THE CHARACTERISTICS OF FINANCIAL INNOVATION IN DEVELOPING COUNTRIES: THE CASE OF TURKEY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF SCIENCE AND TECHNOLOGY POLICY STUDIES

AUGUST 2019

Approval of the Graduate School of Social Sciences

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ABSTRACT

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August 2019, 143 pages

Financial innovations are one of the important factors affecting the development of financial markets and have attracted more attention in the literature especially after the 1980s. In the existing literature, only a few studies investigate financial innovation processes in developing countries. The main purpose of this study is to investigate the factors influencing the emergence and development processes of financial innovations in Turkey. Thus, it is aimed to fill the gap in the development process of financial innovation in developing countries in the literature. In this study, a qualitative data was collected by interviewing with the employees from the first 9 out of the 15 highest-ranking banks in Turkey considering the asset size of the banks. In addition to these banks, there was also an interview conducted with an employee from a participation bank. The interviewed employees were working in the headquarter office of the relevant banks and were general managers of innovation department, manager of R&D department, IT specialist or innovation specialist. In the light of the information generated by the interview results, technological developments, changing customer expectations and market conditions, cultural characteristics of society and government regulations are the factors that affect the emergence and development processes of financial innovations in developing and developed countries. Moreover, it is observed that government regulations and the cultural characteristics of society are the most important ones for Turkey among these factors.

Keywords: Financial innovation, developing countries, Turkey

ÖZ

GELİŞMEKTE OLAN ÜLKELERİN FİNANSAL İNOVASYON KARAKTERİSTİKLERİ: TÜRKİYE ÖRNEĞİ

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Tez Yöneticisi: Doç. Dr. Hasan Cömert

Ağustos 2019, 143 sayfa

Finansal yenilikler, finansal piyasaların gelişimini etkileyen önemli faktörlerden biridir ve özellikle 1980'lerden sonra literatürde daha fazla dikkat çekmiştir. Mevcut literatürde, sadece birkaç çalışma gelişmekte olan ülkelerdeki finansal inovasyon süreçlerini araştırmaktadır. Bu çalışmanın temel amacı, Türkiye'de finansal yeniliklerin ortaya çıkma ve gelişme süreçlerini etkileyen faktörleri araştırmaktır. Böylece, literatürdeki gelişmekte olan ülkelerde finansal yeniliğin gelişme süreci hakkındaki boşluğu doldurmak hedeflenmektedir. Bu çalışmada, Türkiye'deki bankaların aktif büyüklüğü göz önünde bulundurularak, en yüksek sıradaki 15 bankanın ilk 9'undan çalışanlarla görüşülerek nitel veriler toplanmıştır. Görüşülen çalışanlar, ilgili bankaların merkez ofisinde çalışıyordu ve inovasyon departmanının genel müdürü, Ar-Ge departmanının müdürü, BT uzmanı veya inovasyon uzmanıydı. Görüşme sonuçlarından elde edilen bilgiler ışığında, teknolojik gelişmeler, değişen müşteri beklentileri ve piyasa koşulları, toplumun kültürel özellikleri ve devlet düzenlemeleri gelişmekte olan ülkelerde ve gelişmiş ülkelerde finansal yeniliklerin ortaya çıkması ve gelişme süreçlerini etkileyen faktörlerdir. Ayrıca, hükümet düzenlemelerinin ve toplumun kültürel özelliklerinin bu faktörler arasından Türkiye için en önemli olanlar olduğu görülmektedir.

Anahtar sözcükler: Finansal yenilik, gelişmekte olan ülkeler, Türkiye

To my lovely family

ACKNOWLEDGEMENTS

During this thesis, I sank into despair. However, I was lucky that there were people who supported me.

I would like to express my gratitude to my supervisor Assoc. Prof. Dr. Hasan Cömert for his support and guidance.

I also thank to my thesis committee members, Prof. Dr. Erkan Erdil, and Assist. Prof. Dr. M. Aykut Attar for their time and invaluable suggestions.

I want to express my special thanks and my deepest gratitude to my family, my mom Emine, my father Mesut, my sister Ayça and my brother Selim. They have always been trusting me more than anyone and always been there for me with their limitless support. I am very lucky to have you.

I also thank my precious friends who have shared my burdens of this thesis with me. Without their support and understanding, life would be much harder. Especially, I owe special thanks to Oğuzhan Özçakır and Tunç Ulaş for their priceless understanding and support.

Lastly, I am very thankful to my dear colleagues Maryat Coşkun and Yelda Erden Topal for their wonderful friendship and advices.

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ATM	Automated Teller Machines
BIS	Bank for International Settlements
BRSA	Banking Regulation and Supervision Agency
CBRT	Central Bank of the Republic of Turkey
ICC	Interbank Card Center
ICTs	Information and Communication Technologies
IT	Information Technology
BIST	Istanbul Stock Exchange
POS	Point-of-Sale
TBB	The Banks Association of Turkey
TRY	Turkish Lira
TURKSTAT	Turkish Statistical Institute
TURKDEX	Turkish Derivatives Exchange

CHAPTER 1

INTRODUCTION

Since the beginning of the 20th century, there has been an unprecedented technological change in almost every area. Specifically, with the development and extensive usage of information and communication technologies (ICTs) such as computers and the internet, this change has accelerated. In today's modern world, innovation is the core of technological change and development. Furthermore, innovation is an integral part of people's lives. For this reason, it is one of the most interesting subjects discussed in the magazines, on televisions, and in newspapers. At the beginning of the 20th century, many researchers focused mainly on the real sector innovation and they have investigated the reasons behind the emergence of innovation and its effects. Specifically, Schumpeter and his followers have made great contributions to the innovation literature[1].

In addition to the real sector, technological developments happened throughout history, specifically the ones in ICTs, also have influenced the financial sector. Especially, the banking sector has been affected by these technological developments. Thanks to real sector innovations and several other developments, new and more sophisticated financial instruments, institutions, goods, and services in the financial sector have emerged. Like real sector innovations, financial innovations also play a crucial role in an economy since they affect the financial system, financial institutions, macro-economic variables and the welfare of consumers both directly and indirectly (Schumpeter, 1939).

