LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
School of Business and Management
Innovation and Technology Management

Joonatan Naukkarinen

Business Ecosystem Change in Financial Services – Case Study

1st Examiner and Supervisor: Professor Marko Torkkeli
2nd Examiner: Professor Olli-Pekka Hilmola

10. November 2015
Kouvola

ABSTRACT

Author: Joonatan Naukkarinen

Title: Business Ecosystem Change in Financial Services – Case Study

School: LUT School of Business and Management

Master's Program: Innovation and Technology Management

Year: 2015

Master's Thesis: 102 pages, 16 figures, 1 table and 2 attachments.

Examiners: Professor Marko Torkkeli
Professor Olli-Pekka Hilmola

Keywords: Financial Services, FinTech, Financial Innovation, Innovation Management, Disruptive Technologies, Business Ecosystem, Financial Service Ecosystem

The thesis explores how the business ecosystem of financial services has changed and what its drivers of change are. Existing literature in the field of financial industry is concerned with financial innovations and their features, determinants and factors, but also with how to organize innovation activities such as open innovation principles. Thus, there is a clear need for understanding changes in financial service ecosystem. First, the comprehensive theory framework is conducted in order to serve the reader's necessary understanding of basic theoretical concepts that are related to ecosystem changes. Second, the research is carried out by using qualitative research methods; the data is collected by interviewing 11 experts from the field of financial services in Finland. According to the results of this thesis, the most significant changes in the financial service ecosystem are the new market players. They have increased competition, created new courses of action, set new requirements for financial services, and first and foremost, they have shifted customers into the heart of the whole ecosystem. These new market players have a willingness to cooperate with external partners, which means a shift towards the world of open innovation. In addition, the economic environment has changed which has resulted in tighter regulation for incumbents making them even unyielding. Technology change, together with digitalization, has lead new financial innovations and new digital service channels, which have challenged the traditional business models in the financial industry. They have improved transparency, openness and efficiency, but also lead to the fragmentation of financial services. Thus, customers search for financial services from different sources and different service providers, and finally combine them into a coherent whole, which meets their own needs. The change of customers' behavior and social environment has enabled and boosted these changes in the financial ecosystem. All in all, the change of the financial ecosystem is not a result of one or a few change forces, but instead it is a combination of many different factors.

TIIVISTELMÄ

Tekijä:	Joonatan Naukkarinen
Työn nimi:	Liiketoimintaekosysteemin muutos finanssipalveluissa – Case –tutkimus
Tiedekunta:	LUT School of Business and Management
Maisteriohjelma:	Innovaatio- ja teknologiajohtaminen
Vuosi:	2015
Diplomityö:	102 sivua, 16 kuvaa, 1 taulukko ja 2 liitettä.
Tarkastajat:	Professori Marko Torkkeli Professori Olli-Pekko Hilmola
Hakusanat:	finanssipalvelut, FinTech, finanssi-innovaatio, innovaatiojohtaminen, diruptiiviset teknologiat, liiketoimintaekosysteemi, finanssipalveluekosysteemi

Työn tavoitteena on tutkia, kuinka finanssipalveluiden ekosysteemi on muuttunut sekä tutkia, mitä ovat finanssipalveluekosysteemin muutosajurit. Aikaisempi tutkimus finanssialalta on keskittynyt finanssi-innovaatioihin ja niiden ominaispiirteisiin, tekijöihin ja vaikuttimiin, mutta myös kysymyksiin kuinka organisoida innovaatiotoimintoja kuten avoimen innovaation periaatteita. Voidaankin todeta, että on selvä tarve tutkimukselle ymmärtää finanssipalveluiden ekosysteemin muutoksia. Aluksi työssä rakennetaan kattava teoriaviitekehys parantamaan lukijan ymmärrystä peruskonsepteista liittyen ekosysteemimuutokseen. Tämän jälkeen tutkimus on toteutettu käyttäen laadullisen tutkimuksen menetelmiä. Tutkimusaineisto on kerätty haastattelemalla 11 Suomessa toimivaa finanssipalveluiden ammattilaista. Tulosten mukaan merkittävin muutos finanssipalveluekosysteemissä ovat uudet markkinatulokkaat. He ovat lisänneet kilpailua, luoneet uusia toimintamalleja, asettaneet uusia vaatimuksia finanssipalveluille, ja ennen kaikkea nostaneet asiakkaat ekosysteemin ytimeen. Uudet markkinatulokkaat ovat myös halukkaita tekemään yhteistyötä ulkoisten toimijoiden kanssa, mikä tarkoittaa siirtymistä kohti avointa innovointia. Lisäksi taloudellinen ympäristö on muuttunut, mistä seurauksena on ollut regulaation kiristyminen ja lisääntyminen perinteisille toimijoille. Teknologian kehittyminen yhdessä digitalisaation kanssa on johtanut uusiin finanssi-innovaatioihin ja digitaalisiin palvelukanaviin, mitkä ovat haastaneet perinteiset liiketoimintamallit, parantaneet finanssipalveluiden läpinäkyvyyttä, avoimuutta ja tehokkuutta, mutta johtaneet myös palveluiden fragmentoitumiseen. Kuluttajat etsivät finanssipalveluita eri lähteistä ja palvelutarjoajilta muodostaen palvelukokonaisuuksia, jotka täyttävät heidän tarpeensa. Asiakaskäyttäytymisen ja sosiaalisen ympäristön muutokset ovat tukeneet ja vahvistaneet näitä muutoksia. Muutokset ekosysteemissä eivät ole tulos yhdestä tai muutamasta tekijästä, vaan sen sijaan muutos on yhdistelmä monia eri tekijöitä.

ACKNOWLEDGEMENTS

In the fall of 2010 I began to study industrial engineering and management at LUT. Time has gone by quickly - thus it is difficult to realize, five years later, that it is finally time to finish this project and say goodbye to student life. During this time period a lot of memorable things have happened. Especially my exchange studies in Lund, Sweden were something that I'm never going to forget. I want to thank all my friends in Lappeenranta for these five unforgettable years.

First, I want to thank Professor Marko Torkkeli for making this Master's thesis possible, as well as for all the help, guidance and support I have received for this project. I also want to thank the all of the staff of LUT Kouvola, Professor Olli-Pekka Hilmola, Coordinator Sanna Tomperi, and researchers Melina Maunula and Ville Henttu. You all have supported me and given me valuable guidance and help.

Second, I want warmly thank all interviewees who were willing to share their expertise from the financial service sector. Without your valuable views, this thesis could not be possible!

And third, I want to thank my aunt Mari and her husband David for proofreading and giving valuable comments about this thesis.

Last but not least, I want to thank my family who has supported me during my studies in every situation.

Kouvola, November 10, 2015

Joonatan Naukkarinen

TABLE OF CONTENTS

1 INTRODUCTION 5
1.1 Scope and Motivation 5
1.2 Research Questions, Objectives and Limitations 8
1.3 Structure of the Thesis 10
2 LITERATURE REVIEW 13
2.1 Definition of Innovation 13
2.2 Innovation Paradigms 16
2.3 Innovation Management 20
2.4 Innovation in Financial Services 23
2.5 Disruptive Technologies 27
2.6 Business Ecosystems 34
3 METHODOLOGY 40
3.1 Structure of Interview 41
3.2 Data Collecting 43
3.3 Data Analysis 45
4 RESEARCH FINDINGS 46
4.1 Financial Innovation and Innovation Activity 46
4.2 Technology Change and Digitalization 53
4.3 Financial Ecosystem 60
4.4 Research Model 67
5 DISCUSSION 75
5.1 Summary of the Research Findings 75
5.2 Conclusions 82
5.3 Limitations of the Research Findings and Further Research 85

REFERENCES 87

APPENDICES

Appendix 1: The Interview Framework

Appendix 2: Haastattelurunko

LIST OF FIGURES

Figure 1: Structure of the Study...……………………….……………………......11
Figure 2: Four Dimensions of Innovation……….……………...……………….15
Figure 3: The Model of Development Funnel……………..…..…………………….17
Figure 4: The Model of Open Innovation………………....……………………...18
Figure 5: The Evolution of Innovation………………….………………….......19
Figure 6: The Model of Innovation Management…………..…………………....21
Figure 7: The Technology S-Curve……..……………………………………….29
Figure 8: Assessment of Disruptive Technologies……..………………….……....30
Figure 9: The Progress of Disruptive Innovation……..……..…………….……..31
Figure 10: Step-Wise Technological Change.…………………….…..…..……...32
Figure 11: Business Ecosystem………......……………….……….……….……35
Figure 12: The Business Field of FinTech Startups………………...…....…...38
Figure 13: Theoretical Model of Ecosystem Change…..………………………...68
Figure 14: Change Factors of the Financial Ecosystem…………………......…69
Figure 15: Change of the Financial Ecosystem……….…………………………73
Figure 16: Future Financial Ecosystem……..…………………...……………74

LIST OF TABLES

Table 1: Interviews...44

ABBREVIATIONS

API	*Application programming interface*
ATM	*Automated teller machine*
BASEL3	*Third Basel Accord (the global regulatory standard on bank capital adequacy, stress testing and market liquidity risk)*
CCP	*Central counterparty clearing house*
EU-28	*The 28 member countries of EU*
FINTECH	*Technology integrated in finance*
ICT	*Information and communication technology*
OI2	*Open innovation 2.0*
POS	*Point of sale*
R&D	*Research and development*
SME	*Small and medium enterprises*
TARGET2SECURITIES	*A platform for the settlement of securities*

1 INTRODUCTION

1.1 Scope and Motivation

Our society has moved from industry to services through a number of innovations (Fasnacht 2009). As a consequence, the service sector accounts for more than 73.6 % of the EU (EU-28) gross domestic product (Eurostat 2015a). Every single business needs a bank for their financial transactions and the banking sector supports investments in other productive sectors (Arnaboldi and Claeys 2014). Thus, financial services represent a considerable share of the EU economy (EU-28), accounting for almost 5.5% of the gross value added (Eurostat 2015b). The financial sector has a significant impact on the overall economy, playing a significant role in our society and is therefore the source of wellbeing for the entire economy (Mention and Torkkeli 2014a; Mention et al. 2014; Arnaboldi and Claeys 2014; Fasnacht 2009). All this shows the importance of the financial sector, but also the fact that services have become the largest sector in most industrialized economies, thus offering an important contribution to economic growth and employment (Fasnacht 2009).

The financial sector has changed significantly in the last 20 years due to multiple reasons like *"(de-, re-) regulation, the dominant role of information and communication technologies, shift to off balance sheet activities, service bundling, and changes in customer preferences*" (Mention et al. 2014; Mention and Torkkeli 2014b). There have also been many crises in the financial industry in the previous decades. In the early 80s, rising interest rates affected a debt crisis in the Latin American. In turn in the late 90s, large capital flows to emerging Asian economies affected a financial crisis. In 2001, an exponential growth in the values of equity markets caused the Dotcom crash, which in turn affected not only the financial industry, but also other industries as well (The Economist 2015a; The Guardian 2012). The most recent financial crises, the collapse of Lehman Brothers, the Euro crises, and the banking crises in countries such as Iceland, Ireland, Greece, and Cyprus, have affected the financial business ecosystem, resulting in a turbulent, extremely sensitive and constantly changing business environment (Santonen 2014;

Salampasis et al. 2014). In this kind of environment, speed, flexibility, reliance and efficiency have become vitally important factors for success and survival (Fasnacht 2009; Mention et al. 2014; Mention and Torkkeli 2014b). These behavioral changes, trends and environmental factors have challenged the whole financial ecosystem and have created a new set of rules in the global business and financial market. In addition, they have affected a tremendous loss of trust from financial, marketing and organizational perspectives. In order to overcome these consequences, a shift is required into the creation and popularization of new financial instruments, new financial technologies, and institutions and markets, which means the need of financial innovation in various forms and extents (Lerner and Tufano 2011; Salampasis 2014; Mention et al. 2014; Mention and Torkkeli 2014b; Sarma et al. 2013).

Financial innovations may have a vast effect on the whole society through diffusion and adoption mechanisms (Mention and Torkkeli 2012), and therefore it will be a major competitive battleground in future (Salampasis et al. 2014). A vivid example of the future importance of financial innovation comes from Singapore, where the Monetary Authority of Singapore will grant *225 million dollars* for the creation of a vibrant ecosystem for financial innovation (Monetary Authority of Singapore 2015). The new paradigm of financial innovation will derive from the effective collaboration and openness of different actors and the financial sector (Salampasis et al. 2014). This means that the financial service sector will be shifting towards an open innovation that is based on a trustful environment and win-win collaboration (Salampasis et al. 2014; Fashnacht 2009). Innovations are not always about high technology, but also about designing better working processes and creating new business models. But in the end, technology will be a key enabler for all this (Monetary Authority of Singapore 2015).

The digital revolution, internet related technologies, cloud computing and big data are the most recent factors that have challenged the traditional financial service industry (Santonen 2014; Yablonsky 2014). Technology will be fundamentally more and more transformative in financial services, and that’s the reason there has

arisen a new buzz word, “FinTech”. FinTech can be defined as financial technologies or the integration of finance and technology, which in other words, refers to the application of technology in the world of finance (Monetary Authority of Singapore 2015; Entrepreneurial Insights 2015). At the same time, universal banks have not reacted to these new possibilities which have arisen: a new competitive environment for new niche market players and non-financial players, including disruptive value brands, which use new technologies in order to offer innovative solutions to compete with the services that are traditionally offered by financial institutions (Monetary Authority of Singapore 2015; Deutsche Bank Research 2014; Santonen 2014). Non-banking players are entering the financial service markets in order to close the gap between the offerings of banks and the needs of customers (Vantomme and De Ruyck 2014; Rajander-Juusti 2015). They will disrupt the financial industry by cutting costs and improving the quality of financial services, by assessing risk in new ways, and by creating a more diverse and stable credit landscape (The Economist 2015b). The new market entrants operate across diverse consumer sectors, and they try to captivate consumer’s share of wallet, not only limited to banking, but also offering new services, from payments to wealth management and peer-to-peer lending, to crowdfunding (The Economist 2015b; Santonen, 2014). The rise of a mobile on-demand economy, including cheap storage, cheap computing, great analytics, changed regulatory environment and changes in customers behavior, has been one of the key enablers to get these new services embraced by customers (Aspen 2015). Customers value new digital service channels where services are available everywhere and at any time (Rajander-Juusti 2015). For instance, in the mobile finance services, traditional banks are at risk to lose customers, business and ultimately money to non-bank players (Vantomme and De Ruyck 2014). Often these new disruptive players are in a better position to create more innovative, low-cost business models with flexible product range and distribution channel mixes which give new market entrants an ability to unbalance the whole financial industry (Santonen 2014).

FinTech has affected almost all aspects of the financial industry and it has unlimited potential of financial innovation (Entrepreneurial Insights 2015). For instance, in

2014, these new FinTech firms have attracted *12 billion dollars of investment,* whereas it was just *4 billion dollars* the year before (The Economist 2015b). In addition, they are predicted to reach *19.7 billion dollars of investment* globally in 2015 (MarketResearch.com 2015). All this shows the fact that these new market entrants are growing rapidly and they are thus going to reshape and improve finance – *the digital revolution has arrived in the financial service sector* (The Economist 2015b; Accenture 2015). These new disruptive firms understand the fact that "*people need banking, not banks*" (Monetary Authority of Singapore 2015), and thus they want to change peoples' relationship to money (Aspan 2015). According to the McKinsey consultancy, new technology companies will drive down prices and erode lenders' profit margins, which could wipe out almost two-thirds of earnings of the banking sector on some financial products (Arnold 2015). The fact is that the entire financial system could be remade with these new market entrants (Aspan 2015). On the other hand, many of these new market players do not even want to become a bank, but instead they want to take a position between customers and banks, and skim the cream off the top (Arnold 2015). Of course, the traditional financial institutions will fight back by rethinking their business models, turning towards innovation and new technology solutions (Monetary Authority of Singapore 2015). "*Either banks fight for the customer relationship, or they learn to live without it and become a lean provider of white-labelled balance sheet capacity*" (Arnold 2015).

1.2 Research Questions, Objectives and Limitations

The financial service sector has changed and is still changing due to various environmental factors, such as financial crisis and changes in customers' behavior, but first and foremost due to digitalization enabled by technological change and innovations. These changes have allowed new disruptive non-financial players to enter into the financial service sector and challenge the whole financial industry. Existing literature is concerned with financial innovations, features, determinants and their factors. The change of the financial service ecosystem as a phenomenon, and especially FinTech in all aspects, are so new that there is no existing data available. Thus, there is a clear need for understanding how these changes in the

business environment and new disruptive market entrants have affected the business ecosystem of the financial service sector, and especially what the main change drivers are.

The aim of thesis is to fill the research gap mentioned above by conducting extensive literature review in the field of financial innovations, disruptive technologies and business ecosystems in order to develop a comprehensive research framework for understanding the change mechanisms in business ecosystems. The research concerning changes in the business ecosystem of the financial service sector is conducted by collecting data from qualitative semi-structured interviews of financial experts. The objective is to build up a comprehensive research model and make valid conclusions about the changes in the financial business ecosystem, recognize the change drivers which affect this phenomenon, and provide the valuable views of experts in the field of financial industry in Finland. From these aims and objectives are derived two research questions which are listed below:

Question 1: How is the business ecosystem of the financial service sector changed?

Question 2: What are the main forces that affect changes in the financial business ecosystem?

The objective of first research question is to explore how the business ecosystem of the financial service sector has changed. This study aims to serve as a comprehensive research model which combines theoretical framework based on existing literature and data sourced from qualitative, semi-structured interviews in practical part of this thesis.

Due to this master's thesis' *limitations* regarding *the first research question,* there is no intention of modeling and naming all players of the financial ecosystem and their mutual roles and relationships. Nor will the boundaries of the business ecosystem of the financial service sector be explored here. Instead, the objective is

to simply give an overview of the financial ecosystem, but first and foremost, explore changes within it. That's because those aspects are not needed in order to analyze ecosystem change. In addition, the extent of master's thesis is limited. The research part of this thesis is limited to include only interviewees from Finland which means the results may not be fully utilized in another geographical area, although some of the interviewed organizations have functions abroad. In addition, the number of interviewees was limited due to limited resources.

The objective of second research question is to find out what are the main factors that affect change in financial business ecosystems. The aim is just to name and recognize different factors, not to evaluate them deeper, such as comparing their power and extent.

1.3 Structure of the Thesis

This master's thesis consists of five chapters including the introductory chapter. The structure of the research is presented in Figure 1. There are also illustrated inputs and outputs of every chapter. This study consists of two different parts: theory (chapter two) and empirical (chapters three and four). The fifth chapter is for summary and conclusions.

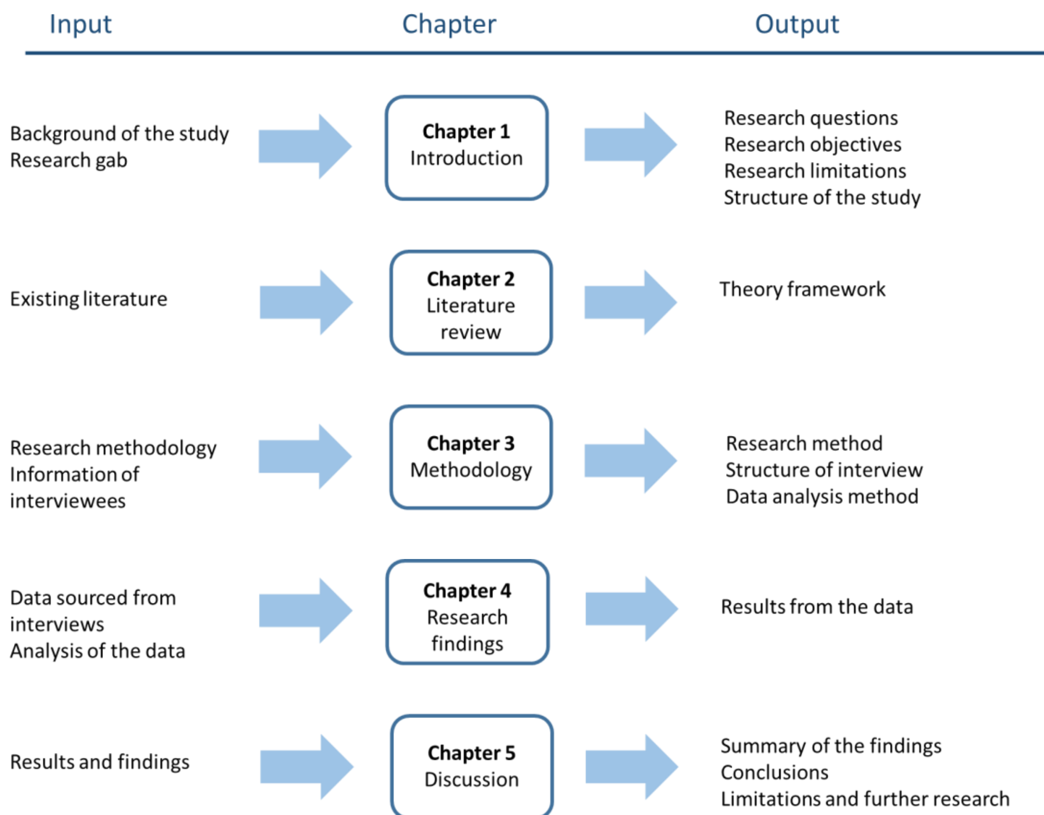

Figure 1. Structure of the Study.

