. Reason for innovation in your company? You can choose multiple choices. *

Larger market share

Cost reductions

To offer services which answer to customer needs

Increased productivity

Other reason. What?

Innovation management.

7. Where does your company get funding for its innovation activities? *

- Public investment
- Private investment
- Combination of both
- Other. What?

8. Does your company cooperate with other parties to do R&D? *

- Yes
- No

9. If Yes, which other parties? You can choose multiple choices.

- Universities
- Other businesses, other startups for example
- Consulting agencies
- Other

10. Have you received business advice from organizations who specialise in start ups or SMEs? If yes, what kind of advice?

11. Has your business participated in innovation programmes funded by Finnish government or the EU? If yes, what kind of program(mes)?

12. Do you agree with the following statements? *

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
1. Not all of the smart people work in the company. They can also be found outside of it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. To profit from new innovations, you must research and develop them yourself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. A company does not have to research a technology to profit from it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Developing a strong business model is more important than getting to a market first.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. By leading the competition in R&D investments, we will come up with the best ideas and will also come to lead the markets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. We should make sure that we are the only ones who should profits from our intellectual property rights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thanks for answering!