[1]See: Frame and White (2004), Tufano (2003)

The phenomenon of financial innovations is not new. On the contrary, it has existed throughout history in different forms since the invention of money or maybe even earlier times (Comert and Epstein, 2016). However, due to financial liberalization and rapid changes in ICT, development of financial innovations has accelerated and its scope has been enlarged, especially after the 1980s. Miller (1986) argues that these developments in both financial instruments and institutions can be considered as a revolution.

Financial innovation can influence the economy both positively and negatively. Many researchers in the literature have highlighted the positive sides of financial innovation. According to them, financial innovation provides a better allocation of capital, minimization of transaction costs, and improvement of diversification[2]. Also, financial innovation increases the stability of a financial system by allowing better risk management (Llewellyn, 2009). In addition to these, financial innovation enables appropriate payment instruments, and monetary exchange between currencies (Levich, 1987). Akhavein et al. (2005) liken the positive sides of financial innovation to “the lifeblood of efficient and responsive capital markets” (p.577).

However, although many academics warning about the possible negative effects of financial innovation, only after the financial crisis, the majority of the studies started to emphasize the possible negative impacts of financial innovation as well (Comert and Epstein, 2016). For example, derivative products were blamed for excessive leverage leading to the crisis (Llewellyn, 2009). In addition to derivative products, subprime securities, credit default swaps, and other securitization practices have been discussed as important factors contributing to the crisis (Allen et al., 2012). Crotty (2009) argues that excessive use of high credit shifting instruments such as mortgage-backed securities and residential mortgage-backed securities led to the excessive risk-taking behavior of the banks supported by the high bonus culture of financial institutions. Notably, the derivatives led to too much credit expansion that increased house prices. In this vein, the derivatives caused bubbles in the US market since the

[2]See: Greenbaum et al (2016)

house prices exceeded their real worth. This is one of the essential factors that caused the 2008 global crisis (Brunnermeier, 2009). Overall, there has been an increasing emphasis on the role of financial innovation in rising complexity and leverage, encouraging risk-taking behavior and increasing volatility in financial markets.

Different aspects of financial innovation have been explored in the literature. However, existing financial innovation literature mostly focuses on the developed countries, specifically the United States where many financial innovations have developed so far[3]. The reasons for that can be related to advanced financial infrastructure and financial environment of the developed countries.

Financial innovation studies about developing countries including Turkey are also very rare in the literature. One of these studies is Güner (2005)'s Master of Science thesis. Güner (2005) investigates data about the number of Automated Teller Machines (ATM), especially for T.C. Ziraat Bankası and Türkiye Iş Bankası. Generalized method of moments is used with the panel data as the estimation method. One of the important results of this study is the positive correlation found between ATM numbers and the numbers of banks' branches. Another result is that there is a negative correlation between the number of ATMs of T.C. Ziraat Bankası and the population of Turkey. In contrast, the number of ATMs of Türkiye Iş Bankası is positively related to the population of Turkey.

Another study about Turkey is related to Internet banking in Turkey and it was made by Bulut (2013). He collected data on internet usage from the payment system of Central Bank of The Republic of Turkey. Panel regression is used as the estimation method. According to the findings of this study, internet banking adaption and bank size are positively correlated to each other in Turkey although they are indicated as negatively correlated in the literature in general. Another result is that the internet usage of households has a positive influence on Internet banking adaption since Internet banking is an alternative for bank branches. Another study was made by Herguner (2015) on credit card installments and gold accounts in Turkey. According

[3]See: Comert & Epstein (2013)

to this study, credit card installments and gold accounts occurred as a result of technological developments and cultural and institutional factors. In addition, these two innovations have some characteristics unique to Turkish culture and a large part of society has been using them.

This study aims to investigate the emergence and development processes of financial innovations in developing countries. Since many studies about financial innovation in the literature are conducted by employing the case study approach, we have chosen Turkey as a case study for this research. This study differs in many aspects from other studies described above about financial innovation in Turkey. First, when we discuss the main aspects of financial innovation like its definition and history, we also explain the main differences and similarities between financial innovations and real sector innovations. Second, the factors that affect the emergence and development processes of financial innovation and the reasons that lead to different financial innovations between developing and developed countries are explained in this study, which has not been discussed so far in the literature. Third and last, instead of focusing on specific types of financial innovations in Turkey, this study is designed to include the aspects and the emergence and development processes of all financial innovations in Turkey in general. Therefore, this study makes the first comprehensive literature review on financial innovations in Turkey.

With respects to the aim of this study, we developed the main research question as follows: "What are the factors influencing the emergence and development of financial innovations in Turkey?”. To collect data for this research, we conducted semi-structured interviews with the employees from the first 9 out of the 15 highest-ranking banks in Turkey considering the asset size of the banks. In addition to these employees, there was also an interview conducted with an employee from a participation bank**.**

The main findings of this study are: technological developments, changing customer expectations, and market conditions are the most important factors that affect the emergence and development processes of financial innovations in developing and developed countries. Moreover, especially in developing countries, government regulations and society’s and the government’s approach against financial innovations influence on both the emergence and development processes of financial innovation. In addition to all of these factors, the cultural characteristics of the society also affect the development and diffusion processes of financial innovations in Turkey.

The main contributions of this study to the literature are as follows: First, it attempts to shed some light on the differences between financial innovation and real sector innovation which does not have wide coverage in the literature. Second, this study is the first study to examine the factors affecting the emergence and development of financial innovations in Turkey by utilizing a qualitative method. Third and last, this study explains the reasons why financial innovation differs between developing and developed countries.

The plan of this thesis is as follows: Chapter 2 discusses the main arguments of financial innovation literature. This chapter prepares the ground for the rest of the arguments in the thesis by clarifying the definition, classification and measurement methods of financial innovation and it discusses a brief history of financial innovation along with the reasons behind the emergence of financial innovations.

Chapter 3 focuses on financial innovation in developing countries considering the main arguments provided in the literature. Factors that affect the emergence and development of financial innovations in developing countries are discussed. To identify these factors, we elaborate on institutional and economic changes that have an influence on the development of financial innovation. Especially, the effects of the collapse of Bretton Woods's system and liberalization policies on financial innovation are discussed. Furthermore, we relate all of these factors to Schumpeter's business cycle and creative destruction thought. The rest of chapter 3 explores the main differences in the functioning of financial innovation in developing and developed countries. To make a comparison between these types of countries, we adapt the real sector innovation theories to financial innovation theories. We observe that developing countries stay behind developed countries in terms of financial market structure, regulatory framework, the banking system, and technological infrastructure.