The first chapter is the introduction of this master's thesis. In this chapter this study's background is described, with the current situation of the financial service sector in mind. In addition, this chapter shows the need for this research by pointing out the research gap, and then concluding with research questions, objectives and limitations. At the end of this chapter, the structure of the study is shown in order to help readers perceive the main content and the objective of this research.

The second chapter consists of a literature review, and thus a review of the theories used in this master's thesis. This chapter begins with an overview of basic innovation theories, also including aspects of innovation paradigms and innovation management. These theoretical parts are also viewed from the financial sector's point of view. Later in this chapter, theories in the field of disruptive technologies and business ecosystems especially in the terms of change are also reviewed. These two theory themes are adapted into the case of financial industry as well.

The third chapter presents the research methodology used in this master's thesis and the interviewed organizations. The objective of this chapter is to describe the research method used in this study, including the data collection methods (interviews in this case) and the analysis methods of gathered data. Finally, the content of interview is presented. The ultimate goal of this chapter is to assure the reader of the validity of this research.

The fourth chapter analyzes data sourced from expert interviews, concluding findings and results. The structure of this chapter follows the structure of the interview presented in the previous chapter. At the end of this chapter, the research model is shown.

The fifth chapter briefly summarizes the research findings, presenting conclusions that are derived from the findings of interview data and from the existing literature. At the end of this chapter, limitations of the research findings are presented and further research is recommended.

2 LITERATURE REVIEW

The literature review was conducted in order to find a valid theoretical framework for this study; to understand the change mechanisms of the business ecosystem from the financial service sector's point of view. The objective of this chapter is to collect all essential theories that are needed to build a comprehensive theory framework. This chapter consists of six sections which are briefly described below:

- The first section introduces the concept of innovation and its different aspects and types.
- In the second section, the aim is to provide an overview of different innovation paradigms, and thus how innovation activities are possible to organize.
- In the third section, the goal is to find out what the basic principles of innovation management are and define the different fields of the innovation process.
- The fourth section analyzes theories presented in the previous three sections from the financial service sector's point of view.
- The fifth section in turn deals with sustaining and disruptive technologies. These theories are applied to the case of the financial industry by presenting the story of a Chinese financial disruptor –Alibaba.
- In the sixth section, the aim is to define the concept of the business ecosystem and the different forces that can change it. At the conclusion of this section the business ecosystem of financial services is defined.

2.1 Definition of Innovation

"Most innovations fail. And companies that don't innovate die." (Chesbrough 2003)

"If managers understand the theories of innovation, they have the ability to create new growth businesses again and again." (Christensen et al. 2003)

When the definition of invention can be seen as a good idea, the meaning of innovation is much broader. It is more than simply coming up with good ideas (Chesbrough 2003; Fasnacht 2009). Instead, innovation is a good idea that is made to work technically and commercially in terms of new products and services, or improving the existing ones. In other words, it is the whole process of developing good ideas into practical use (Chesbrough 2003; Roberts 2007; Fasnacht 2009; Da Silva 2014). Thus, invention is only the first step in an innovation process; bringing good ideas to widespread and effective use (Chesbrough 2003). Innovations can be exemplified as new service and product offerings, business models, pricing plans, entry to market plans and management practices (Dennehy et al. 2014). All in all, innovations are about creating value and improving productivity in any industry or economy (Fasnacht 2009).

Innovations can be categorized into four dimensions: product innovation, process innovation, position innovation and paradigm innovation. In Figure 2, these dimensions with the novelty aspect (radical versus incremental) of innovation are shown in a map of innovation space. The circle area is the potential innovation space where a company can operate. The way how a company explores and exploits its innovations space is defined in its innovation strategy. Sometimes it's difficult to discern whether an innovation is process or product innovation. For example, when it comes to services, innovations may have both product and process innovation aspects (Tidd and Bessant 2013).

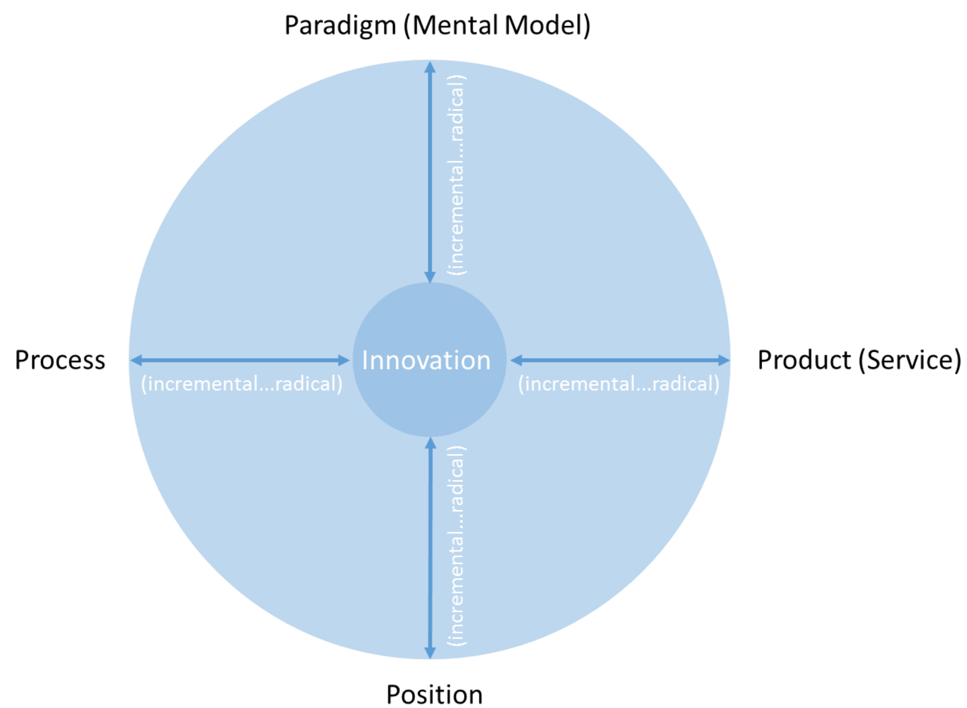

Figure 2. Four Dimensions of Innovation. (Tidd and Bessant 2013, p.25)

- *Product innovation*: Indicates changes in the organization's offerings (products or services).
- *Process innovation*: Indicates changes in the ways products or services are created and delivered.
- *Position innovation*: Indicates changes in the context of market delivery of products or services.
- *Paradigm innovation*: Indicates changes in the organization's mental models which constitute what the organization does. The on-line insurance and other financial services are examples of paradigm innovations (Tidd and Bessant 2013).

It is also important to consider the degree of novelty of innovation involved in different places across the innovation space (see Figure 2). The novelty degree of innovation can be divided into two broad categories: incremental and radical innovations. These two different types of innovations require different organizational capabilities, and thus they have different competitive consequences.

Incremental innovations are minor changes, day-to-day improvements in established products or services; they exploit existing technology. In contrast, radical innovations transform the way we think about products/services and how we use them. Thus, radical innovations entirely transform the economies of a business. These kind of innovations are usually concerned about the exploration of new technology. In addition, they can often open up new markets and potential applications; sometimes they even change the basis of society (Fasnacht 2009; Tidd and Bessant 2013).

2.2 Innovation Paradigms

Organizing innovation activities in firms has changed from the closed innovation model to a more open one due to challenges caused by a fast changing and intensively competitive global business environment. The closed innovation model is based on a “do it by yourself” attitude, whereas the open innovation model is about cooperation with external partners and opening up the boundaries of the company. The rapid development of information and communication technology has removed the physical distances between different players, and thus enabled integration of customers and suppliers into the company’s innovation process (Savitskaya and Torkkeli 2010). Curley and Salmelin (2015) also argue that it’s necessary to have collaboration in today’s complex business world in order to accelerate the process of innovation and to improve the quality of its outcomes. Despite the benefits of open innovation, the model of closed innovation will not disappear, although its position and role will weaken and decrease (Curley and Salmelin 2015).

Figure 3 illustrates the paradigm of closed innovation. According to this paradigm, companies generate their own ideas and finally develop, build, market, distribute, service, finance and support them on their own. The solid lines in Figure 3. show the boundaries of the firm. Ideas flow into the firm on the left and flow out to the market on the right. All ideas are screened and filtered by the firm during a research process before they are moved into the development phase, after which they are finally taken to market. It’s important to see that the linkage between the research

process and the development process is tightly coupled and internally focused (Chesbrough 2003).

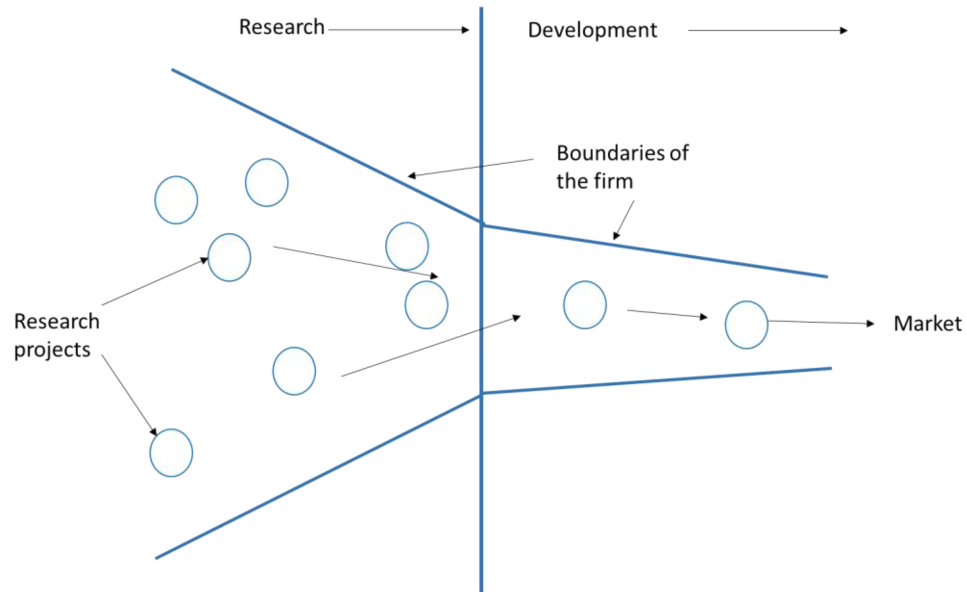

Figure 3. The Model of Development Funnel. (Wheelwright and Clark 1992)

The paradigm of closed innovation suggests that companies should be strongly self-reliant, because collaboration is seen as uncertain from the perspective of quality, availability and capability. Thus this paradigm is based on an internally focused logic which means that a company should hire the best and smartest people, bring new products and services first to the market, discovered and developed by themselves. This logic means that a company controls its intellectual property in a way that its competitors cannot profit from it. The model of closed innovation leads to breakthrough discoveries which enable companies to bring new products and services to market (Chesbrough 2003).

In contrast, the paradigm of open innovation suggests that companies should use external ideas together with internal ones, and similarly it should use both external and internal paths to market (Chesbrough 2003). In other words, open innovation is about crossing the boundaries of companies in an innovation process which means exploiting external innovation sources and marketing channels when launching new

products/services in order to promote the creation and commercialization of innovations (Torkkeli et al. 2008).

Figure 4 illustrates the principles of the open innovation paradigm described above. As seen in Figure 4, the company's boundaries are not closed and thus ideas can arise inside the company's own research process, but they also may come from outside of the company either in the research or in the development phase as well. The idea flow works also vice versa, which means that company's internal ideas are able to fall outside the company and later move to market. One leading example of this kind of external actor is a start-up company that can be staffed with the company's own personnel. Other external channels are licensing and departing employees. Open innovation leads new pathways for creating and developing new ideas and for commercializing innovations created within and beyond the boundaries of a company Chesbrough 2003).

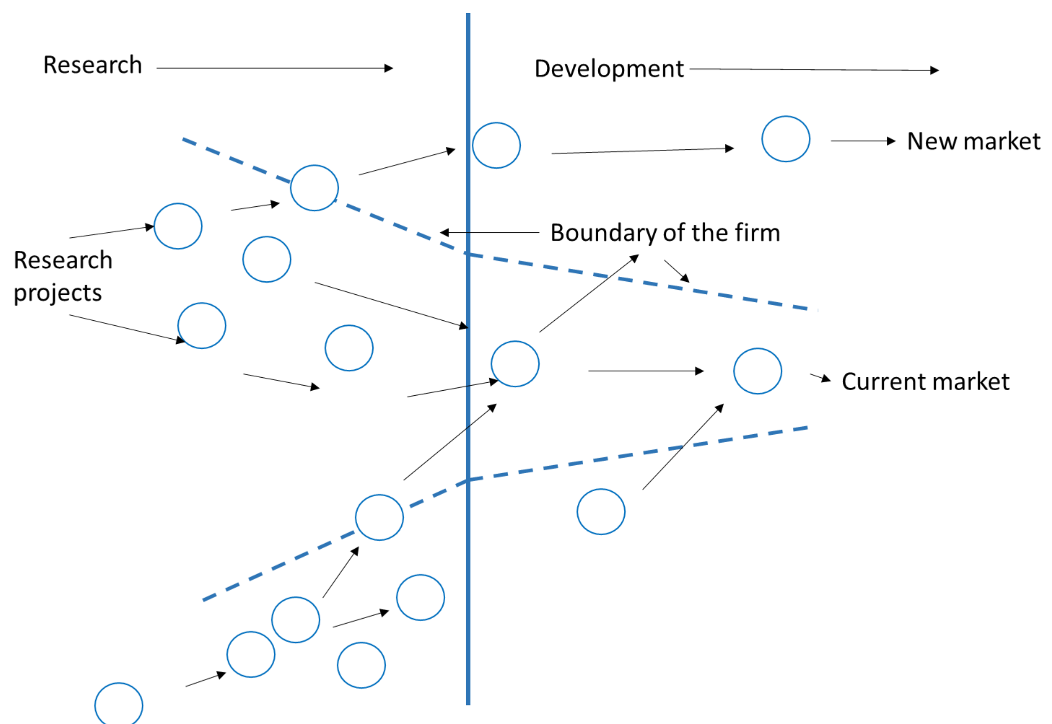

Figure 4. The Model of Open Innovation. (Chesbrough 2003, p.xxv)

The new generation of the open innovation paradigm is called open innovation 2.0 (OI2) which is based on a Quadruple Helix Model, where government, industry,

academia and civil participants work together. Users also become an integral part of the innovation process, and thus user driven innovation will be a vital part of OI2, because users co-create solutions that really meet their needs. OI2 paradigm is based on principles of integrated collaboration, co-created shared value, cultivated innovation ecosystems, unleashed exponential technologies and extraordinarily rapid adoption. Information technology will play a vital role in this paradigm. The aim of OI2 is to enhance simultaneous value creation for civil, business, academia and government markets (European Commission 2015; Curley and Salmelin 2015).

As seen in Figure 5, innovation as a paradigm has moved from being closed and diffused to the era of open innovation. In today's environment, it has moved from open innovation to an ecosystem-centric view of innovation. In this new ecosystem-centric innovation model, collaboration will accelerate the innovation process and improve the quality of its outcomes. Often innovation success is driven by teams that have multidisciplinary skills. It is a fact that the closed innovation won't disappear, but it will be surpassed by the efforts of teams that enable a wide scale of different stakeholders to take on active roles (Curley and Salmelin 2015).

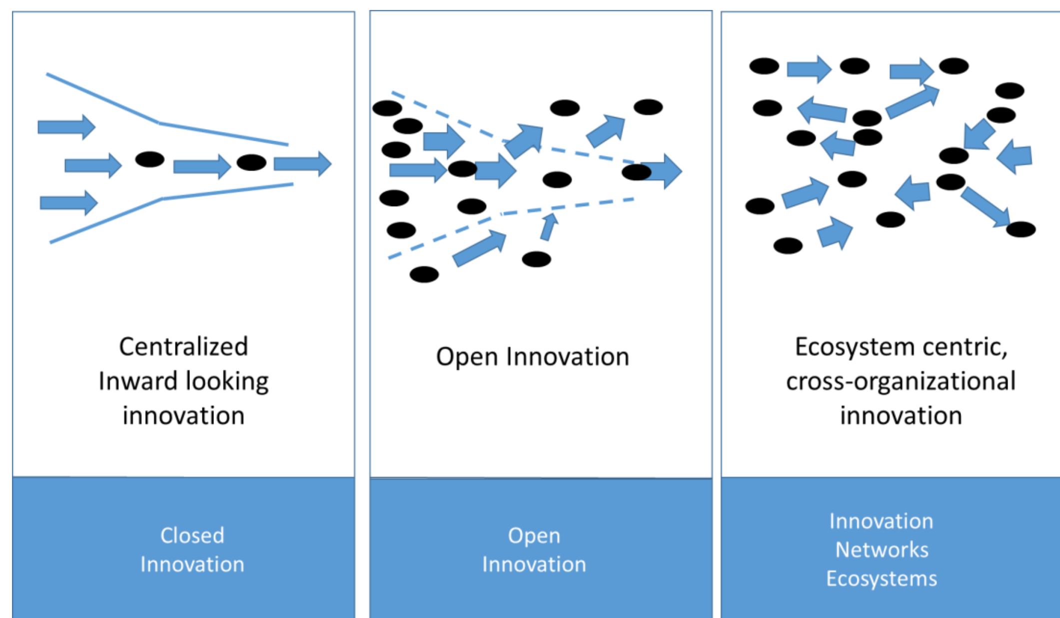

Figure 5. The Evolution of Innovation Paradigms. (Curley 2015, p.10)

2.3 Innovation Management

The managing innovation process is a crucial activity for every successful company. It needs supportive organizational context and effective external linkages, but also an implementation mechanism and structures of good ideas. When innovation is about good ideas, managing innovations is the whole process, from idea generation to the selling of new products/services to markets. "*The innovation process is an interactive, often chaotic, intuitive, cumulative, and complex process*", but it can be managed with a proper strategy (Fasnacht 2009). Tidd and Bessant (2013) conclude that innovation management is a learning process in order to find out effective routines to deal with the challenges of the innovation process. Success in this process depends on technical resources such as people, equipment, knowledge, and money, but it also depends on the capabilities of the organization to manage them (Tidd and Bessant 2013).

Tidd (2001) argues that there are four different factors which affect the management of innovation: type of innovation, stage of innovation, scope of innovation, and type of organization. In addition, he says that environmental uncertainty especially affects both the organization and management of innovation (Tidd 2001). Service companies in particular have difficulties in managing innovation because of the mostly intangible nature of service products. It is characteristic of the services that they involve a close interaction with customers, which means that innovation in service companies is not only about new products, but also about new ways of offering them to customers (Oke and Goffin 2001).

Oke (2007) defines innovation management to be the company's activities of managing the process of creating an innovation. It refers to the systematic planning, implementing, directing and controlling of a company's innovation activities in order to efficiently and effectively create and implement innovative ideas. Successful innovation management requires good performance in the following five areas: *innovation strategy*, *creativity and ideas management*, se*lection and portfolio management*, *implementation management and human resource management*.

These areas compose the model of innovation management and it is shown in Figure 6 (Oke 2007; Oke and Goffin 2001).

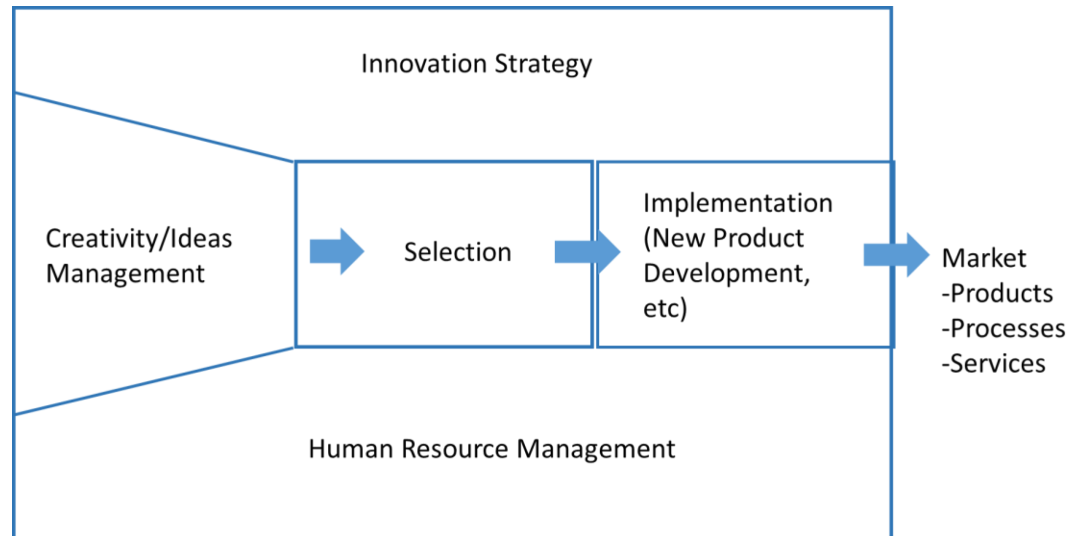

Figure 6. The Model of Innovation Management. (Oke 2007, p.569)

Innovation Strategy

The objective of innovation strategy is to serve a clear direction for a company and focus the effort of the entire organization on a company's common innovation goal. From management's point of view, it is necessary to develop a proper innovation strategy and communicate the role of innovation within an organization. It is also important to decide how technology should be used and how performance improvements should be driven through the use of performance measurement systems (Oke 2007; Oke and Goffin 2001).