Chapter 4 focuses on the case of Turkey by following the arguments in the previous chapters. We examine the emergence and development processes of financial innovation in Turkey in terms of the institutional and cultural aspect. Moreover, the rest of chapter 4 provides a comprehensive review of financial innovation in Turkey as opposed to available studies in the literature mostly focusing only on a specific financial innovation. The adaptation and diffusion process of some specific financial innovations such as Turkish derivative market and mortgage system and payment methods are examined. In addition, the banking sector in Turkey is briefly reviewed in the last section of this chapter.

Chapter 5 gives information about the qualitative analysis of the research. This chapter explains the general research process, research methodology, and findings of the research. Semi-structured interviews are conducted with the employees working at the headquarter office of the relevant banks and their occupations were general manager of innovation department, manager of R&D department, IT specialist or innovation specialist.

Chapter 6 concludes the thesis with a summary of the main findings of the research. Moreover, we made policy recommendations for further development of financial innovation in Turkey based on the research results and main arguments provided in the literature. In addition, some suggestions are made for future research about financial innovation in Turkey.

CHAPTER 2

LITERATURE REVIEW ON FINANCIAL INNOVATION

Although the history of financial innovation goes back to ancient times, spectacular developments in financial innovation have taken place after the 1980s. As a result of these developments, the literature has paid more attention to financial innovation since then. At the beginning of the 1980s, many researchers mentioned about the positive side of financial innovation in the literature. These researchers argued that the primary role of financial innovation was to improve the financial sector. However, some of these positive opinions have become reversed, and financial innovations have been criticized after the global financial crisis of 2008. Despite the fact that researchers have elaborated on financial innovation, most of this issue is still ambiguous in the literature. That is to say, there are many aspects of financial innovation remained controversial in the literature. In this chapter, we try to expound these ambiguous parts and main aspects of financial innovation. The literature on financial innovation has been shaped thanks to the literature on innovation in the real sector. The definition of financial innovation is related to the common and distinctive features of the term "real sector innovation". In addition, some of the classification methods of financial innovation are also related to real sector innovation. First, benefiting from the existing literature, this chapter takes it to a step further and attempts to clarify the similarities and differences between financial innovation and real sector innovation concepts. Second, many currently available financial innovations have emerged as a result of the development of previous financial innovations. Last, the emergence of financial innovations is mostly related to the effort made for solving the problems in the financial environment. However, financial innovation can lead to financial troubles at the same time.

The contributions of this chapter are to show the main similarities and differences between financial innovation and real sector innovation and to discuss the factors that lead to the emergence of financial innovations.

The course of this chapter is as follows: First, the different definitions of financial innovation are presented in section 2.1. Second, a history of financial innovation is discussed in section 2.2. Third, underlying factors that affect the emergence of financial innovation are explained critically in section 2.3. Then, how financial innovations can be classified and measured is clarified in section 2.4. Last, summary and the main arguments of the literature are discussed in the section 2.5.

2.1. What is Financial Innovation?

Primarily, to have a clear definition of financial innovation, it would be better to define the concept of innovation which affects almost every aspect of our lives. According to the OECD Oslo Manual, innovation is defined as follows (2005, p.46):

> An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.

In this manual, the cornerstone of innovation is regarded as technology either implemented or created anew.

Although a clear definition of innovation is available, there isn’t any agreed financial innovation definition in the literature because innovation in finance is quite different than real sector innovation. On the other hand, the common points of different financial innovation definitions in the literature emerge from product and process innovation aspects of the main concept. Therefore, before giving these different definitions of financial innovation, it would be helpful to define product and process innovation terms. According to the OECD Oslo Manual (2005), while product innovation is defined as “the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses” (p.48), process innovation means “the implementation of a new or significantly improved production or delivery method" (p.49). That is to say, the fundamental difference between product and process innovation is that while product innovation focuses on the product itself, process innovation is related to the creation methods of product.

According to Boot and Thakor (1987, p.1125), financial innovation could be considered as a way to handle risk diversification, to provide an advantage in terms of tax along with its aspect of enhancing information sensitivity in a broad sense. Moreover, Lerner and Tufano (2011, p.6) think that the financial innovation definition is "the act of creating and then popularizing new financial instruments, as well as new financial technologies, institutions, and markets"

Frame and White (2004, p.118) also define financial innovation as: "Something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies financial system participants' demands."

Based on the definitions above, financial innovation mainly associates with a technological, legal and organizational framework. From this point of view, we can define financial innovation as new financial tools or improvements in any financial activity. On the other hand, based on evolutionary thought, the diffusion and characteristics of financial innovation can change from developed countries to developing countries depending on some circumstances such as historical and institutional conditions. From this point of view, the definition of financial innovation is unique to countries' specific conditions. This can explain why there isn't any agreed financial innovation definition in the existing literature. Following the aforementioned discussion, in the next chapter, we discuss why financial innovation and its development function differently in developed and developing countries.

2.2. Brief History of Financial Innovation

As mentioned previously, even though financial innovation started to gain importance in the 1980s due to the developments in ICTs, its origin actually dates back a long time. In other words, financial innovation has been one of the integral parts of the economy through the past few decades, but it has a history that goes back to ancient times. In this sense, Miller (1986, p.460) describes financial innovation just as “lying like seeds beneath the snow, waiting for some change in the environment to bring them to life”.

The introduction of a coin in the 7th century B.C. in Lydia was one of the oldest financial innovations in history (Flood, 1992). Another crucial financial innovation was the invention of paper money in China in the 9th century (Comert and Epstein, 2016). In addition, banking activities, which are one of the main components of a financial system, are seen as financial innovation, and the origin of banking activities are based on ancient civilizations. For example, an arrangement of payments, deposits, and loans were financial activities that were used in ancient Greece.[4] Dutch financial markets in the 17th century can be given as another example of banking activities in which financial innovation played a quite important role and in where the products and their derivatives related to securitization were used as their first practices (Goetzmann and Rouwenhorst, 2005). The financial innovations in the 20th century developed more rapidly, especially after the 1980s.

Considering the examples given above, banking activities have developed over time and transformed into the financial innovations we use in today's world. Therefore, it can be said that continuity is an essential feature of financial innovation development. Similarly, according to Tufano (2003), financial innovation is similar to any innovation in business in terms of being a continuous process. Thus, Tufano (2003) claims that every new financial product has been created as a derivative of its predecessor or developed as a result of its interaction with the previously created products throughout history. This means that today’s financial innovations are connected with the developments in earlier times. The evolution of financial instruments into finance projects in time can be given as an example of this argument. The purpose of developing new financial instruments such as debt contracts came into use in 17th and the 18th centuries was to fund the commercial activities such as maritime commerce. Afterward, in the 19th century, investment banks created new accounting

[4] See: Allen, F. & Gale, D. (1994)

methods in order to finance and to evaluate the profit of railroad companies. Then, in the 20th century, new private companies were established to finance projects like high tech investment projects (Blach, 2011, p.17). It is inferred from the reviewed examples that technological and financial innovations have always depended on each other and evolved together throughout history (Michalopoulos, Leaven, and Levine, 2009).

2.3. The Reasons behind the Emergence of Financial Innovation

A financial system has various functions in the economy. According to Tufano (2003), these functions are collecting funds, minimizing risk, offering consulting services, resolving asymmetric information problem and trading of financial instruments. If these functions fulfill the demands of the financial system itself, why is it necessary to develop financial innovations? (Tufano, 2003). The answer to this question is as uncertain as the definition of financial innovation is. Therefore, there are many different explanations in the existing literature about why financial innovation occurs in the first place, and some of these different explanations are discussed in the following part of this section.

First, profit maximization is an important stimulation for the development of financial innovations. The key to profit maximization is to perform a cost-benefit analysis. According to Flood (1992), financial innovation emerges as a result of cost-benefit analysis which suggests minimizing the costs and increasing the revenue in order to end up with a high profit. While searching for new ways to increase profit, an impulse to innovate is created. Tufano (2003) also refers to the Schumpeterian innovation process and argues that financial innovation is an integral part of profit maximization in the market. Similarly, individuals and enterprises who have an aim of profit maximization try to do innovation in products, processes or organization to reduce costs and increase the revenue. All of these innovations can be achieved by developing some research methods or by trial and error (Frame and White, 2004). Another aspect of cost-benefit analysis is about technology. Flood (1992) argues that minimizing the cost of producing which can stimulate innovation is challenged by exogenous technological change. Tufano (2003) also claims that financial intermediaries play an essential role in the minimizing of transaction costs because they help to find optimal consumption and investment level of households[5]. For instance, after the development of ICTs, the cost of accounting for intensive products such as electronic funds transfers, automatic teller machines, intermediary deposits, and mutual funds has reduced. Also, such development of technologies has increased the speed and accuracy of a transaction (Flood, 1992).

Second, technological development can be one of the sources of financial innovation. Improvements in IT, telecommunication, and internet facilitate an increase in the number of financial innovations such as new methods for securities and assembling the portfolios of stocks (Tufano, 2003). Thanks to the developments in computer and telecommunication technology, it is now easier to access information about financial opportunities and to minimize the transaction costs. With these improvements, provision methods for financial products are also enhanced (Van Horne, 1985). Furthermore, with these technological developments in the finance sector, adaptation to sophisticated financial innovations and improvements of financial techniques for investment and credit may be easily possible (Frankel and Mann, 1986). On the other hand, investors may not fully understand how to use some complex features of financial innovations such as securities, and financial institutions can benefit from this situation which can be assumed as a negative side of financial innovation. For instance, the profit rate of Stock Participation Accreting Redemption Quarterly-pay Securities (SPARQS) is lower than the risk-free interest rate. In general, investors don't prefer to use such financial innovation because they do not increase their marginal benefits. However, some investors may still use this financial innovation by mistake when they don't really understand it since it is complicated and has a complex structure (Henderson and Pearson, 2011).

The market conditions such as complete financial markets and market limitations are two of the reasons why financial innovation emerges since market conditions affect the financial environment. A complete market enables greater capital mobility and an

[5] See also McConnell and Schwartz (1992).

integrated structure in the international market because financial instruments provide flexibility for everyone to achieve their desired financial goals (Levich, 1987). Similarly, Tufano (2003) thinks that the completion of incomplete markets is crucial for the emergence and development of innovations because risk management and free movements of funds across time and space are so difficult in incomplete markets. Thanks to financial innovations, these problems can be solved now. Moreover, market limitations can also have a direct influence on the development of financial opportunities. Ben-Horim and Silber (1977) assert that market limitations such as balance sheet constraints and liquidity requirements negatively affect financial institutions and financial firms. Therefore, they need to search for new financial practices to overcome market limitations. As a result of the introduction of new financial practices, Grinblatt and Longstaff (2000) argue that financial markets can be more complete and transaction costs can be minimized[6].

Another common reason why financial innovation emerges is the agency and information problems. Opaque institutions encounter agency and asymmetric information problems because there is always a conflict of interest between these institutions and their participants. For this reason, participants and these institutions agree upon a contract. Based on the contract, when financial shocks such as tax and regulation changes emerge, financial intermediaries tend to sell some of their low-grade assets. The underlying reason for selling low-grade assets is a strenuous assessment of low-grade assets by foreign investors. Banks, especially investment banks, seek for innovations to create new pools composed of these assets. Therefore, agency and information problems and marketing costs have a role in the production of innovations by interacting with each other (Ross, 1989).

Some researchers suggest that the emergence of financial innovations is triggered by the volatility of macroeconomic variables. During the end of the 1970s and 1980s, due to the effect of oil crises, the collapse of Bretton Woods Monetary System, international payment structure, exchange rate regime, and also economic and political

[6] See Duffie and Rahi (1985) and Tufano (2000)

environment of the financial system changed. As a result of these changes, high inflation occurred which then led to a rise in the volatility of both interest rate and foreign exchange rate. Therefore, financial service users and suppliers produced new financial instruments and techniques to deal with these negative consequences (BIS, 1986).[7] Smith, Smithson, and Wilford (1990, p.13) also think that an increase in macroeconomic variables such as volatility of interest rate and exchange rate triggers the development of some financial innovations:

> Uncertainty in the global financial environment has caused many economic problems and disruptions, but it has also provided the necessary impetus for the emergence of financial innovations. Through financial innovation, the financial intermediaries were soon able to provide their customers with products to manage risks or even turn them into their advantage. Furthermore, financial institutions got better at evaluating and managing their own asset and liability processes.