When creating an innovation strategy, the first step is to determine what innovation actually means to the company in achieving organizational aims and what the areas of focus are in terms of innovation which a company wants to achieve (Oke 2007; Oke and Goffin 2001; Hydle et al. 2014). Appropriate resources and practices have to be ensured in the innovation strategy which are needed to develop products or services that match the expectations and demands of customers (Hydle et al. 2014).

Creativity and Ideas Management

In order to create innovations it is necessary to have an ability to see connections, to spot opportunities and to take advantage of them (Chesbrough 2003). The objective of the creativity and ideas management phase is to stimulate ideas that address customers' requirements (Oke 2007; Oke and Goffin 2001). It is important to detect signals in the environment which hold the potential for change. New technological opportunities, changing market requirements, legislative pressure or competitor action are examples of signals in the business environment (Tidd and Bessant 2013). All in all, it is important that the scope of ideas is wide and all employees in an organization are involved. In addition, organizations should have close contacts with their customers and thus ideas from customers should be cultivated (Oke 2007; Oke and Goffin 2001).

Selection and Portfolio Management

Innovation is always risky and that is the reason it is essential to have some selection process among various market and technological opportunities. Choices should always be in line with the overall business strategy and build upon established technical and marketing competences (Tidd and Bessant 2013). The objective of the selection and portfolio management phase is to provide tools to select from the many ideas generated in the previous phase of the innovation process. The ultimate target is to choose the best ideas for implementation (Oke 2007; Oke and Goffin 2001).

Implementation

At the early stages of the implementation phase there is a high uncertainty in terms of technological feasibility, market demand, competitor behavior, regulatory and other external influences. Technological and market research help to overcome these uncertainties. (Tidd and Bessant 2013) The objective of this phase of the innovation process is to turn new ideas into new products, new services and processes. Often the implementation phase is organized as a structured process that is based on "State-Gate" approaches. The implementation process should be managed as a normal manufacturing process (Oke 2007; Oke and Goffin 2001).

In addition, Tidd and Bessant (2013) say that there are three important elements in the implementation phase: acquiring knowledge, executing the project, and launching and sustaining the innovation. Knowledge acquiring means that the organization combines new and existing knowledge (carried out within and outside the organization) in order to offer a solution to the problem. The execution of the project is the heart of the whole innovation process. Its inputs are a clear strategic concept, while its outputs are a developed innovation and a prepared market for launching. Launching and sustaining innovation points out the need to understand the dynamics of adoption and diffusion. For example, customers' early involvement and allowing them to take part in the innovation process leads to a better adoption and higher quality (Tidd and Bessant 2013).

Human Resource Management

This phase includes elements that mainly deal with people and organization climate issues. It's important to create an environment and organizational culture in which employees are motivated to contribute and push for innovation. From innovation management's point of view, there is a clear need for a human resource policy that supports innovation. Innovative culture needs norms that support creativity and implementation of new ideas. One possibility to promote innovative culture in an organization is to create a proper rewards system and methods for innovative employees (Oke 2007; Oke and Goffin 2001).

2.4 Innovation in Financial Services

Torkkeli and Mention (2012) define financial innovation to be changes in the offerings of banks, insurance companies, investment funds and other financial service firms. Financial innovations may also be changes in internal structures and processes, managerial practices, new ways of interacting with customers, and new distribution channels (Mention and Torkkeli 2012; Mention and Torkkeli 2014). Financial innovation can be seen as a process of creating and then popularizing financial instruments, financial technologies, institutions and markets (Tufano 2003; Lerner and Tufano 2011). It is characteristic for financial innovation that it serves the interests of individual customers, households, states and at the same time

affects positively on society (Mention and Torkkeli 2012; Mention and Torkkeli 2014). In addition, financial innovations reduces costs, risks and provide better products, services and instruments which better satisfy customers' needs (Frame and White 2004). Salampasis et al. (2014) conclude that financial innovation is about understanding the customer, appreciating the information from the partner and differentiating from the competition. It can also be seen as an ability to evolve in order to prepare for the future (Salampasis et al. 2014).

Determinants of Financial Innovation

Regulation is one of the key determinants of financial innovation. It is seen both as a catalyst of innovation and as a hindrance factor of innovation (Mention and Torkkeli 2012; Cankaya 2014). Regulation leads to short-term innovations that don't improve efficiency or market effectiveness in the long run. In addition, regulation can be seen as a negative factor because it may deter young and inexperienced companies due to the lack of resources (Mention and Torkkeli 2012). Regulation also calls for a high level of transparency which leads to a rapid diffusion and imitation of financial innovations (Arnaboldi and Claeys 2014). On the other hand, regulation has improved performance of the real economy (Laisi 2012).

In turn, the deregulation of interest rates, fees and credit ceilings has enabled banks to use competitive tools, which has directly affected market outcomes of banks. It has also affected the number of mergers and acquisitions, which has led to larger banks with wide ranges of products. In addition, these changes have resulted in higher market liquidity, lower transaction costs, and better risk diversification due to cost-based synergies affected by mergers and acquisitions. For example, in Europe, deregulation has led to a more homogeneous market in terms of banks' profitability. In turn, in developing countries, the result of deregulation has been lowered costs and increased pressure on profits (Laisi 2012).

Added to the regulation factor, Cankaya (2014) says that other key determinants of financial innovation are *macroeconomic conditions*, *customers' needs*, *increased*

competition, *globalization* and *technology*. *Macroeconomic conditions* may increase volatility which forces financial players to create new instruments in order to handle the changes in the financial market. Financial institutions have learned to be more sensitive to *customers' needs* and they have also realized the significance of marketing, which has led to increased diversity of financial instruments. Deregulatory policies *increased competition,* which in turn increased the number of financial innovations in the late 80s. The same effect has happened due to globalization and the development of information technology. *Globalization* has offered financial innovations in capital and credit markets, such as new investment classes, new investment vehicles and the rise of lightly-regulated types of asset managers. *Technology,* including internet and telecommunication, has brought about a number of financial innovations. For instance, the rapid development of information technology has enabled new financial innovations such as new risk management systems, developments in new numerical analysis and simulations, and more powerful and better hardware (Cankaya 2014).

Added to the key determinants, it is characteristic for financial innovations that they have difficulty in benefiting from the novelty of innovation. That's because innovations in financial services are often not considered as eligible for patent protection. Thus, financial innovations are easily copied and their diffusion across competing institutions is rapid (Mention and Torkkeli 2012; Kapoor 2014).

Because of a resource-intensive, time-consuming and costly innovation process, combined with weak appropriability regimes and ease of copying, financial innovations are often considered as incremental. Fast followers are quicker to imitate innovations in the financial sector than in other industries. It's characteristic for financial innovation that it doesn't comply with neither the R&D nor the patent count tradition (Mention et al. 2014).

Open Innovation in Financial Service Industry

Financial firms cooperate for innovation activities. For example, many ideas in the retail banking industry are sourced from outside the focal firm, which means that

the environment of the innovation process is open. Despite the openness of the innovation process, customers are seldom involved in innovation activities (Mention and Torkkeli 2012). There are many different knowledge sources available both inside and outside of the boundaries of financial firms, such as listening and engaging customers, involvement of employees, cooperation with suppliers, consultants, competitors, and other entities belonging to the financial firm’s group (Martovoy 2014). In addition, the financial service industry is also the end-user of innovations that are developed in other sectors, such as in software houses and specialized technology firms (Arnaboldi and Claeys 2014).

Martovoy (2014) has researched the possible benefits that financial firms can obtain by cooperating with different partners. These benefits are listed below:

- Financial firms are able to obtain some unique or necessary resources and expertise in order to gain leverage in internal innovation.
- Cost reduction when developing a new financial service solution.
- Shorter time to market when developing and deploying novel financial solutions.
- Cooperation with a large, well-known and respected partner, is expected to benefit both partners by achieving more credibility and trust.
- Cooperation with partners who have large and relevant networks makes it easier to reach a larger customer segment in a shorter time.
- Improve the performance and flexibility of backstage operations.
- The degree of diversity of external partners benefits the innovation process and its outputs (Martovoy 2014).

Added to potential benefits sourced from cooperation with external partners, Martovoy (2014) has listed some possible disadvantages:

- Bureaucracy and organizational culture differences may cause conflicts in the cooperation for innovation.
- Cooperation in developing novelties may cause considerable time costs.
- In cooperation there is a risk that a partner doesn’t meet expectations and deadlines.

- In cooperation there is a risk of the imbalance of bargaining power, because of a different stock of resources and competences.
- If all partners cannot reach strategic alignment of objectives, cooperation won't be as productive as possible (Martovoy 2014).

Innovation Process in Financial Service Firms

Innovation activities differ slightly from those in manufacturing companies. There are differences in R&D activities and R&D budgets. In financial service firms there is not a specific organization unit that is responsible for R&D activities, and in addition, there is the lack of dedicated R&D budgets (Arnaboldi and Claeys 2014; Mention and Torkkeli 2012). The innovation process can be divided into four phases: idea generation, concept development, building and implementation. Innovations are often generated by multidisciplinary teams that consist of representatives from different functional departments. Often they are able to use only part of their time for the new product development project. In addition, customers are seldom involved in this development process, which means that most new products are not market tested before launching. Thus innovations in financial sector are more market-oriented than customer-oriented. Instead of trying to identify and meet customers' needs, there is often the goal of simply introducing slightly modified products and services in response to competition. In new service development it would be important to comprehend the competitive landscape, as well as anticipating and meeting the customers' needs (Mention and Torkkeli 2012).

2.5 Disruptive Technologies

By developing new technologies, it's possible to disrupt traditional firms and at the same time create unprecedented opportunities for innovation and growth of new companies (Mäkinen and Dedehayir 2012). Players who dominate the market usually focus on sustaining innovations in order to improve their products and services to meet the needs of the profitable high-end customers. That kind of activity makes a market ripe and means that newcomers are able to enter the market by introducing disruptive innovations that may be cheaper, simpler, more

convenient products or services targeting the lower end of the market (Christensen et al. 2000). Companies' revenue and cost structures play a crucial role when it comes to their evaluation of technological innovations. Especially disruptive technologies look unattractive from a financial point of view, because potential markets are small, poorly defined, and it's often difficult to forecast how big the markets will be in future. That's why companies often put more money on research concerning on sustaining technologies compared to the disruptive ones (Christensen and Bower 1995; Christensen et al. 2002).

The technology S-curve represents the substitution of new technology for old at the industry level. As seen in Figure 7, the magnitude of improvement in the performance of a product/service or process depends on the mature state of technology. In the early stages, the rate of performance improvement is slow, but when time goes by and the technology becomes better understood, controlled and diffused, the rate of performance improvement increases. In mature stages, the technology approaches its natural or physical limit, which means that improvements in performance require more time or engineering efforts. Radically new technologies are rarely developed and brought into market by incumbents. Instead, they are often new market entrants, who frequently develop and bring these technologies. The reason is that the leading firms often fail to spot new successful rising technologies and instead they are only trying to reinforce and refine their mature technologies (Christensen 1992).

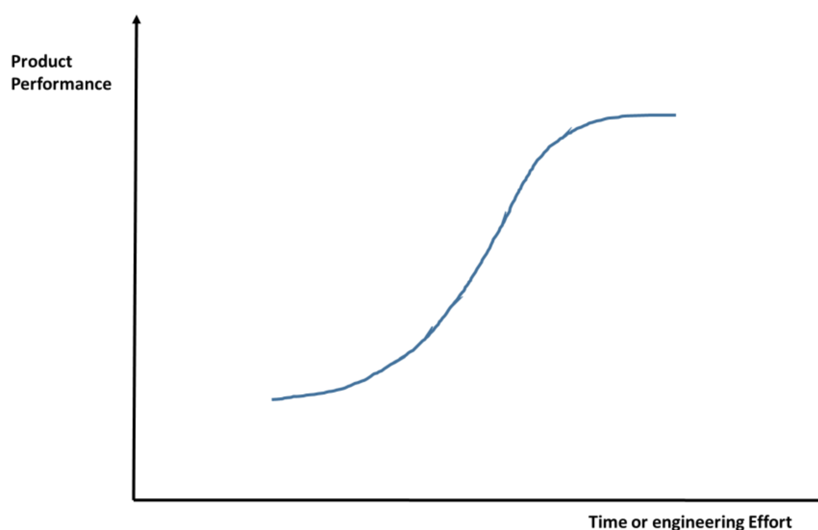

Figure 7. The Technology S-Curve. (Christensen 1992, p.335)

Sustaining and Disruptive Technological Changes

Sustaining innovations are incremental refinements or radical breakthroughs targeting demanding, high-end customers of a market (Christensen et al. 2003; Christensen and Raynor 2003). Sustaining innovations consist of improvements of performance of established products or services that customers in existing markets value (Christensen et al. 2003; Christensen et al. 1996). In practice, these changes provide customers with more of what they have expected, and thus sustain innovations that are incremental year-by-year improvements (Christensen et al. 1996; Christensen and Raynor 2003).

In contrast, disruptive technological changes don't attempt to bring better products and they are seldom targeted in established markets. Instead of current markets they are introduced in remote or emerging markets (Christensen 1996; Christensen and Raynor 2003). The attributes of disruptive technologies differ from the mainstream customers' values and they often result in worse performance along one or two dimensions compared with established products that are important to mainstream customers. Disruptive products or services are often cheaper, simpler, smaller and more convenient to use (Christensen and Bower 1995; Christensen et al. 2003; Christensen and Raynor 2003).

Disruptive technological innovations can be divided into two distinct types. The first type creates a new market by creating products or services. It targets those customers who are not able to do it themselves, for example, due to a lack of money or skills. The second type competes in the low end of an established market. Many products are so good that they over serve customers, who would be happy to buy a product that is good enough and cheaper than the prevailing ones (Christensen et al. 2003; Christensen et al. 2002).

Figure 8 shows the concept of disruptive innovations by using performance trajectories. As seen in Figure 8, sustaining and disruptive innovations have their own trajectories with different characteristics. Sustaining technologies maintain the rate of improvement of performance, and thus give customers something more or better. On the other hand, the performance point of disruptive technology lies far below the performance demanded by current customers. But the expected rate of performance improvement of the new technology is faster than the market's demand for performance improvement (Christensen and Bower 1995).

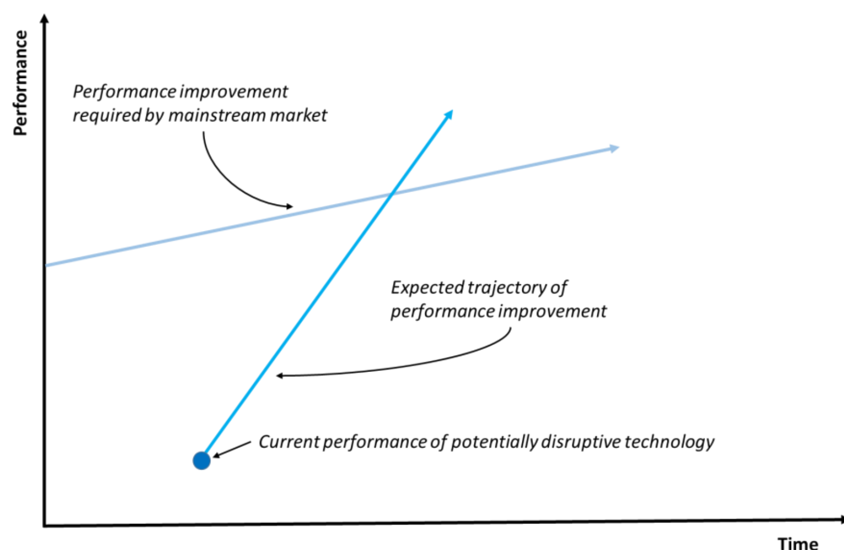

Figure 8. Assessment of Disruptive Technologies. (Christensen and Bower 1995, p.49)

Figure 9 also illustrates technological innovations by changes in the product performance improvement trajectories. As sustaining technological innovations move companies along the established performance trajectory, disruptive innovations establish an entirely new performance trajectory (Christensen 1996; Christensen et al. 2003). By developing and introducing successive sustaining innovations, companies just keep their competitive edge in the short term. As seen in Figure 9 companies innovate faster than customers' lives change to adopt those innovations. More often than not, the pace of technological progress outstrips customers' ability to use them, because companies try to make increasingly better products to sell them for higher profit margins to not yet satisfied customers in a more demanding tier of the market. This phenomenon creates an opportunity for disruptive innovations (Christensen et al. 1996; Christensen et al. 2003; Christensen and Raynor 2003). As seen in Figure 9, disruptive technological innovations consist of two important characteristics. First, they present a different package of performance attributes. They are not valued by existing customers, but instead they are aimed at customers who are unattractive to incumbent companies (Christensen al. 2002; Christensen and Bower 1995). Second, existing customers' performance attributes improve at such fast rate that the new disruptive technology is later able to capture those established markets. At this point, the mainstream of customers want the new technology (Christensen and Bower 1995).

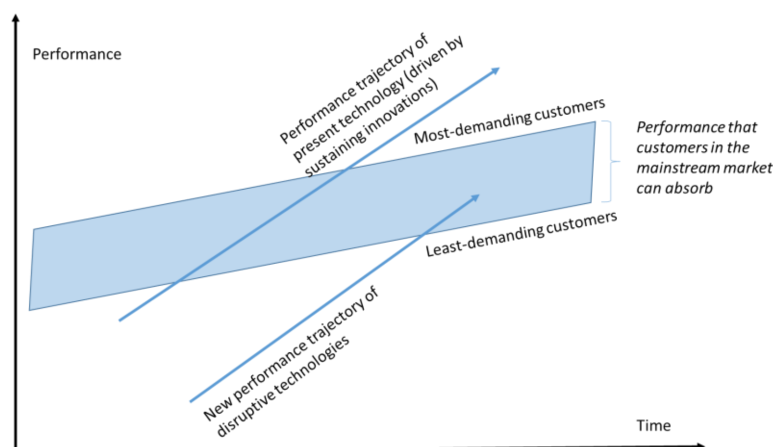

Figure 9. The Progress of Disruptive Innovation. (Christensen et al. 2000, p.3)

It’s important to know that different types of technological innovations affect performance trajectories in different ways (Christensen and Bower 1995). Hilmola (2012) emphasizes that technological change does not always follow the model of discontinuity as we showed in Figures 8 and 9. Instead, technological change sometimes merely follows step-wise, as illustrated in Figure 10. A vivid example of this kind of technological change comes from mobile phones and telecommunications, where radical new technologies in data transmissions have been so much better than previous technologies (Hilmola 2012).

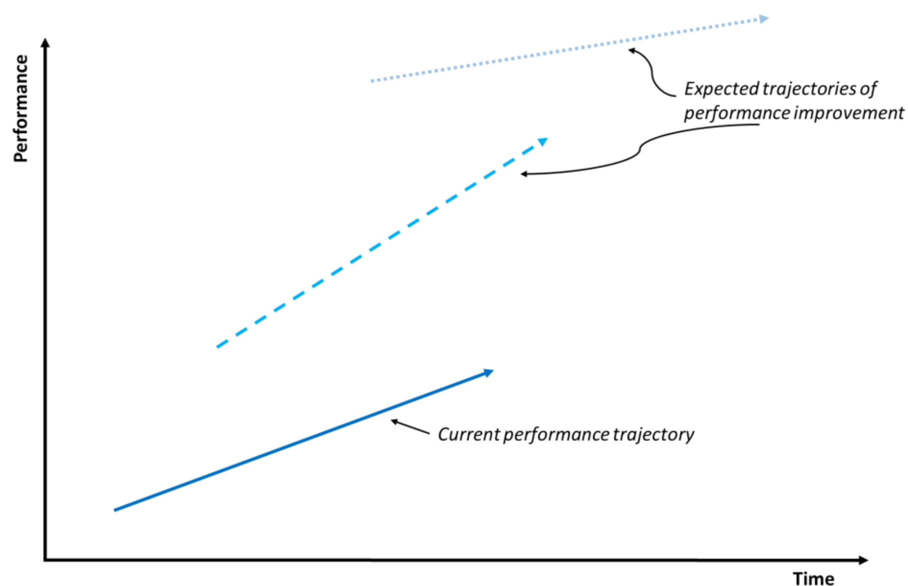

Figure 10. Step-Wise Technological Change. (Hilmola 2012, p.377)

Alibaba – A Financial Disruptor

A vivid example of recent disruptions in financial services comes from China, where the 2000s decade has brought significant disruptions to financial services when companies like Alibaba have lead the charge into mobile payments, deposit –like savings products and fully fledged banking. Compared to other internet companies, Alibaba is not only operating one of the world’s largest e-commerce platforms, but it also has a successful online payment tool, Alipay (CKGSB Knowledge 2014). In 2013, Alipay had 300 million registered users and 100 million

mobile users. It processed nearly $150 billion in mobile transactions which is more than even Paypal does (Business Insider 2014).