Similarly, Kogar (1995) asserts that many financial innovations protect against the dangers of financial environments such as high inflation and high-interest rate. For instance, the natural gas deregulation in the USA caused huge volatility in oil gas prices. For this reason, some financial innovations such as contract of volumetric production payment and cross-commodity swaps were created by financial markets and gas marketers to reduce the negative effects of the volatility (Tufano, 2003). On the other hand, it is thought that financial innovation permits the investors to take speculative and arbitrage positions as well. In fact, Beck et al (2012) claim that financial innovation eases arbitrage by lowering the cost of off-balance sheet investments. Therefore, arbitrage is a determinant affecting international banking activities and flows, which leads to an increase in economic volatility and fragility (Houston et al. 2012).

Demand for avoiding risks is another factor in explaining why financial innovations exist. Globalization of financial markets and the volatility of macroeconomic variables are the reasons for creating new risks for firms and investors[8]. However, financial

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[7] See Van Horne(1985)

[8] The details about globalization is given in the section 3.1

innovations can help to deal with that. For instance, the first-ever instrument providing a guarantee for currency convertibility and transferability was developed by the Interamerican Development Banks (Tufano, 2003). In a similar way, Van Horne (1985) claims that financial innovation can help households to make savings and profitable investments by adjusting risks. In other words, financial innovation can help investors to make risk diversification among different assets (Segoviano et al., 2013). Also, Frame and White (2004) think that financial innovation, which includes new financial products and services, can provide a better financial system thanks to the advanced software and computing programs. Thus, financial innovations can reduce risks.

Levich et al (1988) claim that investors and borrowers take their maximum welfare into account instead of taking risks according to finance theory. Consequently, thanks to financial innovation, it is expected to provide a flexible environment by hedging the risks of individuals. On the other hand, as we mentioned in the introduction, financial innovation leads to an increase in the risk-taking behavior of investors like in the 2008 global crises. In addition to this, according to Engin and Golluce (2016), financial risk was spread to the economies of other countries through derivative products during the 2008 global crises. For instance, thanks to financial instruments called Collateral Debt Obligations (CDO) and Credit Loan Swaps (CDS), the risk of the mortgage loans was transferred to financial institutions located in the United States and abroad (Demir, 2015). In other words, derivative products enable mortgage creditors to transfer the risk of reimbursement to the third party. Therefore, new loans mean taking higher risk for credit institutions. As a result of these, the derivative market has grown to an uncontrollable scale (Ozatay, 2009).

Lastly, government regulations and taxes are considered as major stimulators for the emergence of financial innovations. According to Miller (1986), two incentives which are taxes and government regulations are the reasons for successful financial innovations because these can influence on the financial structure of a country. Tax is one of the main cost elements that change the profit rates, and investors search for new financial products owing to an upward change in tax fields as explained by Fabozzi et al. (1998). Besides, Frame and White (2004) claim that an increase in the level of taxation provides a higher flow of innovation.

Silber (1983) argues that financial innovation is often seen as a by-product of regulations. Similarly, "regulatory dialectic" term coined by Kane (1977) also explains how regulatory limitations, which are the visible hands of governments that shape markets and preserve economic power, induce the emergence and development of financial innovations. Zero-coupon bonds and Eurobonds are the examples given by Miller (1986) to this phenomenon. In addition, Frame and White (2004) argue that some protection regulations on property rights like patents, copyright and trademarks stimulate both innovators and financial innovations because these regulations can maintain the protection of a new idea.

The reasons behind the emergence of financial innovations are considered, it can be seen that many different aspects of the economy can be effective in this respect. For example, some financial innovations are developed to be able to avoid financial risks while some of them emerge to cope with the complications that occur due to volatile nature of macroeconomic variables. Moreover, some problems occur when institutions such as banks misinform their customers regarding the use of existing technologies and take advantage of the situation and a need to eliminate these kinds of problems arise. Therefore, the development of new financial innovations is again triggered with the objective of problem elimination. However, as seen in the 2008 global crisis, financial innovations may lead to an increase in risk-taking behavior, credit expansion and the volatility of macroeconomic variables like prices. Therefore, only if the required financial conditions are fulfilled, financial innovations can lead to positive outcomes. In addition, the objective of profit maximization can be one of the main reasons behind the developments in financial innovation because people always seek for new ways to gain more profits in a shorter time by decreasing cost.

2.4. Classification of Financial Innovation and Its Measurement

After the explanations of the historical roots of financial innovation and why financial innovation emerged, how financial innovation can be classified is the main discussion of this section. To analyze the financial innovation process more accurately, there is a need for a classification of financial innovation. As in the definition of financial innovation, there is no agreed classification method for financial innovation in the literature. There are three different and common taxonomies of financial innovation in the literature, which are by type, by functions and by motive (Llewellyn, 2009, p.4).

First, Frame and White (2004) assert that financial innovations are grouped into four categories according to their types: New products such as an adjustable-rate mortgage, new services such as internet banking, new production processes such as electronic record-keeping, and new organizational forms such as internet-only banks. Comert and Epstein (2016) assert that this classification is similar to the classification of innovation in non-financial sectors.

Second, the taxonomy of financial innovation could be based on their functions. Merton (1992) classifies financial innovations in terms of their functions. These are: (i) moving funds between time and space; (ii) collecting funds in a pool; (iii) risk management; (iv) gathering information to support decision-making mechanisms; (v) resolving ethical danger and asymmetric information problems; (vi) easing the sales of goods and services through a payment system (as cited in Comert and Epstein, 2016). In addition, according to the Bank for International Settlements (BIS, 1986), the functions of innovations are made up of four categories, which are credit generation of innovations, risk transferring such as price and credit, equity generation of innovations and the enhancement of liquidity. Apart from these functions, Llewellyn (2009) claims that risk price, insurance, management of assets and liabilities, and funding of financial innovations are other functions of financial innovations. Finnerty's classification of security innovations as reduced corporate and transactional costs can be given as a specific example of the taxonomy of financial innovation functions (as cited in Tufano, 2003). Although each writer defines different functions of financial innovation, their descriptions are similar to each other like Merton’s risk management and BIS’ risk transferring.

Third and last, Llewellyn (1992) classifies financial innovation by considering its motives. These are: (i) defensive (answers to political and legal regulations); (ii) aggressive (such as creating new products or new instruments that are successfully marketed); (iii) responsive (new financial services or instruments are developed to meet the changes in customers' portfolio needs); and (iv) protective (institutions can develop new techniques due to their own portfolio limits) (as cited in Comert and Epstein, 2016).

Apart from these, financial innovations can also be classified as product and process innovations as in the real sector. By looking at the definition of product and process innovation in chapter 2.1, the distinction between product and process innovation is ambiguous because they are often connected to each other (Lerner and Tufano, 2011). For example, the classification of a currency swap can be under both product and process innovation categories. The currency swap is a new product group to make sell services in exchanges where a bank is an intermediary. However, for the customers of the bank, it is a new process to obtain funds at a cheaper rate at the same time (Podolski, 1986). Similar to product and process innovation, financial innovation can also be classified as institutional innovation, which includes an overall change in the financial system at the structural, organizational and institutional levels (Schrieder and Heidhues, 1995)

In addition to these, financial innovation can be classified as risk-shifting innovation. It means that "the unbundling of the separate characteristics and risks of individual instruments (such as credit risk and interest rate risk) and their reassembly in different combinations" (Llewellyn, 2009, p.4). Unlike product and process innovations, risk-shifting innovation cannot be classified within the real sector. All of these classification methods show that there is a difficulty in categorizing financial innovations.

In the literature, there is no agreed measurement technique for financial innovation as for its definition and classification method. The number of studies on how financial innovation can be measured is very limited as well. Furthermore, Frame and White (2004) say that "everybody talks about financial innovation, but (almost) nobody empirically tests hypotheses about it" (p.116). This situation may be related to the difficulty in accessing measurement sources. Beck et al. (2012) emphasize the lack of data problem, which affects determinants and consequences of empirical research on financial innovation.

There are several measurement indicators used for innovation in the literature. One of them is the R&D expenditure. R&D expenditure, which is an input indicator, is the first generation of innovation indicators, especially for the manufacturing sector. This indicator is not enough for the measurement of innovation since it assumes a linear relationship between inputs and outputs of innovation (Napoli, 2008). In other words, all R&D spending may not result in innovation and thus this indicator is inadequate for innovation measurement. Moreover, Tufano (2003) claims that most financial innovation exists as a result of some changes in financial practices instead of allocating a large budget for R&D spending. Therefore, evaluating R&D spending is not a good technique for measurement of financial innovation (as cited in Comert and Epstein, 2016).

Another measurement indicator is the total patent number. A patent is appropriate for the real sector to measure real sector innovation. However, it is not appropriate for the finance sector because patent applications for financial innovations and financial formulas are very rare in most of the countries outside the US, especially in Europe (Napoli, 2008). In addition, Tufano (1989) explains the reason why banks do not use patenting much for their financial products: getting a patent for the financial products developed by the banks will mean that all information about the products goes public. If this information is publicly available, then the other banks can develop a similar product by using this information and the bank with the original product idea can lose its first-mover advantage in the market (as cited in Tufano, 2003). However, US courts have only begun to approve patent applications for financial innovations since the late 1990s (Komulainen and Takalo, 2013). Bank of America products can be given as specific examples of patented financial innovation. One of them (U.S. Patent No.8914308) is related to a transaction on small electronic devices such as a tablet or a mobile phone[9].

[9] For more information see: http://www.freepatentsonline.com/8914308.html

Although the number of patents received for financial innovations has increased since the late 1990s, it is still not comparable to the number of patents received in the real sector. Komulainen and Takalo (2013) also claim that it is still complicated to obtain a patent on financial innovations in Europe as a consequence of State Street decision (as cited in Comert and Epstein, 2016). For the measurement of financial patent, Komulainen and Takalo (2013) use a subclass of European Classification System (ECLA). According to uspto.gov, this subclass of G06Q40/00 is pertinent to the finance sector. To illustrate, G06Q 40/08 is for insurance; G06Q 40/02 is for banking; G06Q 40/06 is for investment and G06Q 40/04 is for exchange.

Utilizing data collected from a survey is another way for measuring innovation. For instance, the Community Innovation Survey (CIS) collects data from firms through a survey. However, the CIS is also not enough for the measurement of innovation. The reason behind this is that firm managers see themselves as innovators, and hence, innovators respond to the questions in the CIS survey in this regard. Therefore, it is thought that the survey indicator is too soft to measure innovation (Napoli, 2008). Innovators tend to see their firms in its best condition and choose the most positive option for themselves in the survey. Correspondingly, the reliability of the results of the CIS survey is a controversial issue.

Beck et al. (2012) assert that some studies for European countries and many other high-income non-European countries, use the OECD innovation questionnaire on banks' R&D expenditures. This data source is called "Analytical Business Enterprise Research and Development (ANBERD)" database. Depending on this source, Beck et al. (2012) use the total added value of financial R&D expenditures in the financial sector as the basic innovation measurement unit (as cited in Comert and Epstein, 2016).

Some researchers try to develop their own innovation indicators for measuring innovation. For example, Tufano (1989) is interested in securities of investment banks and uses a dataset about 1994 US investment banks between 1974 and 1986. This dataset includes 58 financial innovations that occurred during the 1974 public commitment transaction in the US. Another example is that Lerner (2006) created a new financial indicator for the US. This indicator is formed by scanning the news from a total of 651 articles in the Wall Street Journal about both new financial products and services between 1990 and 2002 (as cited in Comert and Epstein, 2016).

In addition to the indicators mentioned above, some researchers use case studies as an indicator. For instance, Tufano (1989) can be an example of it because he focuses only on securities. Pennings and Harianto (1992) focus on internet banking and the relationship between the sizes of banks instead of investigating all financial innovations. Like Pennings and Harianto (1992), Furst et al. (2002) discuss developments of internet banking including size and number of it (as cited in Comert and Epstein, 2016).

In the light of all information shared in this section, we summarize the main similarities and differences between real sector innovation and financial innovation in table 1 below.