In 2013, Alibaba, "*the Chinese Amazon or eBay"*, launched Yu'e Bao, an online money-market fund. By the end of 2014, it was already China's largest money-market fund with 49 million customers (Financials 2015; CKGSB Knowledge 2014). Alipay, with its millions of users, attracts funds for Yu'e Bao and then it turns them over to Tianhong Asset Management Co to invest (CKGSB Knowledge 2014). The secret behind this success is that Yu'e Bao offers cash on demand to companies and individuals that cannot get loans from traditional banks. In addition, it provides much higher interest rates than banks, thus the success story is ready. Customers are able to use Yu'e Bao credit in Alibaba's Taobao and Tmall ecommerce platforms, but also for paying credit card and utility bills (Financials 2015).

Alibaba has also expanded its activity into e-commerce, including insurance. It has announced the world's first internet insurance cloud platform, which has shortened the time to launch new products in a time of one to two weeks, compared to the three to six month needed from a traditional insurance company. Also the development and deployment costs are reduced due to this new platform from hundreds of thousands to tens of thousands (Insurance Asia News 2015).

Last but not least, in 2015, China's banking regulators approved 10 privately owned companies to establish regional banks. The Chinese policy makers wanted that these companies would focus on lending to small, privately owned businesses and consumers who have had problems to get loans from state-owned banks. Not surprisingly, one of these 10 companies is Alibaba (Financials 2015).

Alibaba has thus, step by step, entered into the landscape of traditional financial companies. First introducing an online payment solution (Alipay), then an online fund platform (Yu'e Bao), then insurance services, and finally it received the rights to establish a regional bank. Its success story follows the theories of disruptive

innovations. First of all, Alibaba's financial services are targeted to non-consumption by offering its services to companies and individuals that have not been able to use traditional banking services. Second, it offers services that benefit its customers, for example, by offering services with higher interest rates than what traditional banks offer. In addition, its services are more convenient, cheaper and easier to use. Finally, Alibaba's systems are cheaper and simpler to run compared to traditional financial services.

2.6 Business Ecosystems

Moore (1996) defines a business ecosystem to be "*an economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world.*" "*This economic community produces goods and services of value to customers, who are themselves members of the ecosystem.*" Mäkinen and Dedehayir (2012) define the business ecosystem to be a network of firms that in cooperation produce a holistic, integrated system that creates value for customers. In addition, firms in a business ecosystem co-evolve capabilities around a new innovation. Firms work not only cooperatively, but also competitively in the creation of products and services. (Mäkinen and Dedehayir 2012) In turn, Peltoniemi and Vuori (2004) define a business ecosystem to be a dynamic structure that consists of an interconnected population of organizations, which can be small firms, large corporations, universities, research centers, public sector organizations and other players that have an effect on the business ecosystem (Peltoniemi and Vuori 2004).

Figure 11 illustrates a typical model of a business ecosystem. The business ecosystem includes members such as customers, suppliers, lead producers, competitors, market intermediaries including agents, channels, and those who sell complementary products and services, and other stakeholders. It also includes government agencies and regulators, associations and standards bodies representing customers or suppliers, but also all direct competitors of the company and those actors, who might be able to compete with the company or with any other members of the business ecosystem community. All these actors of an ecosystem will later

coevolve their capabilities and roles, and some of these members will act like central companies and set directions for the whole ecosystem (Moore 1996). Many of these organizations in a business ecosystem fall outside the traditional value chain of suppliers and distributors who directly create and deliver products and services, and thus business ecosystem as a term has a much larger view than companies' immediate business networks (Iansiti and Levien 2004; Moore 1996). The business ecosystem doesn't go along with the traditional industry boundaries. "*It can thrive within conventional industry lines or straddle them.*" (Moore 1996)

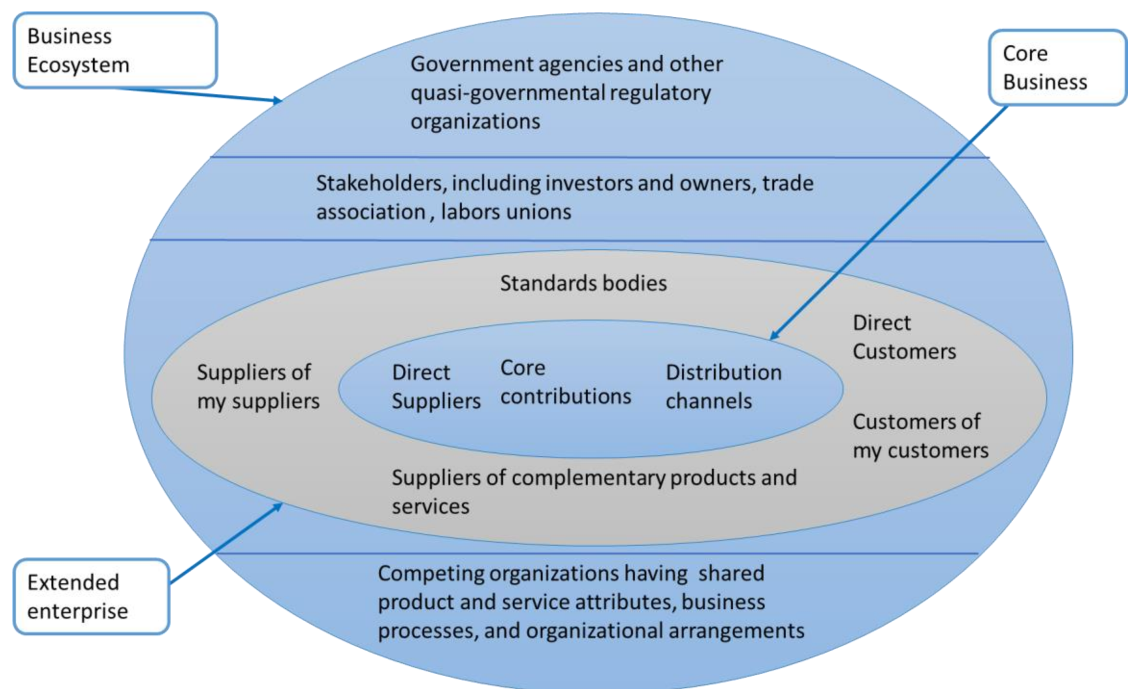

Figure 11. Business Ecosystem. (Moore 1996, p. 27)

Endogenous and Exogenous Evolution Forces

Business ecosystems evolve due to endogenous and exogenous forces. The evolution of business ecosystems is also affected by members' co-evolutionary processes, as interdependent organizations evolve reciprocally with one another. The co-evolutionary processes consist of firms feeding-off, supporting and interacting activities, like knowledge and resource exchange, manufacturing products and services (Mäkinen and Dedehayir 2012).

An important endogenous change factor of the business ecosystem is the architecture of the ecosystem's platform. The level of modularity of platform architectures has an effect on the rate of evolution of the business ecosystem. Systems that are highly modularized are likely to experience a higher rate of evolution, because in this case, the sub-systems are able to evolve independently. The key players of business ecosystems are able to affect the design of platform architectures and they can increase interdependency by decoupling sub-systems and standardizing the interfaces between sub-systems. Another endogenous change factor is platform governance. Governance consists of the amount of decision making, control and coordination (Mäkinen and Dedehayir 2012).

Exogenous factors that have an effect on the evolution of business ecosystems come from the ecosystem's environment. Changes in the social and economic environments are change factors that affect to the rate and direction of ecosystem development. Also, technological changes that can be radical, discontinuous and disruptive, are examples of exogenous factors affecting changes in the ecosystem's environment. If technological changes are convergent and these changes happen outside of the focal ecosystem, they can provide an opportunity for external platform makers to come into the focal ecosystem. Often the result broadens the ecosystem's scope and the engagement of competition which can potentially shrink another ecosystem. Also, the collaborative environment has an effect on the development of the ecosystem. Complementors provide technologies and services to many different ecosystems and aren't governed by or dependent on a single ecosystem (Mäkinen and Dedehayir 2012).

Iansiti and Levien (2004) list three critical measures of health that are vital for the success of a business ecosystem. These measures are *productivity*, *robustness* and *niche creation*. In business life, *productivity* means a network's ability to consistently transform technology and raw materials of innovation into new, lower cost products. In a business ecosystem, *robustness* means that the ecosystem is capable of surviving disruptions, such as unforeseen technological change. In turn, *niche creation* in the business field is an ability to absorb external shocks and the

potential for productive innovation. In practice this means that a business ecosystem is capable of increasing meaningful diversity through the creation of valuable new functions (Iansiti and Levien 2004).

Financial Ecosystem

The financial sector can be seen as a broad ecosystem that consists of institutions, regulatory bodies and service providers among which ICT, legal, consulting and audit firms play a dominant role (Salampasis et al. 2014). Key financial organizations that provide financial services in turn include banks, credit card companies, insurance companies, consumer finance companies, stock brokerages, investment funds, asset management, and government sponsored regulatory enterprises (Salampasis et al. 2014; Fasnacht 2009). These financial organizations provide intangible products and services that consist of liquidity, information, and transformation services (Fasnacht 2009). The main objective of financial service firms is to manage personal and corporate assets and to exclusively manage financial and banking transactions (Salampasis 2014).

A relatively new group of financial companies from the non-financial sector are the FinTech (financial technology) startups that either serve the current financial system or develop alternatives for it (Indra 2014; Deutsche Bank 2015). Figure 12 illustrates the different business fields of new FinTech startups, which can be divided into five categories: services that cut transaction costs, services that ease to make financial decisions, payment systems, SME services, and services that replace banks.

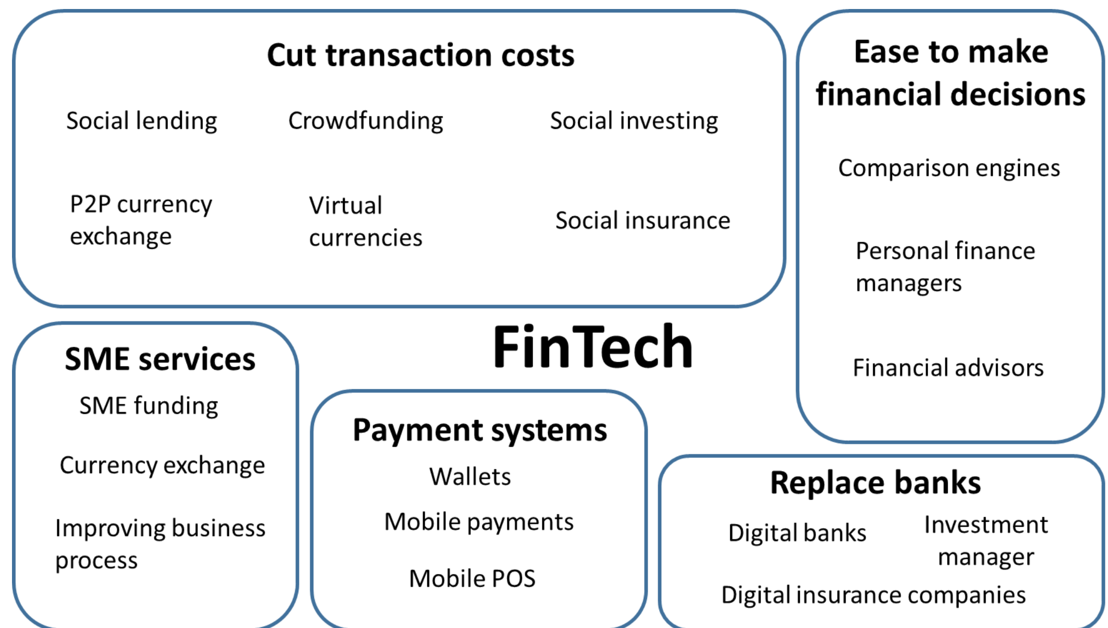

Figure 12. The Ecosystem of FinTech Startups.

Services that ease making financial decisions:

- **Comparison engines**: Help to search for and compare different services and products considering customer's needs (Indra 2014).
- **Personal finance managers**: Help to understand and manage expenses and make short term financial decisions (Indra 2014).
- **Financial advisors**: Help to keep track of your investments and to make long term financial decisions (Indra 2014).

Payment systems:

- **Wallets**: Payments made through the electronic wallet (Indra 2014).
- **Mobile payments**: Payments made through cellphone (Indra 2014).
- **Mobile POS**: A mobile point of sale terminal, usually smartphones and tablets. Helps small merchants in particular (Indra 2014).

SME services:

- **SME funding**: The use of digital technology in order to find efficient ways to lend to small businesses (Indra 2014).

- **Currency exchange**: Digital markets for exchanging currencies between companies (Indra 2014).
- **Improving business process**: Technology-based services that help small businesses to improve their financial processes (Indra 2014).

Services replacing banks:

- **Digital banks**: Technology-based digital alternatives for customers instead of traditional banks (Indra 2014).
- **Investment manager**: Technology-based digital investment management services (Indra 2014).
- **Digital insurance companies**: Technology-based digital alternatives for customers in lieu of insurance companies (Indra 2014).

Services that cut transaction costs:

- **Social lending**: Enables individuals to lend and borrow to/from one another (Indra 2014).
- **Crowdfunding**: Small enterprises, charities etc. are able to get financing from collective fundraising (Indra 2014).
- **Social investing**: Community for investors, which enables the exchange of financial advice and to track and mimic each other’s portfolios (Indra 2014).
- **Social insurance**: Digital market in which customers share or underwrite insurance risks (Indra 2014).
- **Peer-to-Peer (P2P) currency exchange**: Digital markets that enable individuals to exchange currencies (Indra 2014).
- **Virtual currencies**: Virtual open-source currency (Indra 2014).

3 METHODOLOGY

Research strategies can be divided into quantitative and qualitative methods. The quantitative research method emphasizes quantification in the collection and analysis of data. In addition, it has a deductive approach to the relationship between theory and research, which means that it aims to develop a theory and hypothesis and finally test the created hypothesis. In contrast, qualitative research method emphasizes words instead of quantification in the collection of analysis of data. On the other hand, it emphasizes an inductive approach to the relationship between theory and research. The inductive approach aims to collect data and develop a theory as a result of the data analysis. Qualitative research is concerned with the generation of theories rather than testing them. (Bryman and Bell 2011; Saunders et al. 2000)

According to Saunders et al. (2000) studies can be divided into three groups:

- *Exploratory studies*: Helps to seek new insights, to ask questions and to assess phenomena in a new light. In exploratory studies there are three ways of conducting research: a search of the literature, talking to experts and conducting focus group interviews.
- *Descriptive studies*: Provides a proper profile of persons, events or situations; it is often an extension of exploratory research.
- *Explanatory studies*: The object is to study a situation or a problem in order to be able to explain causal relationships between variables.

The goal of this master’s thesis is to understand, explain, determine and interpret a new phenomenon (business ecosystem change in financial industry) and study its extent and consequences. In addition, this thesis aims to answer the questions how and why changes are ongoing in the financial ecosystem. These aims mean that the qualitative research method with the inductive research approach is suitable in this case, because we are not testing some existing theories, but instead we are creating an overview of the phenomena that has not been researched yet. Saunders et al. (2000) says when there is a lack of relevant data, the qualitative interview research

method should be chosen. By doing this, it is possible to get extensive information on the research questions and to deepen the understanding of the subject of the study, in this case the change of financial service ecosystem and the current situation in the field of the financial service sector. This thesis combines both the use of the literature approach and the data sourced from interviews, which means that this is an exploratory qualitative study.

3.1 Structure of Interview

Saunders et al. (2000) defined interviews to be a discussion between two or more people. Qu and Dumay (2011) point out that the research interview is one of the most important qualitative data collection methods. Saunders et al. (2000) say that by doing interviews it is possible to get valid and reliable data that is relevant to the research questions and objectives.

Saunders et al. (2000) say that interviews can be categorized into three groups as follows: *structured interviews, semi-structured interviews and unstructured interviews*. Examples of *structured interviews* are different types of questionnaires based on standardized or identical sets of questions and are used in quantitative analysis. *Semi-structured and unstructured interviews* include a set of questions that are non-standardized. In *semi-structured interviews* the researcher only has a list of themes and questions that have to be covered, but these may differ from interview to interview. In practice, this means that it is possible to omit some questions in particular interviews, but in some cases it may be necessary to pose some additional questions within particular organizations. *Unstructured interviews* are informal and they can be used to explore in depth a general area, which means that there are not a predetermined list of questions. Instead, an interviewee has the possibility to freely talk about events, behavior and beliefs in relation to the title (Saunders et al. 2000).

According to Vinten (1995), semi-structured questions enable interviewees to provide more valid responses in terms of unearthing genuine attitudes and views than structured interviews. That is because open format and semi-structured

questions allow interviewees to reply in their own words (Vinten, 1995). Qu and Dumay (2011) point out that semi-structured interviews are flexible, accessible and intelligible. First and foremost, they are capable of disclosing important and hidden facets of human and organizational behavior. All in all, semi-structured interviews are the most effective and convenient way of gathering information (Qu and Dumay 2011).

The interview questions here consist of semi-structured questions. The semi-structured questions fit best because there is a lack of existing data, and thus a structured interview would have been too confining for the purposes of this thesis. So as Qu and Dumay (2011) said, semi-structured questions enable one to obtain valid, valuable data which is needed to answer the research questions and make valid conclusions. Also semi-structured questions allow interviewees to emphasize important aspects from their own point of view, which is needed when researching a totally new field.

The semi-structured interview is available in English in Appendix 1 and in Finnish in Appendix 2. Interview questions are divided under four main categories that are derived from the theory portion of this thesis. These categories are innovation, technology & digitalization, ecosystem and the general portion:

- **Innovation**: The objective of the innovation portion is to find out what the recent significant innovations are, what the current trends are, how innovation activities are organized and what the level of cooperation is.
- **Technology & digitalization**: In this portion the aim is to find out, how technology development together with digitalization have affected the financial industry. Moreover, the objective is to determine challenges, risks, possibilities, and benefits concerning innovations and new technologies.
- **Ecosystem**: The objective of the ecosystem portion is to find out how the business ecosystem of the financial service is changed in terms of new market entrants, relationships, and the roles of ecosystem players. Also the goal is to determine what the main change factors are according to interviewees.

- **In general**: In this portion, interviewees have the possibility to say whatever they want regarding the business ecosystem change of the financial industry.

In practice, the interview structure was not strictly followed. Instead, some questions were left out, some questions were added in and some were slightly modified depending on each situation and interviewee. That's because the ecosystem of the financial services is vast and thus it includes actors that differ from each other. For instance new FinTech firms differ from the traditional financial companies. Moreover, it is a self-evident truth that regulators have a totally different approach to the themes than companies. Of course, interviewees varied in nature and that's another reason why some questions had to be followed up with some secondary questions, or some questions had to be phrased in a different manner in order to get more coherent results. But all interviews achieved the characteristics of the half-structured questions presented earlier.

3.2 Data Collecting

The empirical portion of this thesis contains 11 half-structured interviews. All information about the interviewees, including business field, interview date and the position of interviewee are shown in Table 1. The crucial factors that affected the selection of the interviewees were the business field of the target organization and their potential contribution to this master's thesis. The objective was to widely cover the whole business ecosystem of the financial industry. As seen in Table 1, interviewees consist of three different categories according the data triangulation theories, thus the use of several different data sources. Denzin (2006) says that the data triangulation involves time, space, and persons and it enhances the credibility and validity of the research findings. That is the reason we chose to widely interview organizations with different backgrounds. These three different categories are FinTech companies (Companies: A, B, C, D, E, and H), incumbents, or in other words traditional financial service providers (Companies: F and G) and other significant players in the financial service ecosystem (Organizations: I, J, and K) (See Table 1).

Nine of the interviews were conducted in person, face-to-face. The rest of interviews (2) were executed via phone due to geographical distances. Every interview was recorded and later transcribed (Times New Roman, font 12, spacing 1.5) resulting 53 pages of transcribed speech. All meaningless filler words were left out. The interviews were given in Finnish and the interviews were conducted on September and October 2015 as seen in Table 1. From each interviewed company there was only one interviewee, most of which were the heads of the whole companies or managers of some department (See Table 1). In each case, a half hour was reserved for each interview, but in many cases it took nearly an hour because of the overall conversation. All companies will be kept anonymous for the thesis and that is the reason why companies' names or further identification details are not offered in Table 1.

Table 1. Interviewees.

Interviewees	Business Field	Interview Date	The Position of Interviewee
Interviewee A	FinTech	1.9.2015	Technology Manager
Interviewee B	FinTech	9.9.2015	CEO
Interviewee C	FinTech	14.9.2015	CEO
Interviewee D	FintTech	14.9.2015	Head of Marketing and Communications
Interviewee E	FinTech	15.9.2015	CEO
Interviewee F	Incumbent	23.9.2015	Branch Manager
Interviewee G	Incumbent	24.9.2015	Credit Manager
Interviewee H	FinTech	28.9.2015	Product Marketing
Interviewee I	Other	28.9.2015	Senior Economist
Interviewee J	Other	28.9.2015	Attorney at Law
Interviewee K	Other	7.10.2015	Investment Director

The main objective of this interview research was to collect data for the research questions and for the creation of a comprehensive research model. As mentioned in the introduction, the main problem is that there is no previous data available regarding the subject of this thesis - the change of the business ecosystem of the financial service sector. By doing interviews we aimed to collect valuable firsthand knowledge about business ecosystem change in financial services and knowledge about the main change drivers.