Table 1

Comparison of real sector innovation and financial innovation

Real sector innovation	**Financial innovation**
It has an agreed definition and this definition has relatively a broader definition framework	It does not have an agreed definition. Although most of the financial innovation definitions are derived from real sector innovation definitions, financial innovation definitions are formed within a more specific framework
It has specific measurement methods such as R&D expenditure and total patent number	It does not have specific measurement methods; however, some methods used for the measurement of real sector innovations are used in here as well
It has certain classification methods	There is no certain financial innovation classification method in the literature, but some of them are related to real sector innovation
Continuity is an important feature for both of them	

Table 1 (continued)

ICT and profit maximization are thought to have a crucial effect on the development of both of them.

2.5. Concluding Remarks

When the literature on financial innovation is reviewed, it can be seen that some points about financial innovation should be further investigated since they are either undetailed or controversial. These points are related to the definition of financial innovation, comparison of it with real sector innovation, and factors that affect the emergence and development of financial innovations. Our study is designed in a more comprehensive way that will include all these aspects. Moreover, we focus on the case of developing countries in this study which is not discussed fully in the literature.

As previously mentioned, there is not any conclusive definition of financial innovation in the literature. The available definitions of financial innovation are mostly derived from the definitions of product and process innovations and these definitions emphasize some positive features of financial innovations such as decreasing the financial risk and reducing the cost. By considering these definitions, we can define financial innovation as new tools used and improvements provided in any financial activity. Our definition of financial innovation is more comprehensive since financial innovation can correspond to any change in a product, process, marketing style or organizational structure. In our case study provided in chapter 5, we observed that financial innovation was defined both in a specific and broader manner by the interviewees, and these definitions were similar to the definitions found in the literature.

Based on the literature, in this chapter, we mention the main differences between real sector innovation and financial innovation. It is hard to find studies that clearly make this comparison in the literature. Comparing their definitions, we think that the most important difference is in terms of their functions. Most of the financial innovation definitions include solutions to the negative financial situations that would complicate to handle risk diversification and accomplish cost reduction. However, real sector innovation does not include a solution to a negative environment. In other words, we observe that financial innovation definitions are formed within a more specific functions and framework.

It is clearly seen in the literature that the primary motives for the emergence of financial innovations are the objective of profit maximization, government regulations and the volatility of macroeconomic variables. The first two motives are similar to our research findings mentioned in chapter 5. As discussed in the literature, before the 2008 economic crisis, financial innovation was seen as a solution to any financial problem such as the problems that occur due to the volatility of macroeconomic variables. However, this last motive is not mentioned in chapter 5 because we observe that the practitioners did not consider financial innovations as a solution to any financial problems. When an innovation will be developed or adapted as a result of these three motives mentioned above, the first factor to be examined is whether this innovation complies with the government regulations or not. Therefore, we claim that government regulations are the most important one of these motives. We can give an example of our claim from our case study. It is revealed that some of the regulatory implementations enforced by the government act as a barrier against the adaptation of some financial innovations such as open banking system and usage of digital signature in Turkey.

In chapter 3, we focus on financial innovations in developing countries based on the information available in the literature. In this chapter, we discuss the factors that affect the development process of financial innovations and cause the differentiation of financial innovations between developed and developing countries. Since our goal is to investigate the factors that influence the emergence and development processes of financial innovations in the developing countries, these processes in Turkey as a developing country are examined in chapter 4. In doing these, we consider the chapters that discuss the main arguments regarding the developing countries and the literature on financial innovation.

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CHAPTER 3

FINANCIAL INNOVATION IN DEVELOPING COUNTRIES

In the previous chapter, comprehensive information about financial innovation is given and a certain part of the chapter is related to the factors that cause the emergence of financial innovation. Considering these factors, it can be observed that the development process of financial innovation differs between developing and developed countries. Therefore, this chapter mainly focuses on the explanation of these differences, especially with regards to developing countries.

The main findings of this chapter corroborate the idea that all of the changes in the financial environment and the effects of these changes on adaptation and diffusion processes of financial innovations can be explained by the theoretical arguments of Schumpeter, which are related to the concepts of the business cycle and creative destruction. The business cycle concept coined by Schumpeter theoretically explains the relationship between financial innovation and the instability of economic conditions. In addition, it also explains why financial innovation development process has accelerated in the 1970s and 1980s. Moreover, the creative destruction concept, again suggested by Schumpeter, explains how changes in the financial environment lead to diversity in the financial structure. Additionally, the creative destruction process in the financial sector affects the diffusion and adaptation processes of financial innovations in developing countries because this process increases the diffusion of knowledge and competition.

This chapter aims to contribute to the literature on financial innovation, especially in terms of developing countries since there is very limited information available in the literature regarding financial innovation in developing countries.

The plan of this chapter is as follows: the aim of section 3.1 is to show the impacts of changes in financial conditions on the adaptation and diffusion processes of financial innovation in developing countries. Therefore, section 3.1 describes the changes in the world financial system and their effects after the 1980s. The aim of section 3.2 is to investigate the factors that lead to the differences in financial innovation between developing countries and developed countries. In so doing, we first analyze the literature on real sector innovation in developing countries. Then, we adapt the real sector innovation theories to financial innovation for developing countries. The aim of section 3.3 is to summarize and discuss main findings of this chapter.

3.1. The Financial Innovation Process in Developing and Developed Countries after the 1980s

As previously explained in chapter 2, financial innovation has been existent for a long time in history. However, development of financial innovations has accelerated after the 1980s with economic and political changes. The economic and political changes of the 1970s and 1980s have led the economies of both developed and developing countries to be very fragile and unstable in the following periods. These changes had a negative influence on the economic structures and financial markets of countries. We argue that negative financial conditions shaped the development of financial innovations in countries. Here, Schumpeter's business cycle theory is relevant to understanding the relationship between innovation and instability of economic conditions. Schumpeter (1939) claims that major technological innovations occur as a result of the growth of a leading sector during the periods of deflation and inflation (as cited in Ayres, 1989)[10]. This idea can be used to explain the developments in financial

[10] Business cycle theory mainly deals with the real sector. However, we think that it also applies to the finance sector.

innovations during the end of the 1970s and the 1980s. That is to say, current financial innovations have been developed as a result of changes in the economy especially after the 1970s. These changes are discussed as follows:

First, the order of the world financial system changed after the collapse of the Bretton Woods system (Eichengreen, 2008). The collapse of the Bretton Woods fixed exchange rate system in 1973 led to the emergence of a new world monetary order, which Steinherr (2000) describes as “a more diverse, complex and less rigid system” (as cited in Hayali, 2014, p.22). In this new order, a new international financial architecture was established. Some of the implementations in this new architecture brought about were floating exchange rates, adjustable pegs and mutually independent monetary policies (Eichengreen, 2008).