3.3 Data Analysis

Saunders et al. (2000) say that one approach to analyzing qualitative data is to thoroughly read and re-read transcripts of qualitative interviews. This method may cause some problems, and so to avoid them Saunders et al. (2000) recommend to follow the next steps in order to successfully read and analyze qualitative data. These are the following steps:

- **Categorization**: In the first step, the collected data has to be classified into categories. Categories provide a structure which help the researcher to analyze data further (Saunders et al. 2000). In this thesis the questionnaire is already divided under four themes (see section 3.1) that are derived from the theory portion. These themes will be exploited as categories when analyzing collected data.
- **“Unitizing" data**: In the second step, the objective is to reduce and rearrange the data. This is exploited by attaching relevant pieces of data under the categories that are devised in previous step (Saunders et al. 2000).
- **Recognizing relationships and developing categories**: In the third step, the aim is to find out key themes and patterns or relationships in the re-arranged data. The ultimate goal is to determine the meaning of the data set (Saunders et al. 2000).
- **Developing and testing hypotheses**: In the last step, after patterns within the data and recognized relationships between categories are revealed, it is time to develop the hypothesis. All hypotheses need to be tested before you are to come to conclusions (Saunders et al. 2000).

4 RESEARCH FINDINGS

This chapter of the study introduces the findings of the qualitative semi-structured research interviews. The order of this chapter follows the structure of the interviews (see the section 3.1): the first section is about financial innovations, the second section deals with technology change and digitalization, and the third section covers business ecosystem. In these sections, the discussion is divided into two distinct group based on the different backgrounds of interviewees. First, the findings sourced from FinTech companies are introduced, and after that, the discussion follows with the findings from traditional financial players, including both the traditional service providers and other supporting organizations. In the final section, the findings are tied up together with the theory framework of this study resulting in a research model.

4.1 Financial Innovation and Innovation Activity

FinTech interviewees

According FinTech interviewees, crypto currencies are one of the recent financial innovations that will especially have a great future potential: "*I'm sure that crypto currencies will have a significant position in the future.*" (Interviewee B 2015). In addition, they pointed out that it is no longer just the case of Bitcoin, when talking about crypto currencies. Instead, there have risen many new and more innovative alternatives: "*After Bitcoin, there have come more advanced and innovative alternatives.*" (Interviewee A 2015). One of the interviewees also argued that when it comes to crypto currencies, the future potential is also related to the successful exploitation of technologies behind crypto currencies: "*In the long run the effect of Bitcoin will be that its technologies will be exploited in order to create more effective and distributed control systems of transactions*." (Interviewee H 2015).

Added to crypto currencies, services that cut out the middle man also came often to the fore: "*Examples of services without intermediaries, are peer-to-peer loans and crowd funding.*" (Interviewee B 2015). In addition, peer-to-peer loans were

mentioned from both individual and company perspectives. The difference between these two alternatives is that the first one means that individuals lend money to other individuals and the second one means that individuals lend money to companies. Crowd funding, in turn, enables new innovative start-up firms to get investments direct from investors and venture capitalists through new platforms. Some interviewees did not specify any services but instead they said that "*recent significant innovations are all possible services and mobile apps that remove third parties.*" (Interviewee E 2015).

According to FinTech interviewees, other recent financial innovations are different kinds of payment services, new point of sale solutions, and mobile wallets. New payment services are often integrated into online and mobile apps and a service provider like Paypal was named. Also technologies related to payments such as digital identification were mentioned. Behind these new solutions is the new market place mindset. In turn, traditional payment terminals are moving towards new point of sale solutions like smartphones and tablets integrated with a separate card reader. According to interviewees, mobile wallets have especially affected the financial industry. "*When it comes to the 'Third World', mobile wallets have been especially significant innovations, because there has been a lot of people living outside the banking services, and now these new solutions have enabled these people to get in touch with the banking sector, so it is really revolutionary.*" (Interviewee E 2015). In the Third World it is not only mobile wallets but also "*there has been created a so called agent bank –model, where a local retailer acts as the banks' service point, where all customer service is carried out through mobile channels.*" (Interviewee H 2015). Also regulative innovations were mentioned as a significant financial innovation, which have tremendously affected the financial industry: "*For example, this new payment service license has enabled new firms to offer bank-like services instead of being a real bank.*" (Interviewee D 2015).

According to FinTech interviewees, digitalization and change of customers' behavior are the leading trends that direct the development of new financial innovations. Digitalization means that all services will end up being increasingly

delivered via online and mobile distribution channels, where software and smartphones will be center factors: "*We have a growing young digital generation, which assume, that also banks are digital.*" (Interviewee D 2015). Customer behavior change goes hand in hand with digitalization: "*Digitalization has created new customer needs and thus consumers look for services that meet their own needs.*" (Interviewee E 2015). The result is that consumers will acquire services from different sources, while disregarding traditional brands: "*In practice, traditional banking services are not enough for consumers and instead they will want more personified services.*" (Interviewee D 2015). This change means that customer experience and interaction between customers and service providers will become more and more important in future. Services have become fragmented and customers want to be served personally. Other mentioned trends are the change of our society and technology. The change of society has asserted the popularity of private enterprise, which has created needs for new services, such as peer-to-peer loans for SMEs and crowd funding for new start-ups, which means that bank financing for firms will decrease. In turn, technology has been the key enabler for these new services.

Interviewees from FinTech companies believe that future financial innovations will arise from the field of lending and from other business fields that cannot even be thought to be able to digitalize. Peer lending in particular will bolster its current market position and the principles of peer lending and crowd funding may be exploited in other types of assets such as real estates. In the future, there will be increasingly different alternatives for bank loans, which can be combined; that will totally change the competition. Share economy and sense of community will be the key characteristics of new future services: "*Boundaries between consumers and service providers will disappear or change.*" (Interviewee E 2015). Also insurance markets will change because "*disruption has not yet occurred and there is a lot of money in circulation.*" (Interviewee H 2015). Crypto currencies and their systems will, according to some interviewees, affect the financial industry significantly, because they will make value transfers faster.

When it comes to innovation activities, it seems that FinTech companies lack an official innovation strategy or a structured innovation process. Instead many of them seem to have "go with the flow" attitude. The reason for this situation lies mostly in these companies' lack of resources. Of course it has to be said that some of the interviewed companies have specific multidisciplinary development teams that have meetings or workshops regularly, and some use the idea box method as well. In addition, some of the interviewees pointed out that they aim to do development activities in a more structured way in the future: "*Our goal is that we could process new ideas in a structured way in our workshops in the future but this process is still at the beginning.*" (Interviewee E 2015).

It also seems to be common for almost every FinTech company that they want and try to work as close to the customer interface as possible, and develop services in cooperation with their customers: "*Our customers are mostly diginatives who are actively in touch with us and they want to develop our services in cooperation. Our goal is to create a brand with a customer-centric and customer oriented company. Thus, we do not want to be a cold and distant financial organization as they usually considered.*" (Interviewee D 2015). Apart from the main flow, one of the interviewees said that they have instead a pragmatic market oriented approach to innovations, which means that innovations will arise from a clear market need.

Added to customers, many of the FinTech interviewees say that they also have other external cooperative parties. Examples of these kinds of parties are different kinds of partner companies, software houses, consultants, marketing specialists, etc. In crypto currencies even competitors are considered a cooperative party because that business field is based on the sense of community. On the other hand, all of the interviewees stated that they do not have any systematic cooperation with universities or other research organizations. Although one interviewee mentioned that "*it would be a really good idea, and it would not do any harm.*" (Interviewee C 2015). Only one of the FinTech interviewees said that they have worked with some accelerator/incubator program and only one of the interviewees said that they had sent an application to that kind of program.

Traditional Financial Players

In the 2000s decade, traditional financial service providers have not introduced any significant new financial innovations: "*Traditional financial players have just digitalized their previous financial innovations such as moved from online payments to mobile ones.*" (Interviewee I 2015). A significant portion of all business and communication with customers has moved online and will continue ever increasingly: "*Nowadays a mobile bank is the most common way to manage your banking services* (Interviewee F 2015) *and there are digital bank branches, where customers are able to manage some of their banking issues. For example, it is possible to apply for financing through an online bank."* (Interviewee G 2015). The reason for these changes is that customers' needs have changed, which means that nowadays they want services that are available at any time and any place. Also tightened competition has set new rules for costs structures and has set new requirements for efficiency: "*Despite the recent changes, I don't see that digitalization would have revolutionized customers' behavior in the banking sector yet.*" (Interviewee F 2015).

According to incumbents, recent financial innovations have been created by new market entrants. The core idea of these new players is to collect small money flows for SMEs, such as venture capitalist communities do. The most significant new financial innovations are peer lending, blockchain, and crowd funding: "*Crowd financing in particular has been significant because it has enabled new financing sources for startups.*" (Interviewee J 2015). In the field of regulation have also arisen new innovations such as Target2Securities, the use of CCPs, and Basel3. All in all, digitalization together with internet has enabled many new financing possibilities, and thus lowered the threshold to the market for new players.

Current trends that have effects on incumbents businesses are increased regulation, new market entrants, change of customers' behavior, and the rise of digitalization. Regulation has increased drastically in recent years due to European central bank and domestic regulators, which have created many challenges. The new regulations

have set tighter rules for capital and for the use of equity, but they have also set new requirements for knowing and identifying customers: "*The regulator has overreacted to the risks of investors when trying to ensure that banks will not fall into difficulties.*" (Interviewee J 2015). The result of tighter regulation is that there are new groups of firms that cannot get financing from traditional banks. This is one of the reasons why new service providers have arrived, who will offer loans for these players. And these new lenders are able to do business outside of the current regulations.

Customers' behavior has changed due to digitalization, and thus they want to manage their banking issues through new delivery channels such as smartphones, computers, etc., because the pace of modern life is hectic. In addition, customers are more individualistic than before and thus they have individual needs and wants, which have changed the traditional customer segments: "*It is a big challenge for banks to be able to understand customers and their changed needs.*" (Interviewee G 2015). "*Banks want to listen customers and thus negotiations will be done via smartphones and tablets at home, which means that the physical location of a bank branch is largely irrelevant.*" (Interviewee F 2015). New market players have responded to these new market needs by having close relationships with their customers: "*In the field of FinTech, customer-orientation is one of the leading change drivers.*" (Interviewee I 2015). Other trends, digitalization, mobility and popularization of smart phones and tablet computers, have created new competition in the field of financial services. "*The trend says that we are going into the application world and these new financial service providers mostly come from outside the traditional banking sector*" (Interviewee F 2015). Now banks have great challenges to respond to new competition if they want to serve all their existing services in future.

According the traditional financial player interviewees, other significant trends are boundary crossing action, and the change of economic environment. Nowadays, companies work across boundaries in different countries, which means the increase of internationalization. In other parts of world, some companies even have their

own boundary crossing action, which means cooperation with external parties. For example, accelerators connect different players such as banks and FinTech firms. In recent years, this kind of cooperation has also be seen in Finland.

According to incumbent interviewees, future financial innovations may arise from new real-time payment solutions: "*Visa cards may be replaced with some mobile applications.*" (Interviewee F 2015). All in all, ICT is a highly potential business field for innovations, because customers increasingly want to independently search for service providers online who meet their exact needs. The result is that competition will become harder, and more new service providers will enter into the field of finance: "*The monopoly of traditional banks and the role to produce all services will become dwarfed.*" (Interviewee F 2015). Another future field of innovation is regulation, because currently there are many newcomers without a comprehensive regulative framework: "*There is no chance that everyone could just do what they want without being regulated.*" (Interviewee K 2015). The increased number of new, different service providers in turn means that there will be both positive and negative experiences, which means that regulator will set new rules for the game: "*New regulation may help individuals to enter investment markets easier than before, which would mean that customer-based funding will gain a higher position.*" (Interviewee J 2015).

Incumbents try to create new innovations and develop the existing services by spotting signals from customer interfaces, by collecting data about customer satisfaction and by collecting feedback from all their service channels: "*The most important message comes from customers.*" (Interviewee F 2015). In turn, organization's tacit knowledge is collected through the "idea box" –method and by brainstorming in work groups concentrated on future issues. They do not have any specific innovation/development departments, but when they see some development objects, a project team will be set up: "*These are really backward development methods and thus trends should be followed very carefully.*" (Interviewee F 2015). After that new services/products will be tested first with the organization's own personnel, and then with pilot customers.

Incumbents are not very keen on cooperation: "*If there is some bigger development project, external IT services will be used.*" (Interviewee G 2015). Customers, universities nor any other research organizations are used in the development phase of new services: "*In the banking sector every player has to pull their own weight. Alliances and other forms of cooperation are for other industries.*" (Interviewee F 2015). The reason is that incumbents fear that in a cooperation their business principles, bank secrecy and competitive edges would be at risk.

4.2 Technology Change and Digitalization

FinTech Interviewees

Technology change and digitalization have tremendously affected the financial industry although *"the new market entrants still operate at quite a small scale business level compared to the traditional financial institutions.*" (Interviewee B 2015). New technology has enabled new ways to serve customers, such as via online and mobile service channels: "*Especially peer loans and start-up funding have affected the financial industry significantly* (Interviewee C 2015) *and in the consumer lending market digitalization will overcome the traditional operation models."* (Interviewee B 2015). All services will become digital, from opening accounts to identification: *"There no longer a need to go to the bank branch, because nowadays you can manage your financial issues everywhere through mobile appliances."* (Interviewee A 2015). At the same time, importance of service design and digital service experience have become more important success factors.

In addition, technology and digitalization have allowed new players to enter into the financial market and the growth of the number of these new market entrants has been rapid in the last one and half years. At the same time the traditional financial organizations have reacted to these changes extremely slowly: "*These changes have had far-reaching and large consequences, and they have forced banks to rethink their business from the customers' perspective.*" (Interviewee H). Customers' behavior has changed, with their wants and needs changing ever so rapidly all the

time, thus setting new, agile market entrants in a better position, because they are able to response to these new market requirements quicker: "*The new market players are much more agile compared the incumbents, such as banks, who have really old and inflexible systems.*" (Interviewee E 2015).

Among the FinTech interviewees there is almost a clear consensus that new technology based services will support the traditional financial services instead of replacing them. Interviewees believe that these new services will be just new alternatives existing alongside the current ones. All this depends on how the traditional financial service providers will react to these new competitors and how quickly they manage to renew their offerings and business models: "*If the incubators cannot adapt to changes, the new market entrants will replace the current services. In another case, the new players will just work alongside the incubators and take their own niche market.*" (Interviewee B 2015). Regardless, some of the interviewees say that newcomers have not even planned to replace the services of incumbents: "*For example, we do not attempt to replace banks, because we cannot even compete with the interest rates of banks.*" (Interviewee C 2015). In addition, some interviewees admit that it would require significant resources to replace the existing service providers due to tight regulation: "*Replacing the traditional banking sector is challenging, because it is so strictly regulated and the banking license is so expensive.*" (Interviewee H 2015).

Now the traditional financial service providers are under considerable pressure to rethink and change the ways of doing business. The new market entrants will challenge the current market players, and thus accelerate changes in the whole financial industry. It is likely that the incubators will first watch the changes, then experiment with some new interesting ideas and maybe adopt the best practices in the future. Another alternative is that the incubators will acquire these new market players through consolidations as it has happened in the other parts of world. Of course, some of these new services are totally new and thus they have created totally new markets in the financial environment. Thus, it's not only a matter of whether these new services are going to support or replace the old ones, but instead

digitalization has created something new. Instead of bloody competition, "*new market entrants and the incubators should cooperate in such a way where the best parts and strengths of both groups could be exploited.*" (Interviewee E 2015).

Most of the FinTech interviewees believe that new market entrants have a real possibility to disrupt financial industry, because they are more agile than the traditional players and they have more sophisticated technological solutions in use. These new market entrants will bring new mindsets and behavioral approaches to the financial industry and these changes will emphasize more service design, mobility and user experience. In addition, those changes will lead the whole financial industry towards more personal and individual services, because mass solutions will not work anymore in the changed business environment: "*The financial market will become re-segmented, which means that the incubators will have their own segments and there will be certain market needs that the new comers will better serve*." (Interviewee H 2015). Though, some of the interviewees do not believe that new comers would have chances to disrupt financial industry, because disruption would require new comers to get banking licenses (which are expensive and difficult to obtain), or the current coinage would have to be replaced with some other system, such as crypto currencies. In that case, it would be likely that regulators would step in.

In turn, regulation has not much affected these new technology-based companies. Currently, there is no comprehensive regulation framework covering new digital financial services, whereas in the banking sector regulation set stiff requirements: "*The situation is that innovation was created first and the regulation has followed. Now the regulator has to think how to react to these new services.*" (Interviewee C 2015). For example, there is no legislation for crypto currencies and peer loans between individuals. Instead, startup funding is set under the legislation of investment services. Thus, regulation is seen as a hindrance factor and a great challenge, because it is hard to predict how the regulator will react these new digital services and how regulation will affect your whole business: "*New regulation may even force new companies to completely change their business models.*"

(Interviewee E 2015). Despite the negative aspects, interviewees see regulation as a positive factor, because it increases companies' credibility, customers' trust in these services, and it sets clear and common rules for all players on how to conduct business. Some of the interviewees also pointed out that regulation is not exclusively a hindrance or negative factor. For example, the payment service license has lowered the threshold to enter the financial market, because it is much cheaper than the official banking license and it is easier to get. Thus, new regulation has allowed new players to offer a bank-alike service without actually being a bank, which has accelerated change in the whole financial industry. All in all, regulation should supervise markets, but at the same time it should assure enough freedom for innovative players to develop and do their business.

Challenges and risks concerning new technology and innovations are consumers' IT skills, consumers' understanding about new services, security of new technology and customer data, and regulation. IT skills are especially emphasized in crypto currencies where it is vital to be able to protect your own wallet. In turn, security aspects are connected to all new technologies. If financial technologies do not work, there is a big risk, that many lose their money. Of course consumers should understand, what they are doing, how services work and moreover, what the possible risks are. All in all, when creating something new, there is no one who can help you when some problems appear. In addition, there is always the risk that there may not be enough demand for new services. The lack of comprehensive regulation enables companies, who do not have trustworthy goals, to enter the market, and if something goes wrong, they do not have any commitments to pay for the damage. And this is a really great risk and challenge.

In turn, possibilities and benefits concerning new technology and innovations are that middle men will be cut out, and thus it is possible to act in more efficient ways and profits will be shared with several different parties. Due to new funding and loan services, entrepreneurship will be supported because now companies have new sources of capital investments, which helps them to grow. Of course, this will benefit investors and venture capitalists as well, when they have new investing

channels and objects available. Thus, these new digital financial services have a great importance for the whole society, and they create new mindsets and enable totally new monetarist models. In addition, new technology solutions are scalable, reduce costs, ease the procurement of new customers, and first and foremost, they are transparent, easier and faster to use, and they are available everywhere at any time. All this means that the customer experience will be improved.

Traditional Financial Players

According incumbent interviewees, the development of technology has considerably affected the financial industry. New technology has enabled the distribution of traditional banking services through new digital channels, such as mobile channels, online banks and online stockbroking, which has revolutionized the whole banking sector: "*The traditional network of bank branches has decreased and it has been replaced by digital channels that are open 24 hours every day.*" (Interviewee G 2015). Communication with customers also happens through these new digital channels, and customers visit in bank branches approximately once in two years: "*Thus, digital channels have decreased the need of physical service providing.*" (Interviewee F 2015). On the other hand, these new channels require new marketing methods, because there is no longer the same physical access to customers as before: "*Increased use of data has made marketing more allocated.*" (Interviewee I 2015). Yet, it has to be said that the financial service sector has not been revolutionized as much as, for example, traditional media houses and department stores. Instead, the financial industry has managed to remain almost the same. Maybe the most noticeable change is the decrease of banking personnel in Finland, which has decreased approximately 30 000 from the late 80s to 2014: "*The products and services of incumbents are not changed and they are quite similar as before. The only change is that nowadays services and products are distributed in an allocated way through new digital channels.*" (Interviewee I 2015). In addition, technology change has enabled a group of FinTech players to enter into their competitive field. So, the change is just at the beginning and new technology is a central change driver in the field of financial services.

According to most of the incumbent interviewees, new FinTech market entrants will replace existing financial services instead of supporting the traditional financial services: "*FinTech players try to maximize their profits. For the present, they have targeted the fields of services, where incumbents have the highest contribution margins.*" (Interviewee I 2015). The new FinTech market entrants have especially great potential to capture diginative consumers who value highly innovative services/products. From the services' points of view, bank transfers and card payments are potential fields to be replaced with new innovative solutions. New market entrants will support the financial industry if they manage to create services for business fields, which incumbents cannot or do not want to serve anymore. This has happened due to new regulation when traditional service providers cannot serve particular market segments anymore: "*Regulation has generated two separate markets for financing.*" (Interviewee J 2015). The result will be that increasingly larger parts of loan markets will fall outside of the traditional banking sector: "*Different products will be packaged into loan instruments, where banks may no longer be in the role of financer.*" (Interviewee J 2015). Thus, banks will not be the only places, where it is possible to get financing: "*Banks have all possible service channels available and all kinds of financial services in their offerings. And we also want to do all of this in future."* (Inteviewee F 2015). The fact is that upcoming, new market entrants are continually trying to capture a part of the incumbents' business. The result will be that consumers have more possibilities of where to choose: "*The competition is getting harder and we the traditional financial players will respond to this challenge by cutting costs and by investing in ICT.*" (Interviewee F 2015).

Incumbents believe that newcomers have a clear possibility to disrupt the current financial service sector: "*There is no business field which could not get disrupted.*" (Interviewee K 2015). Disruption can most easily start from payments and micro finance, and then spread wider, because it is easier to enter those fields. Although all of the interviewees believe in the potential disruption, some of them are a bit sceptic: "*Sometimes it feels that the change is seen to be more challenging than it actually is, but it is possible that new services and service providers will arrive,*

rapidly taking parts of the financial service sector. The biggest threat is what you cannot even understand." (Interviewee G 2015). Despite these threats, incumbents see that the potential change is just a good thing, because it forces all traditional players to develop their businesses, to cut down expenses, and to become more efficient.

The new financial service providers have entered during a short time period, which means that regulators could not have set any regulations for these newcomers. For example many FinTech players operate outside of regulation. The challenge is to regulate in a way that would boost innovations, but at the same time preventing risks. In the banking sector new regulations have forced banks to be more careful about granting credit. These are the reasons why certain segments have had to be excluded from traditional bank financing. The lack of comprehensive regulation set great challenges for newcomers, because it is impossible to know what will happen in future, when the regulator finally reacts to their businesses: "*You have to remember that regulation comes always sooner or later.*" (Interviewee F 2015).

According to incumbent interviewees, benefits and possibilities of the new innovations in the field of financial services are the increase of productivity, improved customer experience, and more expeditious financing operations. New technologies enable the production of services for customers with lower costs, which result in improved efficiency and productivity. In turn, the new service channels have improved customer experience. Also capital cycles become faster due to new service channels, which should support economic growth. These new digital service channels will also benefit customers with better availability. New service providers increase the competition, but it will also benefit the incumbents, because it forces them to be more efficient and to screen out unprofitable services: "*This will be done either by increasing sale or cutting costs.*" (Interviewee F 2015).

According to incumbents, challenges and risks concerning new innovations and technologies are security issues, regulation, legislation, and increased competition. Security issues, including personal data security and cybersecurity, are especially

significant challenges for smaller players, because of the lack of resources. Legislation challenges concern all new innovative services: "*It seems that people imagine that all services, which are carried out through digital channels or social media are also legal.*" (Interviewee J 2015). From the banks' perspective, risks concerning new innovations and technologies are numerous, new competitors who claim portions of banks' businesses: "*The challenge is how we respond to new competition, because we still want to be the comprehensive financial service provider.*" (Interviewee F 2015). Tight regulation, together with new digital service channels, affect challenges for incumbents, because despite these new ways to serve customers they still have to know all their customers and identify them as well as before.

4.3 Financial Ecosystem

FinTech Interviewees

In Finland the financial ecosystem change has happened due to the new market entrants who are on the way to erode the power of the traditional financial service providers. The biggest banks are gradually awakening to see the possibilities and benefits of digitalization: "*Banks have clearly noticed that they really should react somehow to these newcomers and their services. What it comes to down is that banks should develop and improve their services or else they will lose the game.*" (Interviewee A 2015). But it has to be admitted that these new market entrants are still running on a small scale business level, and thus some of the interviewees hope that they could cooperate with incumbents instead of just competing: "*I think that all financial players should try to find synergies through cooperation instead of bloody competition.*" (Interviewee E 2015).

Although the roles and relationships of the traditional financial service providers have not radically changed, some of them have entered the new markets because of the pressure caused by new market entrants: "*Nordea has started to sponsor FinTech accelerator, which shows that new market players have affected the incumbents, and thus they are forced to enter the market of startup funding.*"

(Interviewee C 2015). Elsewhere in the world, big banks actively try to find innovations. For example, Citi Bank systematically looks for new startups who have significant innovations through its own innovation competition. The other alternative is that the incumbents will buy these new service providers through consolidations.

The new market players have made people more aware that there are also other alternatives to manage banking services: "*I think that the financial ecosystem has fragmented.*" (Interviewee E 2015). Thus, financial services are fragmented and customers source services from different service providers and combine them into a coherent whole. In addition, the new market players have also forced all financial players to improve the transparency of financial services. All in all, newcomers have created new courses of action, which has allowed the sharing of profits widely. Thus, they are consumers who will gain from these changes.

Most of the FinTech interviewees say that peer lenders are the most significant new financial service group, which include peer loans both to individuals and to companies/startups: "*Of course the scale of peer loan business is still quite small, but it is growing all the time.*" (Interviewee C 2015). Also crowd funding is seen as one of the important new comers in the field of financial services. Equity-based crowd funding enables companies to get easier financing, and in turn social crowd funding makes it easier to finance different kinds of projects or activities. According to interviewees, other interesting new fields are new payment solutions and digital banking. New payment solutions include mobile money apps, different payments services such as Paypal, but also new point of sale solutions, which enable transfer card payments in a new way, for example via smartphones and tablets. In turn, digital banking offers bank-like services and it is often based on a market place mindset, which enables the integration of different services into one bank account. Other significant new financial services are crypto currency related services, stock brokerage, big data services for analyzing credit information, and algorithm-based trading in the field of investing. In addition, all kinds of new services, which help

people to get in touch with banking services especially in the Third World, have a huge growth potential.

According to FinTech interviewees, two of the most significant change drivers of the financial ecosystem are the development of technology and the change of customers' needs and wants. Customers' needs and wants have changed hand in hand with the rise of digitalization. There is growing a new digital –generation, the needs of which are different. Digitalization has decreased the need of personal service and instead it has highlighted "do it yourself" -services that are available everywhere at any time. In addition, customers expect that new services are transparent and more efficient than the previous ones: "*Customers want better service and cheaper than previously. In addition, they want that services are transparent, because they want to know exactly what they get:*" (Interviewee E 2015). These kind of changes have risen from the change of the social environment and general mindsets. Moreover, technology has enabled many changes in the financial ecosystem. For example, new advanced algorithms have taken the place of humans in many places. Those algorithms have become increasingly more intelligent, and thus they have markedly improved efficiency: "*Technology has had a huge effect on the financial ecosystem. Software eases life and those who are capable of using it to its full potential will be among the winners.*" (Interviewee B 2015). Other notable change drivers are legislation, regulation, and financial crises. After the financial crisis in 2008, SMEs have had challenges to get funding from traditional financial institutions, because Basel3 –regulations have strengthened banks capital requirements, resulting in a situation in which many SMEs could no longer obtain loans without sufficient collaterals. The new market entrants are at the heart of the all changes when they have challenged the existing operations models: "*The new market entrants are forcing the whole financial market to look at business from more customer-centric view.*" (Interviewee H 2015).

The ecosystem of financial services will continue changing and is getting overheated through the FinTech-boom. Thus, significant changes will happen in near future, but changes will take time, because financial industry is so conservative

business field that there will be a lot of resistance and challenging. More new market players will enter to the financial service market, the more acceptable and believable the whole FinTech will become. Many current banking services are so old-fashioned that change in financial ecosystem is unavoidable. Especially openness will become more important factor, because customers have to understand what they will get from services. Thus, the financial market is moving closer to its customers, and service providers with their customers will be more in touch and everything will be more transparent. In addition, cooperation between different other players will be increased and deepen. "*I hope that there would be more cooperation and assistance*" (Interviewee C 2015). Digitalization has also enabled to distribute services all over the world, which means, that internationalization will be one of the leading trends. In future one possibility is that currency units will be removed and all exchange will happen directly with goods and services. All in all, whatever it will happen, they are customers who will benefit from changes. "*Customers will be shifted in a more significant role in the financial service ecosystem*" (Interviewee H 2015).

Traditional Financial Players

According to incumbent interviewees, the financial business environment has changed due to internal and external factors: "*The 'speed' of traditional financial service providers has slowed down and at the same time new market players have entered the field of financial services.*" (Interviewee I 2015). New market players have arrived that have not had any previous role in the financial industry: *"Thus, banking companies have started to finance growth companies as venture capitalists did earlier.*" (Interviewee J 2015). This has led to the situation where financial service markets will be reshaped and partitioned in a new way, which is the result from both new regulation and technology. When regulation rules out some actions, technology will instead enable totally new ways to do business. It is clear that these new agile players have affected incumbents: "*Newcomers have managed to change traditional banks and have affected attitudinal changes among incumbents. The banking sector has been too confident of its position in the financial industry and now these newcomers have been a humbling experience.*" (Interviewee G 2015).

These new players have captured parts of incumbents' market shares and the result is that consumers have wider range of different service alternatives. Many of the interviewees believe that we have not even seen the major changes and the best success stories in the financial services will come in future.

As it currently stands, relationships between incumbents have not changed drastically and the traditional market players still have their market shares. However, S-Pankki Oy has entered the banking sector, which may affect current positions and relationships in future. In Finland banks have been profitable through financial crises and that is the reason why there has not been pressure to change. Though, one of the banks in Finland has started to cooperate with some FinTech accelerator, which shows the fact that innovation skills are possible to source outside an organization. In addition, regulators have affected the financial industry significantly. Recent new regulations have improved customer protection and regulated investing services, which have required resources from incumbents. All the regulations are targeted to improve the transparency of services, prices and terms of condition: "*The trend says that companies grow larger, and thus smaller players will not fare because they cannot to respond to regulation.*" (Interviewee F 2015). Thus, increasing regulation may result in consolidations in the future. Also current world political situations, such as the crisis between Ukraine and Russia, have created great challenges when financial players are required to block some communities and companies out of financial services: "*The world has changed drastically.*" (Interviewee F 2015).

The remarkable changes have happened in customers' behavior and their needs and wants, which have had effects on the whole financial industry. In turn, new technology and digitalization have been the key enablers for these changes: "*Traditional financial service providers have not listened to customers' needs and wants as well as they should have.*" (Interviewee G 2015). These changes can be seen in increased popularity of new digital service channels, which have forced service providers to reduce their workforces. In addition, the change of customer behavior has affected consumers in such a way as they are not as brand loyal as

before. Instead prices and service are more important factors: "*In the end, they are customers who will benefit from all these changes*" (Interviewee F 2015).

According to incumbent interviewees, the most significant new financial services have arisen from the fields of payments, loans, and funding activities. New market entrants have especially hit the payment markets, as Paypal and Klarna have done. "*These new solutions have destroyed the banks' traditional credit card businesses which has had really high contribution margins.*" (Interviewee F 2015). Good examples of new funding services are different kinds of crowd funding solutions and other firms who offer different kinds of venture objects: "*Banks cannot even serve venture capital because of Basel3 directives. In practice Basel3 has enabled new alternative funding channels for firms.*" (Interviewee F 2015). In the loan segment, new players have arrived who finance SMEs, or firms' instant loans. In the consumer loan markets there have been newcomers who offer new solutions for consumption credits, car loans and peer loans. These new players have managed to achieve significant market shares. In turn, mortgages are still in the hold of incumbents, but the situation may change in future: "*According to some scenarios, new players will arrive who also provide mortgages. This would be really revolutionizing from the incumbents' perspective.*" (Interviewee G 2015). The contribution of new financing providers has not yet been considerable, but they are growing: "*These new market players set a need for renewal for incumbents who have led internal changes.*" (Interviewee G 2015).

Incumbent interviewees name seven different drivers, which direct changes in the financial ecosystem. Especially technology change and the change of customers' needs and wants have had the most significant contribution on changes in the financial industry: "*The changes of customers' needs and wants have been the key change driver.*" (Interviewee G 2015). Due to the development of technology, internet and mobile appliances have become cheaper, faster and easier to use, which has lead the wider use of them: "*People use more digital technology and the share of diginative people of the whole population increases all the time*" (Interviewee I 2015). Thus, digitalization will especially change the world, because almost

everyone have some mobile appliance that enable many new things to do. Examples of new technology based services are the use of big-data, mobile services, blockchain, internet of things and APIs. In turn, financial innovations have not been really radical and thus their contribution to changes is lower. Finally, they are consumers who decide which of the new technologies/innovations they want to use: "*The driver of technology development is that people are self-indulgent.*" (Interviewee F 2015).

In addition, new market entrants together with regulation, and changes in business environment have seen notable change drivers. New market players including FinTech firms, but also companies such as Google, Amazon, Facebook and Alibaba, have together with digitalization changed the ecosystem of financial services. Regulation has especially challenged the banks' daily routines, but in general it has affected the whole financial ecosystem. Financial crises and the Euro crisis have especially taxed traditional financial service providers. Macroeconomic situations in turn affect companies' chances to get liability funding: "*Economy affects the whole world and it changes enterprise culture, but also consumers and thus banks as well.*" (Interviewee F 2015). Cooperation and openness are seen as future change drivers of the financial industry: "*There are still no observations that some banks would have bought any FinTech firms in Finland.*" (Interviewee I 2015). Nonetheless, Nordea has started to cooperate with a FinTech accelerator program. Cooperation has increased especially due to new FinTech firms who are used to do things together when trying to get a position in the financial market. All in all, it cannot be said that there would be one or more main change drivers that affect the whole financial ecosystem: "*The change of financial service ecosystem is a result from many different drivers.*" (Interviewee K 2015).

In the future competition will become even harder and increased competition will promote more efficient courses of action and better services for customers: "*The financial ecosystem has changed and it is possible that it will change more than we have seen yet.*" (Interviewee G 2015). Incumbents' all services are open for competition. Digitalization will enable many new things, such as banks directly

sending offers to your smart phone or some transparent and efficient procurement of different banking services: "*Development and change will continue and we will see surprising structural changes.*" (Interviewee G 2015). In turn, financial innovations are easily copied, which may slow down development of new innovations. Traditional banks have looked quite similar, but in the future, the main change will be that financial markets will become re-segmented and all players, both incumbents and newcomers, will choose their new target segments. In practice, this will mean that banks will no longer look similar, but instead they will go to town with different target customer groups. This will be a great challenge for incumbents who are attuned to produce all kinds of services: "*Every bank has to create a strategy to which market segment they will target and which service channels they will use.*" (Interviewee F 2015).

4.4 Research Model

In the theory chapter, we learned that business ecosystems, in general, change due to internal and external change factors. As seen in Figure 13, the internal factors that affect business ecosystems are governance and architecture of the ecosystem, and co-evolutionary processes. In turn, the co-evolutionary processes consist of firms feeding-off, supporting, interacting activities such as knowledge and resource exchange, and manufacturing products and services. The architecture also has change effects, because higher modularity and thus higher independency lead to a higher rate of evolution. In the theory portion, we also learned that by managing innovations, it is possible to create new success stories. Thus, innovation activity is one of the key internal change factors. In today's complex business environment it is needed to have collaboration with different external partners in order to accelerate the process of innovation and to improve the quality of new innovations, which means shifting towards an open innovation. The open innovation principles benefit all the collaborative parties as well as the whole business ecosystem. In turn, the external change factors are social and economic environments, development of technology and innovations. By spotting and developing new successful rising technologies it is possible to disrupt existing market players and to create unprecedented opportunities for innovation and growth of new companies.

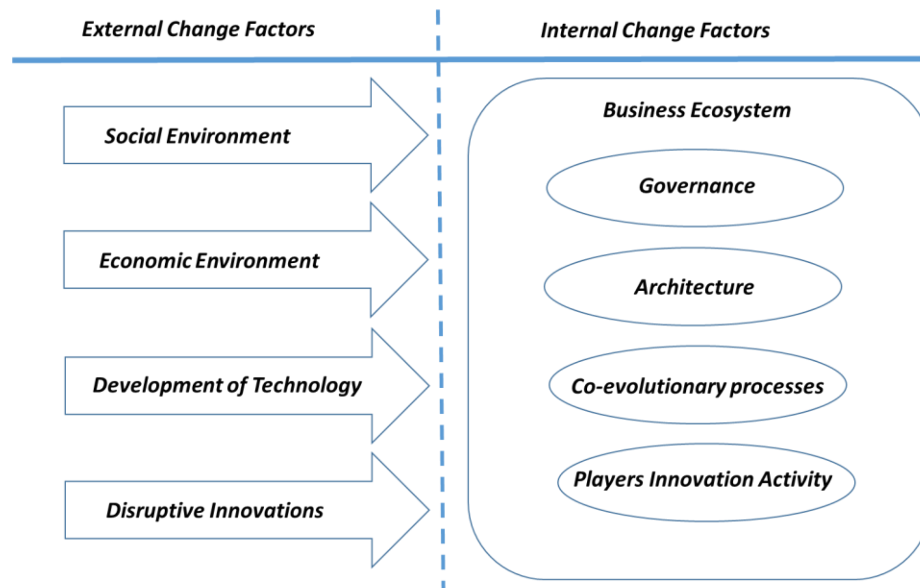

Figure 13. Theoretical Model of Ecosystem Change.

The ecosystem change model, illustrated in Figure 13, is only a simplified and generalized model and thus cannot be directly applied in the case of the financial ecosystem. Of course this provide a valuable framework when creating the model of financial service ecosystem change, which is based on the qualitative research findings described in previous sections in this chapter.

In Figure 14, the change mechanism of the financial service ecosystem is illustrated. As seen, the whole change process is much more complicated than the simplified theoretical model and it shows the uniqueness and specialty of the financial industry. All in all, there is not only one or a few key change drivers, but instead the change is a result from many different drivers.

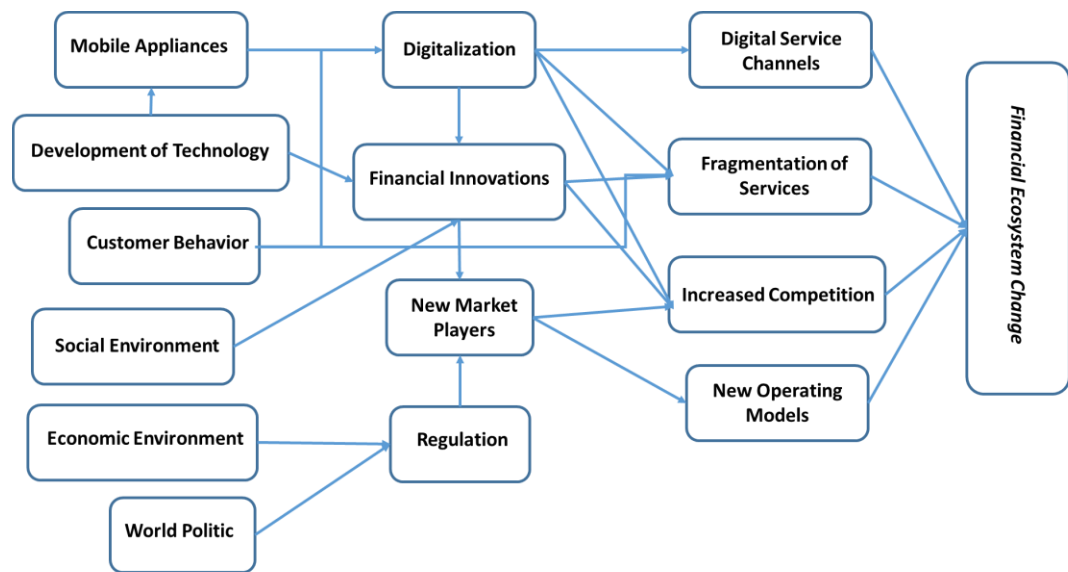

Figure 14. Change Factors of the Financial Ecosystem.

The two most remarkable change factors of the financial service ecosystem are *development of technology* and *change of customer behavior*. *New technology* has created a set of *new financial innovations* such as new payment services, funding, and lending solutions, but also digital banks, and even new coinages, crypto currencies. First and foremost, due to *developed technology*, internet and other *mobile appliances* have become cheaper and better, which has led to their wider usage. The increased use of *mobile appliances* and internet has created a fruitful ground for the current trend, *digitalization*. Also c*ustomer behavior has changed*, thus their needs and wants are different. As a result of this behavioral change, they do not value traditional brands and mass solutions in the same way as previously. The result is changed customer segments. They value more personal services that are available around the clock, every day and that precisely meet their own needs. These services they find from different sources and service providers, and finally combine them into a coherent whole. Thus, financial services have fragmented and become more transparent. *Digitalization* has responded to these new market needs, and thus it has changed the traditional products, services and their service channels. Nowadays, almost all services are in digital form and they are offered through *new digital service channels* such as online and mobile channels. These *new service channels* enable the distribution of services in an allocated way to customers, which

responds to their needs of personified service. In turn, these *new service channels* have drastically affected the financial ecosystem, because they have decreased the need of physical branches and a workforce. But on the other hand, they have improved services' availability (they are available at any time and everywhere) and customer experience, but also they have increased the speed of the capital circle, which supports the growth of the economy and thus will benefit the whole society.

New financial innovations, enabled by *new technology* and *digitalization*, are based on a "cut out the middle man" approach and they hit incumbents' services that traditionally have had high contribution margins. Instead, these *new innovations* share the profit widely, increase the openness and transparency, which benefits customers. *New financial innovations* have not only changed the basic characteristics of financial services, but they also have enabled many new customer segments to get in touch with financial services, especially in Third World countries. The contributions to the financial ecosystem of *new financial innovations* have been in the creation of new requirements for financial services and *increased competition* by offering alternatives to the existing financial services. Also *digitalization* has *increased competition* because it enables the distribution of services globally through new *digital service channels*. *Increased competition*, in turn, has forced incumbents to cut costs and improve efficiency. Of course *new financial innovations* have also created new sets of risks and challenges, such as different kinds of security risks regarding new technology. On the other hand, they have improved productivity, they are more scalable, and they have forced financial services to become more expeditious. All in all, the customers benefit from these changes.

New *financial innovations* have not only offered new financial service alternatives for consumers, but have also created a group of technology based on *new market players* who have entered the financial service market. These *new market entrants* have really challenged the current financial service ecosystem. They have not only *increased competition*, but have also created new mental models and courses of actions, which have challenged the traditional ways of doing financial business. If

traditional financial service providers are often seen as distant and cold institutions, these *new market players* have a more customer-oriented and customer-centric attitude. They want to do their business close to the customer interface and they want that their customers to actively take part in the development process of their services, which improves customers' satisfaction and customer experience. Thus, they force the whole financial industry to look at business from more customer-centric view, which means that boundaries between customers and service providers will disappear. In addition, new market entrants do not have as closed business models as the traditional financial service providers, and thus they really have a willingness to cooperate with external partners, which has not been common previously in the financial industry. According to the *new market entrants*, they would be interested to cooperate with other financial players instead of bloody competition. By searching synergies through cooperation, the whole financial service ecosystem would benefit. All this shows the fact that the *new market players* are shifting the financial industry into the world of open innovation, which will challenge and change the current *operating models*. Most of these *new market players* work without a comprehensive *regulative* framework, which makes them very agile compared the closely regulated incumbents. These changes have even affected some of the incumbents' roles when some of them have started to cooperate with startup accelerators. The *new market entrants* are thus on their way to disrupting the financial industry.

The change of the *economic environment* has also been a really significant factor when it comes to the financial ecosystem change. After the collapse of Lehman Brothers, the Euro and bank crises, regulators have set new rules and legislation for financial players. Good examples are the Basel3 directions, which were set in order to decrease the banks' risks concerning their capital. On the other hand, the result of this new *regulation* is that there are companies and individuals for whom it is difficult to get financing from traditional banks, thus creating a situation which has opened the doors for *new market players*. Thus, *regulation* has been one of the key factors that have changed the financial ecosystem. Also current *world politics* have set new requirements for incumbents which have made them even unyielding. In

addition, the change of *social environment* has supported the other change factors of the financial ecosystem. The *social environment* has increased the popularity of enterprise, which in turn has created needs for new services and *financial innovations*. In addition, it has boosted the favor of the share economy and the sense of community, which are the key characteristic of new *financial innovations*.

Figure 15 summarizes the main changes in the financial service ecosystem. First of all, incumbents (colored circles) have not changed significantly and thus their roles and relationships are quite similar. The biggest change is that many new market players have arrived (uncolored circles), and thus the competition has become harder in the financial service market. Many of these newcomers are able to do business without regulation, but as seen in Figure 15, some of them work under regulative framework. In addition, it can be seen that the regulative framework has become even larger, which means increased regulation to incumbents and to some of the newcomers. New market players strive to work as close as possible with their customers. This approach has resulted in bringing consumers and service providers closer to one another. This can also be validated by the change of customer behavior. Financial services are fragmented which means that consumers do not want mass solutions, and they are ready to search for services from different sources. All this requires a close relationship with service providers. As seen in Figure 15, new market entrants especially have a very customer-centric approach in doing business and developing new services. That is the reason why they are illustrated to be in the customer interfaces. In turn, new regulation has created new segments that cannot get traditional financing services, and this new group is served by new market players. What cannot be seen in Figure 15, is the development of new technology, and thus the rise of new financial innovations. In addition, the effect of digitalization and its results, new digital service channels, as well as the change of social and economic environments, cannot be seen in Figure 15.

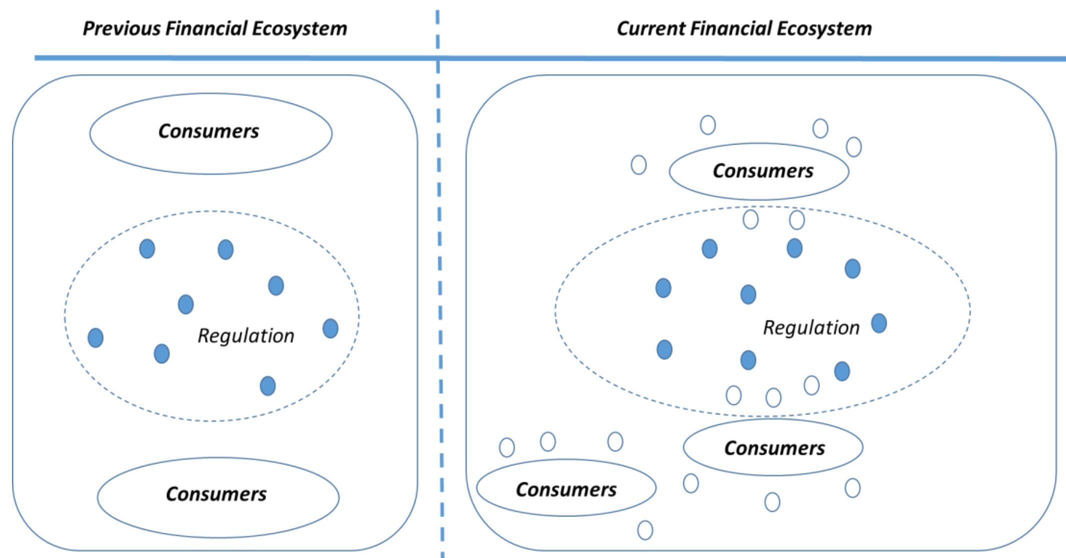

Figure 15. Change of the Financial Ecosystem.

Figure 16 illustrates the future financial service ecosystem if changes continue to happen without any dramatic shift, which would change the entire future direction of the financial industry. Increasingly more new market players will enter the financial service market, and thus competition will become even harder. New financial services will arise from the fields of payments, lending and funding solutions, insurance services and crypto technologies. For example, peer lending and crowd funding methods may be exploited in new asset fields, and credit cards may be replaced with some real time payment solution. The most significant change will be that consumers will become re-segmented in several new groups with different needs and wants. This means that all incumbents will no longer offer similar services, but instead they will target different segments and will have different services to offer them. This will be a great challenge for incumbents who are attuned to produce all kinds of services. The financial market will become reshaped, and players will target to different segments, resulting in an appearance different from the present one. The financial market will also move closer to its customers, service providers with their customers will be more in touch and everything will be more transparent, which means that customers will be shifted in a more significant role in the financial service ecosystem.

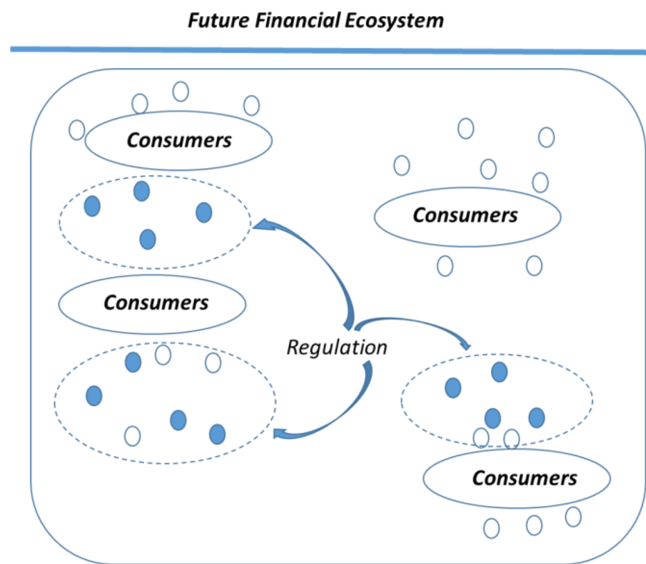

Figure 16. Future Financial Ecosystem.

5 DISCUSSION

In this chapter, the research findings sourced from qualitative interviews in the previous chapter of this study are summarized and discussed. After that, conclusions and results are introduced based on the research findings and other parts of this thesis. In the final part of this chapter, the limitations of the research findings are presented and the potential future research areas are recommended.

5.1 Summary of the Research Findings

As the previous research findings chapter, this section is divided into three parts that are: 1) financial innovations and innovation activities, 2) technology change and digitalization, and 3) ecosystem.

Financial Innovations and Innovation Activities

Both interviewed groups, FinTech players and incumbents, agree that recent financial innovations have arisen outside of the traditional financial service sector. When incumbents have just focused on digitalizing their existing services and service channels, the new market players have introduced the most significant, recent financial innovations. They both see new lending, funding, and payment solutions as significant financial innovations and they name examples, such as crowd funding, SME -financing, and peer loans. In turn, new payment solutions, including mobile wallets and new points of sale, have especially changed and revolutionized peoples' lives in Third World countries. It is noteworthy, that incumbents did not mention crypto currencies as notable innovations, whereas FinTechs believe that crypto currencies are the most revolutionary examples of financial innovations. In general, it seems that FinTech players on average are more aware of all new kinds of financial services than the incumbents. In turn, incumbents pointed out the effect of new regulations, whereas only one of the FinTech interviewees regarded regulation as a significant innovation.

Both FinTech companies and incumbents see that the most significant trends which affect the financial industry are digitalization and the change of customer behavior.

Digitalization has resulted in new ways to deliver services to customers, such as online and mobile service channels, which have increased competition, because this kind of application would enable new players to offer financial services. Due to digitalization, consumers require more customer orientated services and brands that are no longer so highly valued. The biggest difference concerning trends is that incumbents see regulation as the most significant trend which would change the industry, whereas none of the FinTech interviewees mentioned it. Incumbents claim that regulation is increasing all the time, which make their existence challenging. Regulation is the key reason why these new market entrants exist at all in the field of financial services. They argue that regulators have overreacted when setting these new rules and requirements. The result is that there has arisen new market segments which can no longer obtain financial services from traditional financial services providers, and this has opened the doors for new market players. Other trends that the interviewees mentioned are the change of society and the economic environment, and transboundary business. FinTechs argue that the change of society has boosted the popularization of new financial services, and incumbents see that the economic environment has had effects on the changes in the ecosystem. Transboundary business, in turn, has increased internationalization, and business over organizations' boundaries has created new cooperation relationships such as banks' cooperation with accelerators.

FinTech interviewees believe that future financial innovations will arise from the field of lending and crypto currencies. This means that current peer lending and crowd funding methods will be exploited in other types of assets, such as real estate, and the systems of crypto currencies will be exploited in value transfers. In addition, they believe that a sharing economy and the sense of community will be the key characteristics for future services, and things that cannot even be thought to be able to digitalize, will become changed. Also the insurance field will become reshaped and changed. In turn, incumbents believe that future financial innovations will arise from the fields of payment solutions, and thus current credit cards will become replaced with some other solutions, such as with some mobile applications. Incumbents also think that regulation will be one of the fields where new

innovations come from. The reason is that there is a group of newcomers who are outside of the current regulative framework. All in all, they both agree that competition will become harder in the future due to new market entrants and new innovations.

When it comes to organizing innovation activities, it seems that FinTech firms do not have any specific innovation strategy or structural processes. Mostly the reason is the lack of resources, and so instead services and products are created and developed with “go with the flow” attitude. But some of them have created multidisciplinary development teams and some say that their future target is to create structural processes for the development of new services. Nor do incumbents have any structured processes for innovation activities. Instead some of them also have different kinds of work groups which brainstorm and try to spot ideas. The key source of the ideas is feedback sourced from their customers and from customer satisfaction questionnaires.

Almost all FinTech companies are willing to cooperate when developing new products or services. They especially try to work as close as possible with their customer interfaces and they do everything in a customer-centric way. In addition to customers, most of them have many other external partners to cooperate with, such as software houses, consultants, marketing specialists, and even competitors. In turn, incumbents are not very interested in cooperating with external partners. The common attitude is that everyone has to pull their own weight and alliances and other kinds of cooperation are for other industries. Neither FinTech firms nor incumbents cooperate with universities or with other research organizations. Only a few of all interviewees had some kind of relationship with accelerators/incubators.

Digitalization and Technology Change

Both FinTech and incumbent interviewees say that digitalization, together with technology change, has affected the financial industry tremendously. The results of these changes are new digital service channels and services, which have decreased the need for current physical bank branches and a workforce. In addition,

digitalization and technology change have enabled a new group of FinTech players to enter the financial market. Regardless, incumbents have reacted to these newcomers very slowly and thus their products and services are quite similar than before, and the only change is the new digital service channels.

According to new FinTech market entrants, they will not replace incumbents' services but instead they will just offer new alternatives for consumers and thus work side by side with the existing financial services. That said, they admit that the result depends on how incumbents will react to the increased competition. If incumbents do not manage to respond to new challenges, new services will replace the existing ones. In turn, incumbents believe that these new service providers will replace their current services and they have great potential to create a replacement to bank transfers and payments. For example, due to regulation, loan markets are increasingly falling outside the traditional financial sector and in the future banks may not be in the role of financer. Of course, some of the new financial services are targeted totally new segments, and thus they are not replacing or supporting the existing services. All in all, the result is that consumers will have more service alternatives to choose from.

Most of the FinTech interviewees and all incumbent ones believe that new market entrants have a clear possibility to disrupt the financial industry, because they are much more agile than large traditional organizations, and these new players have more advanced and sophisticated technology in use. Instead, some of the FinTech interviewees do not believe in the newcomers' chances to disrupt the financial industry. Their argument is that the financial industry is so strictly regulated that disruption would require even the banking license which is expensive and hard to obtain, or the current coinage should be replaced with some other system such as crypto currencies. Despite the threat of disruption, incumbents think that these changes are a good thing, because they force all financial players to develop their businesses, to cut down expanses, and to be more efficient.

New technologies and innovations have been introduced in such a short time so there is no comprehensive regulation that would cover all the new market players. For example, crypto currencies, and peer loans between individuals are outside of regulation, whereas startup funding and payment services are under the regulative framework. In the payment field the new regulation has even lowered the threshold for newcomers to enter to the financial market. All in all, the current situation is a big challenge for all financial players, because it is impossible say what will happen in the future. The only fact is that regulation comes sooner or later. The challenge from the regulators' point of view is to set rules that boost new innovations but at the same time minimize all risks.

According to interviewees, challenges and risks concerning new technologies and innovations are security of new technology, regulation, legislation and consumers' IT skills. Security issues are connected to all new technologies and if something goes wrong, there is a big risk that many will lose their money. Also some new financial services, such as crypto currency services, require that users have the necessary IT skills to protect their electronic wallets. Legislation issues are very important to take into consideration because it does not meant that all services distributed online are legal as many people imagine. The lack of regulation is a great challenge, because it also enables dishonest players to enter to the market. From the banks' points of view it's challenging, because despite new innovations and technologies, they still have to work under regulations that are not always designed for that kind of services or products.

In turn, there are also many benefits and possibilities concerning new technologies and new innovations. Cutting out middle men improves efficiency and profits will be shared with several different parties. New funding and lending solutions, in turn, support entrepreneurship because of new sources of capital investments. New technologies and innovations also increase productivity, improve customer experience, and enable more expeditious financial operations. In addition, new technologies enable new service channels, which cut the costs and thus result in improved efficiency and productivity. The new digital service channels also enable

better service availability for customers. Due to new technologies, the cycles of capital have become faster, which support the growth of the whole economy. First and foremost, new innovations are more transparent, easier and faster to use and they are available everywhere and at any time, which means that consumers will benefit.

Financial Ecosystem

According to interviewees, the most significant change in the financial ecosystem are the new market entrants that have come from outside the financial industry. The roles and relationships between traditional financial service providers have not radically changed and they still have their market shares. Nonetheless, newcomers have challenged incumbents to change and develop their services and courses of action, when they have entered the financial market with new innovative and more transparent financial services that are served via new technology-based digital service channels. The result is that the ecosystem has become fragmented. Even the Nordea Bank has entered the funding markets of startups due to accelerator program after the entrance of newcomers. However, some of the new FinTech players would want to cooperate and find synergies instead of bloody competition. In the end, the consumers will be the winners, because increased competition enables a wider range of new service alternatives with cheaper prices.

In addition to new market players, incumbents say that regulation has also affected much of the financial service ecosystem. Regulators have improved customer protection, transparency of services, prices and terms of conditions, which all require new capabilities and recourses from traditional financial service providers. Also, the current world political situations have increased regulation. Other significant changes, which have affected the financial ecosystem, are the change of customers' behavior and the change of their needs and wants, which can be seen in increased popularity of new digital service channels. The popularization of these new digital services and service channels has forced incumbents to reduce their workforces and close branches. In turn, the change of customers' behavior can be seen in how customers are no longer as brand loyal as before, and instead other

factors have become more important such as price, service and availability of services.

Both FinTech and incumbent interviewees say that the most remarkable new financial players are the providers of new payment solutions and peer loans. The new payment solutions have especially struck the banks' credit card businesses where there have been very high contribution margins. New financing solutions, such as peer loans and crowd funding, offer new alternatives for individuals and companies to get financing. These new players have been successful, because after the Basel3 directives, banks have not been able to offer venture capital because of great risks. Mortgages, in turn, are still in the hold of incumbents, but there is a risk that there will also be some new competitors in future. FinTech interviewees also name digital bank-like services and crypto currencies as revolutionary new financial services and other services that help to manage financial issues and enable people in the Third World to be in touch with banking services.

According to interviewees, two of the most significant change drivers of the financial ecosystem are the development of technology and the change of customers' needs and wants, thus customer behavior. New technologies together with digitalization have enabled many new services and service channels. Also internet and mobile appliances have become more common which has enabled wider use of these new services. In turn, financial innovations have not been very radical and thus their effect on the change of the financial ecosystem is lower. In addition, customers' needs and wants have changed hand in hand with the rise of digitalization, which have supported the effect of new technology. Customers expect that new services are transparent and more efficient than the previous ones and first and foremost they want to get these new services cheaper than before. Finally, they are consumers who decide which of new technologies/innovations they want to use.

Other notable change drivers are new market entrants, regulation, and changes in the economic environment. First of all, they are the new market entrants who have

introduced new digital services and services channels and thus forced the whole financial industry to rethink their business. Regulation, in turn, has affected the incumbents' daily routines by setting new rules and requirements and on the other hand, regulation has enabled some newcomers to enter to the financial market. Macroeconomic changes affect companies' chances to get liability funding. Cooperation, in turn, has increased due to new FinTech firms, which will change the financial industry.

In the future financial ecosystem will continue changing. The traditional financial industry is quite conservative, so changes will take time. But the more new market players enter the financial environment, the more acceptable and trusted the whole FinTech group become. The fact is that competition will become even harder and there is no segment for which could not be competed. In general, financial innovations are easily copied which may slow down the development of new innovations. In turn, openness and transparency will become the increasingly more important characteristics of all financial services. The result is that the financial industry will move closer to its customers and they will be more in touch with their customers, which improves transparency and the quality of services. These changes mean that the financial market will become re-segmented. In practice this will mean that incumbents will look different in the future and instead of serving all kinds of customer segments, they will be forced to choose target segments to focus on.

5.2 Conclusions

The financial service ecosystem has been, and it is still in, a state of continuous change. Financial crises have resulted in tightened regulation, which has set new challenges for the traditional financial service providers and thus made their business operations even more unyielding. At the same time financial innovations have arisen outside the traditional financial industry due to new innovative technology-based companies called FinTech players. These new financial innovations are based on a "cut out the middle man" approach and they compete with traditional financial services that have had high contribution margins, which benefits customers. FinTech players have entered the financial service markets and

challenged the existing business models, mental models and ways of doing financial business. Instead of being like the traditional distant and cold financial institutions, these new players want to operate close to the customer interface and actively cooperate with them. Thus, the boundaries between customers and service providers will disappear. In addition, new FinTech players have a willingness to cooperate with external partners, which means that they are shifting the whole financial industry into the world of open innovation, which will challenge and change the current operating models. All in all, these newcomers have increased competition in financial markets, although their current market share is still quite small. They are very agile and they are thus able to rapidly react all kinds of changes, because many of these new firms operate outside a comprehensive regulative framework.

Also customers' behavior has changed, and financial services have fragmented. Consumers do not value brands as much as before and they do not want any mass solutions. The result is that they combine different services from different sources, thus finding the combination that meets their needs and wants. In addition, the change of social environment, bringing with it the increased appreciation of entrepreneurship, the increased sense of community and sharing economy, has boosted the demand of new service alternatives. Digitalization, in turn, has responded to these new market needs by offering new digital service channels, which improves the availability of financial services and enables allocated marketing. In addition, these new digital service channels have decreased the need of traditional physical branches, as well as the incumbents' workforce. First and foremost, these new digital solutions improve the efficiency, transparency and productivity of financial services, which can be seen as lower prices and better customer experience and satisfaction. The result is that customers have shifted into the center of the financial ecosystem.

The goal of the research was to explore how the business ecosystem of the financial service sector has changed and what its key change drivers are. According to the research model based on the research findings, the ecosystem of the financial

service sector has changed significantly, and it continues to change. First of all, after financial crises regulators have taken a more significant role as it has tightened regulation and legislation concerning incumbents. This has made incumbents increasingly unyielding. Otherwise, the roles and relationships of incumbents have not experienced remarkable changes.

The most significant change of the financial service ecosystem has come from outside its boundaries. New market players, due to new technology-based financial innovations, have entered the financial service market. They have challenged all the traditional players and reshaped the general requirements of financial services by increasing transparency, openness, availability, and ways to serve customers, but first and foremost they have set new customer-friendly approaches to do business. They work close to the customer interface and cooperate with them in order to develop better services and thus improve customers' experience and satisfaction. Thus, these new market players have shifted customers in to the heart of financial service ecosystem.

Customers' behavior has also changed and financial services have fragmented which has helped the entrance of new market entrants and has favored new financial innovations and new digital service channels. The new digital service channels and digitalization in general have really challenged incumbents' ways of doing business, and they have decreased the need of branches and workforce. In addition, the social environment has changed, which also has boosted and supported those changes. In turn world politics has also affected the financial service ecosystem by increasing regulation.

In turn, the change drivers of the financial service ecosystem are customers' behavior, development of technology and innovations, digitalization as a trend, regulation, change of social and economic environment, fragmentation of financial services, and last but not least, increased competition and new operating models due to new market entrants. The change of the financial ecosystem is the sum of all these different factors, and they all are needed to make change happen. Thus, it

cannot be said that one of those would be more significant than the others. The financial service ecosystem change is the combination of all those change drivers.

5.3 Limitations of the Research Findings and Further Research

The research findings of this study contain few limitations because of the nature of the qualitative research method. First of all, the results of this study are based on qualitative interviews which mean that research findings and results are mainly the researcher's interpretations of the interviewees' personal views. That is the reason why the results of this study should be thought as individuals' views rather than proven facts. Of course when talking about innovations and their effects on the ecosystem, it is clear that every interviewee pointed out their own services and innovations, and emphasized their excellence and maybe overestimated their future potential. Thus, some findings may be too optimistic and give a highlighted positive view of the business field or innovation. In addition, FinTech as a hot topic, is so new that some interviewees did not even know all the new services and market players. It is clear that these things might have affected some distortion in the research findings and results. In addition, the amount of interviewees, which is relatively small covering only 11 qualitative interviews, is another limitative factor. It is fact that other financial players would act in a different way than the interviewed ones. Six of the all eleven interviewees were from the FinTech field, whereas there were only two interviewees who came from the traditional financial service providers. The other three incumbent interviewees were other traditional players who do not produce financial services, but are in significant roles in the financial ecosystem. This means that FinTech players' views are in a highlighted position when it comes to research findings. Of course it can be interpreted that the traditional financial service providers' unwillingness to take part in this study points out that they are not yet aware of the threat of new market entrants. In addition, all interviewees were from Finland, which means that the research findings and results cannot be directly applied in other geographical areas.

The subject of this thesis is so fresh that there is room for a lot of further research. In the financial service ecosystem changes are happening so rapidly that even this

study should be refreshed after a relatively short time period. Of course it would be useful to carefully research and illustrate the Finnish financial ecosystem and especially the new group of market entrants. In addition, it would be very interesting to research how the cooperation between different financial players could be organized, because as the research findings of this thesis indicate, the new market entrants are very willing to cooperate with external partners. Finally, it would be useful to do this same research in other Nordic countries and in Europe as well so it would be possible to compare the current situations and thus differences and similarities between different geographical areas.

REFERENCES

Accenture. 2015. The Future of Fintech and banking: Digitally disrupted or reimagined? [e-document]. [retrieved August 21, 2015]. From: http://www.fintechinnovationlablondon.net/media/730274/Accenture-The-Future-of-Fintech-and-Banking-digitallydisrupted-or-reima-.pdf

Arnaboldi, F. & Claeys, P. 2014. Banks and Patents in the U.S. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp.70-96

Arnold, M. 2015. McKinsey warns banks face wipeout in some financial services. *Financial Times*. [e-journal]. [retrieved October 24, 2015]. From: http://www.ft.com/intl/cms/s/0/a5cafe92-66bf-11e5-97d0-1456a776a4f5.html#axzz3nCYHdGjX

Aspan, M. (2015). Fintech finally. *Inc*. pp.154-158.

Bryman, A. & Bell, E. 2011. *Business Research Methods*. 3rd Edition. Oxford University Press, New York. 765 p.

Business Insider. 2014. Alipay Overtakes Paypal As The Largest Mobile Payments Platform In The World. [e-journal]. [retrieved August 15, 2015]. From: http://www.businessinsider.com/alipay-overtakes-paypal-as-the-largest-mobile-payments-platform-in-the-world-2014-2?IR=T

Cankaya, S. 2014. Pros and Cons of Financial Innovation. in Dincer, H. Hacioglu, Ü (Eds.). *Globalization of Financial Institutions*. pp. 165-174.

Chesbrough, H. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Press.

Christensen, C.M. 1992. Exploring the Limits of the Technology S-Curve. *Production and Operations Management*. Vol. 1, no. 4, pp. 334-357.

Christensen, C.M. & Bower, J.L. 1995. Disruptive Technologies: Catching the Wave. *Harvard Business Review*. January-February 1995. pp. 43-53.

Christensen, C.M. & Bower, J.L. 1996. Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*. Vol. 17, pp.197-218.

Christensen, C.M. & Raynor, M.E. 2003. *The Innovator's Solution*. Harvard School Press. 15 p.

Christensen, C.M. & Bohmer, R. & Kenagy, J. 2000. Will Disruptive Innovations Cure Health Care? *Harvard Business Review*. September-October 2000. pp. 1-9.

Christensen, C.M. & Johnson, M.W. & Rigby, D.K. 2002. Foundations for Growth, How to Identify and Build Disruptive New Businesses. *MIT Sloan Management Review*. pp. 22-31.

Christensen, C.M. & Raynor, M.E. & Anthony, SD. 2003. Six Keys to Creating New-Growth Businesses. *Harvard Management Update*. January 2003. pp. 3-6.

CKGSB Knowledge. 2014. Internet Finance in China: Will it Disrupt Traditional Banking? [www-document]. [retrieved August 15, 2015]. From: http://knowledge.ckgsb.edu.cn/2014/03/31/finance-and-investment/internet-finance-in-china-will-it-disrupt-traditional-banking/

Curley, M. 2015. The Evolution of Open Innovation. *Journal of Innovation Management*. Vol. 3, no. 2, pp. 9-16.

Curley, M. & Salmelin, B. 2015. *Open Innovation 2.0: A New Paradigm*. Open Innovation 2.0 Conference, 7-9 June 2015, Espoo.

Da Silva, M. 2014. Innovation and Financial Inclusion: The Brazilian Bank Experience. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 43-69.

Denzin, N. 2006. *Sociological Methods: A Sourcebook*. 5th edition. Aldine Transaction.

Deutsche Bank Research. 2014. Fintech – The digital (r)evolution in the financial sector. [e-document]. [retrieved August 27, 2015]. From: https://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000345837.PDF

Dennehy, D. & Adam, F. & Carton, F. 2014. Business Model Design Issues: The Case of Mobile Payments. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp.129-152.

Entrepreneurial Insights. 2015. The Most Innovative FinTech Business Models. [e-journal]. [retrieved August 21, 2015]. From: http://www.entrepreneurial-insights.com/innovative-fintech-business-models/

European Commission. 2015. Open Innovation 2.0. [e-document]. [retrieved September 7, 2015]. From: http://ec.europa.eu/digital-agenda/en/growth-jobs/open-innovation.

Eurostat. 2015a. Main GDP aggregates. [www-document]. [retrieved July 13, 2015] From: http://ec.europa.eu/eurostat/statistics-explained/index.php/National_accounts_and_GDP

Eurostat. 2015b. File:Gross value added at basic prices, 2003 and 2013 (% share of total gross value added). [www-document]. [retrieved July 13, 2015] From: http://ec.europa.eu/eurostat/statistics-

explained/index.php/File:Gross_value_added_at_basic_prices,_2003_and_2013_%28%25_share_of_total_gross_value_added%29_YB15.png

Fasnacht, D. 2009. *Open Innovation in the Financial Services*. Berlin, Springer-Verlag. 219 p.

Financials. 2015. Democratising finance: Net groups disrupt China's financial landscape. [e-journal]. [retrieved August 15, 2015]. From: http://www.ft.com/intl/cms/s/0/63ae4022-a16d-11e4-bd03-00144feab7de.html#axzz3j3hyBCz3

Frame, W.S. & White, L.J. 2004. Empirical Studies of Financial Innovation: Lots of Talk, Little Action? *Journal of Economic Literature*. Vol. 42, no. 1, pp. 116-144.

Hilmola, O.-P. 2012. Technological change and performance deterioration of mobile phone suppliers. *Int. J. Technology Intelligence and Planning*. Vol. 8, no. 4, pp.374–388.

Hydle, K.M. & Aas, T.H. & Breunig, KJ. 2014. Strategies for Financila Service Innovation: Innovation becomes Strategy-Making. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 239-258.

Iansiti, M. & Levien, R. 2004. Strategy as Ecology. *Harvard Business Review*. 3/2004, 11p.

Indra and Efma. 2014. From the traditional banking system to the customer-centric financial ecosystem. [e-document]. [retrieved September 15, 2015]. From: http://www.efma.com/index.php/resources/studies/detail/EN/1/507/1-1DYUY5

InsuranceAsia News. 2015. Alibaba and the disruption of China's insurance industry. [e-journal]. [retrieved August 15, 2015]. From:

http://insuranceasianews.com/insights/alibaba-and-the-disruption-of-chinas-insurance-industry/

Kapoor, R. 2014. Intellectual Property and Appropriability Regime of Innovation in Financial Services. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 97- 128.

Laisi, M. 2012. Deregulation's Impact on the Railway Freight Transport Sector's Future in the Baltic Sea Region. Acta Universitatis Lappeenrantaensis 529. Lappeenranta 2013. 173 p.

Lerner, J. & Tufano, P. 2011. The consequences of financial innovation: a counterfactual research agenda. *Annual Review of Financial Economics*. Vol. 3, no. 1, pp. 41–85.

MarketResearch.com. 2015. Five Banking Innovations From Five Continents. [e-document]. [retrieved November 5, 2015] From: http://cdn2.hubspot.net/hub/209482/file-2481303213-pdf/docs/White%20Papers/5_BANKING_INNOVATIONS_WHITE_PAPER.pdf

Martovoy, A. 2014. Advantages and Disadvantages of Open Innovation: Evidence from Financial Services. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 259-294.

Mention, A.-L. & Torkkeli, M. 2012. Drivers, processes and effects of financial innovation: a research agenda. *International Journal of Entrepreneurship and Innovation Management*. Vol. 16, No. 1/2, pp.5–29.

Mention, A.-L. & Torkkeli, M. 2014a. Editorial. *Int. J. Business Innovation and Research*. Vol. 8, no. 5, pp.463-465

Mention, A.-L. & Torkkeli, M. 2014b. Innovation in Financial Services: Unveiling Ambiguity. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 1-11.

Mention, A.-L. & Martovoy, A. & Torkkeli, M. 2014. Open innovation in financial services: what are the external drivers? *Int. J. Business Excellence*, Vol. 7, no. 4, pp. 530–548.

Monetary Authority of Singapore. 2015. A Smart Financial Centre" - Keynote Address by Mr Ravi Menon, Managing Director, Monetary Authority of Singapore, at Global Technology Law Conference 2015 on 29 Jun 2015. [www-document]. [retrieved July 13, 2015]. From: http://www.mas.gov.sg/news-and-publications/speeches-and-monetary-policy-statements/speeches/2015/a-smart-financial-centre.aspx

Moore, J.F. 1996. *The Death of Competition: Leadership & Strategy in the Age of Business Ecosystems*. New York, Harper Business. 297 p.

Mäkinen, S.J. & Dedehayir, O. 2012. Business Ecosystem Evolution and Strategic Considerations: A Literature Review. *Proceedings of the 2012 18th International Conference on Engineering, Technology and Innovation*. pp. 1-10.

Oke, A. 2007. Innovation types and innovation management practices in service companies. *International Journal of Operations & Production Management*. Vol. 27, no. 6, pp. 564-587.

Oke, A. & Goffin, K. 2001. Managing innovation in the service sector. [e-document]. [retrieved July 13, 2015]. From: https://www.som.cranfield.ac.uk/som/dinamic-content/media/documents/managing%20innovation%20in%20the%20service%20sector.pdf

Peltoniemi, M. & Vuori, E. 2004. Business ecosystem as the new approach to complex adaptive business environments. *Frontiers of E-business research*. pp. 267-281.

Qu, S. & Dumay, J. 2011. The qualitative research interview. *Qualitative Research in Accounting & Management*. Vol. 8, no. 3, pp. 238-264.

Rajander-Juusti, R. 2015. Yhteinen Matka Finanssialan Tulevaisuuteen. [e-document]. [retrieved October 24, 2015]. From: http://www.fkl.fi/materiaalipankki/tutkimukset/Dokumentit/Hyvinvoiva_finanssiala_loppuraportti.pdf

Roberts, E.B. 2007. Managing invention and innovation. *Research-Technology Management*. Vol. 50, no. 1, pp. 35-54.

Salampasis, D. 2014. Readiness for Open Innovation in the Financial Services Sector. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 295- 336.

Salampasis, D. & Mention, A.-L. & Torkkeli, M. 2014. Open innovation and collaboration in the financial services sector: exploring the role of trust. *Int. J. Business Innovation and Research*. Vol. 8, no. 5, pp. 466-484.

Santonen, T. 2014. Defining a Framework for Developing a Mass Customization Strategy for Online Banking. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 152- 183.

Sarma, P.R.S. & Subramanyam, M. & Pramod, V.R. 2013. ICT and banking-is it a rejuvenating combination? A diagnostic analysis. *International Journal of Business Excellence*. Vol. 6, no. 2, pp.231–249.

Saunders, M. & Lewis, P. & Thornhill, A. 2000. *Research Methods for Business Students*. 2nd ed., Prentice Hall. 479 p.

Savitskaya, I. & Torkkeli, M. 2010. Markets for Technology in an Emerging Economy: Case of St. Petersburg Russia. *ИННОВАЦИИ*. Vol. 141, no. 7, pp.10-13.

The Economist. 2015a. The slumps that shaped modern finance. [e-journal]. [retrieved October 24, 2015]. From: http://www.economist.com/news/essays/21600451-finance-not-merely-prone-crises-it-shaped-them-five-historical-crises-show-how-aspects-today-s-fina

The Economist. 2015b. The fintech revolution. [e-journal]. [retrieved August 21, 2015]. From: http://www.economist.com/news/leaders/21650546-wave-startups-changing-financefor-better-fintech-revolution

The Guardian. 2012. Eurozone ignoring parallels with Latin American debit crisis of the 1980s. [e-journal]. [retrieved October 24, 2015]. From: http://www.theguardian.com/business/2012/aug/19/eurozone-latin-america-debt-crisis-1980

Tidd, J. 2001. Innovation management in context: environment, organization and performance. *International Journal of Management Reviews*. Vol. 3, no. 3, pp. 169-183.

Tidd, J. & Bessant, J. 2013. *Managing Innovation: Integrating Technological, Market and Organizational Change*. 5th Edition. Chichester, John Wiley & Sons Ltd. 660 p.

Torkkeli, M. & Hilmola, O.-P. & Salmi, P. & Viskari, S. & Käki, H. 2008. *Avoin innovaatio Suomessa: Yritysten, korkeakoulujen ja julkisen sektorin vuorovaikutus ja yhteistyö*. Tekesin katsaus, 233/2008. 103 p.

Tufano, P. 2003. Financial innovation. in Constantinides, G.M., & Harris, M. & Stulz, R. (Eds.): *Handbook of the Economics of Finance: Corporate Finance*, 1685 p.

Vantomme, D. & De Ruyck, T. 2014. How “Structural Collaboration” Leads to Value Propositions. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 337- 353.

Vinten, G. 1995. Open versus closed questions – an open issue. *Management Decision*. Vol. 33, no. 4, pp. 27 – 31.

Yablonsky, S. 2014. ICT-based financial innovations. in Mention, A.-L. & Torkkeli, M. (Eds.): *Innovation in Financial Services, A Dual Ambiguity*. pp. 184-224.

Wheelwright, S.C. & Clark, K.B. 1992. *Revolutionizing Product Development*. New York, The Free Press.

APPENDICES

Appendix 1. The Interview Framework

Innovations:

1. What are the recent significant innovations in financial services in general?
2. What are the current trends that will have an impact on the development of new financial services?
3. According to you what will be the next big innovations in financial services?
4. What kind of different tools/methods does the company use in its innovation process? (idea box, structured processes, etc.)
5. Are there any external stakeholders who take part in the internal product/service development process? (who, for what, when, how, etc)
6. Does the company have cooperation agreements with universities or other research organizations or startups?
    a. If yes, under what conditions and how?
7. Has the company cooperated with incubators or accelerators?

Technology:

8. To what extent have digitalization and technology development affected the financial industry in recent years?
9. What are the main changes in offerings (products and services)?
10. Are new technology based financial services intended to support or replace financial services provided by traditional financial institutes?
11. Do these new technology based market entrants have the possibility to disrupt the current financial industry?
12. How do law and regulations affect these new technologies?
13. What are the challenges and risks of new technology from your point of view?
14. What are the benefits and possibilities of new technology from your point of view?

Ecosystem:

15. How is the ecosystem of financial service sector changed?
    a. What is the contribution of financial innovations and technology change?
    b. What is the contribution of changes in overall business environment (social, economic)?
16. How are the roles and relationships of incumbents changed?
17. What are the main new market entrants?
    a. What is the contribution of these new market entrants to the changes of the business ecosystem?

18. According to you, what are the main forces of change that can affect an ecosystem?
    - Environment (social, economic)
    - New disruptive innovations
    - New Market entrants
    - Policy & regulation aspects
    - Cooperation and openness
19. What will the future of the ecosystem of the financial service sector look like?
    a. Main possibilities and threats

In General:

20. Do you have any other comments about the financial service sector or ecosystem change?

Appendix 2. Haastattelurunko

Innovaatiot:

1. Mitä ovat viimeisimmät merkittävät innovaatiot finanssipalveluissa?
2. Mitä ovat viimeisimmät trendit, joilla on vaikutusta uusien finanssipalveluiden kehittämiseen?
3. Mikä/mitkä tulevat olemaan seuraavat merkittävimmät innovaatiot finanssipalveluissa?
4. Minkälaisia työkaluja/menetelmiä yritys käyttää innovaatioprosessissaan?
    a. idalaatikot, rakenteelliset prosessit jne
5. Osallistuuko yrityksen tuote/palvelukehitysprosessiin ulkoisia toimijoita?
    a. Jos kyllä, niin ketä, mitä varten, miten, missä rajoissa?
6. Onko yrityksellä yhteistyösopimuksia yliopistojen tai muiden tutkimuslaitosten kanssa?
7. Onko yritys tehnyt yhteistyötä yrityskiihdyttämöiden/hautomoiden kanssa?

Teknologia:

8. Missä määrin/laajuudessa digitalisaatio ja teknologian kehittyminen ovat vaikuttaneet finanssialaan?
9. Mitä ovat päämuutokset finanssialan palvelutarjoomissa (tuotteet, palvelut)?
10. Tulevatko uudet teknologia pohjaiset finanssipalvelut tukemaan vai korvaamaan perinteisten finanssialan instituutioiden tarjoamia palveluita?
11. Onko uusiin teknologioihin pohjautuvilla markkintulokkailla mahdollisuus disruptoida nykyinen finanssiala?
12. Kuinka lait ja sääntely vaikuttavat näihin uusiin teknologioihin?
13. Mitä ovat haasteet ja riskit koskien uusia teknologioita/innovaatioita?
14. Mitä ovat hyödyt ja mahdollisuudet?

Ekosysteemi:

15. Kuinka finanssialan ekosysteemi on mielestänne muuttunut?
    a. Mikä on digitalisaation ja innovaatioiden vaikutus?
    b. Entä liiketoimintaympäristön vaikutus yleisesti (sosiaalinen, taloudellinen)?
16. Onko ekosysteemin toimijoiden rooleissa taikka suhteissa tapahtunut muutoksia?
17. Mitä ovat merkittävimmät uudet markkina tulokkaat?
    c. Mikä on näiden vaikutus ekosysteemin muuttumiseen?
18. Mitä ovat mielestäsi merkittävimmät finanssialan ekosysteemin muutosajurit?
    d. ympäristö(sosiaalinen, taloudellinen)
    e. uudest diruptiiviset innovaatiot/teknologiat?
    f. uudet markkinatulokkaat?
    g. sääntely ja lainsäädäntö?
    h. yhteistyö ja avoimuus?
19. Miltä finanssialan ekosysteemin tulevaisuus mielestänne näyttää?
    i. Mahdollisuudet ja uhat?

Yleisesti:

20. Onko sinulla muita kommentteja koskien finanssialan ekosysteemin mutokseen?