Mishkin (2006) claims that the world economy has become a riskier environment during the 1970s and the 1980s owing to the fluctuations in the interest rate and increase in the volatility of the stock market. Therefore, a huge demand for risk reduction has occurred. According to Allen and Gale (1994), financial innovations such as derivatives and securitizations of loans have emerged to meet this risk reduction demand. In addition, Van Horne (1985) claims that some financial innovations like new investment loans and floating rate loans emerged to eliminate the volatility of inflation and interest rates. Similarly, Kogar (1995) argues that this risky financial environment led to the development of financial innovations such as variable-debt instruments. As a result, these financial innovations provided the opportunity to hedge the financial risks in the 1980s. (Allen and Gale, 1994). In other words, “greater instability is likely to be associated with a faster pace of innovation” (Frame and White, 2004, p.120).[11] Considering both this Frame and White thought and Schumpeter’s business cycle thought, we think that financial innovation is seen as a solution for the deterioration in the financial sector.

[11] Although it is thought that financial innovations prevent negative outcomes brought by the financial environment after the 1980s, development and dissemination speed of the financial innovations seem to be the reason for the negative outcome of financial innovations in recent years.

Second, due to the collapse of the Bretton Woods, most developed countries started to eliminate capital control restrictions. In fact, unrestricted capital movements increased sharply after this collapse. Financial liberalism has been implemented since the end of the 1970s in the developed world (Hoffmann and Urbansky, 2013). For example, the United Kingdom and Japan abolished these restrictions in 1980 (Moore, 2010). This unrestricted of capital movements led to considerable changes in innovation opportunities, market conditions, and market demand. The spread of financial liberalization process in developing countries has accelerated after the mid of the 1970s (Oktayer, 2007). According to Hayali (2014), as a result of the unrestricted capital movements, economies of the developing countries have been mostly vulnerable and fragile. In a similar way, Hoffmann and Urbansky (2013) argue that financial crises occurred frequently in developing countries after the financial liberalization that the collapse of the Bretton Woods system brought about[12]. The government debt crises that arose in many Latin American economies in the 1980s and the East Asian crises that arose in 1997 and in 1998 are some of the examples of financial crisis in developing countries caused by financial liberalization. As a result of unrestricted capital movements, some financial services were restructured in the late 1970s and the 1980s. How liberalization affects the diffusion of financial innovation is discussed below:

With the liberalization process, the development of financial market structure and financial conditions of countries have gained importance because liberalization movements provided more accelerated financial markets transition so that the innovative products spread around the world and reached all markets (Segoviano et al., 2013). Therefore, developments and improvements in financial innovation accelerated in developing countries.

Liberalization movement and its results caused the globalization of financial markets, which means an increase in the formation of global links through international financial flows. Levich (1987) argues that globalization also provides erosion of

[12] See: Kindleberger (2000)

national borders and integration of financial markets. As a result of this, according to Kose and Prasad (2010), financial and commercial relations among developing and developed countries have strengthened and accelerated. We think that this speeded up the development and improvement of new products and processes in developing countries because globalization movements eased technology transfer mechanisms, and increased dissemination of knowledge from more productive firms towards less productive ones (Bernand et al., 2006). In a similar way, globalization also helps financial innovations to become widespread. Moreover, technology transfer paves the way for financial innovation transfer in developing countries. It enables market participants in developing countries to imitate or improve financial innovations more easily. At the same time, the competition among market participants in developing countries increases, which affects the development of financial innovation as we discussed in the next section.

The erosion of national borders also leads to an increase in transmission of capital flows and macroeconomic developments in developing countries in the early 1990s (Knight, 1998). This is related to the practice of the main liberalization strategy which suggests the existence of an open capital account (Hoffmann and Urbansky, 2013). Moreover, capital flows into the securitized markets increases with financial globalization since these markets are regarded as safer (Fostel et al. 2017). We think that these capital flows also play an important role in the development and diffusion of financial innovation in developing countries. As we also previously discussed, uncontrolled capital flows lead to deterioration in the financial environment. As a result, some financial innovations such as derivatives and security of financial transactions emerged as a solution to the negative effects of a deteriorated financial environment.

In addition, market openness, which indicates a market that enables the free flow of trade and investment as a result of financial globalization and integration, is important for the dissemination of knowledge from developed countries to developing countries[13]. Thus, developing countries try to keep up with the current innovations and make an effort to adapt to the conditions of the period. Regulation of financial policies in developing countries can be an example of this effort because these policies play an important role in the dissemination of knowledge regarding the financial innovations developed in any country.[14] On the other hand, we should bear in mind that too much financial innovation causes deterioration in the economy if it is not controlled properly. Some of the financial innovations cause troubles in the finance sector, especially in developed economies. Economic crises in developed countries such as the dot-com bubble burst in the beginning of the millennium, and the mortgage crisis that started in the US market in 2008 and its later spread to other economies can be attributed to financial innovations (Hoffmann and Urbansky, 2013).

Summing up, it can be inferred that the negative financial environment affects the development and diffusion of financial innovations since some of the financial innovations like securities and variable debt instruments emerged in order to solve the financial problems of countries as we previously mentioned. We can also infer that some financial innovations, when not regulated and controlled properly, can be the primary initiator of financial crises.

3.2. Financial Innovation Differences between Developed and Developing Countries

In the previous part of this section, the factors that affect the development and diffusion processes of financial innovations after the 1980s in developing and developed countries are discussed. We think that the effects of these factors vary from developing countries to developed countries due to the differences among their economic and financial structures, and regulatory frameworks. We also mentioned that most of the financial innovations emerge in the advanced markets rather than the developing

[13] In the following part of this section, financial globalization and its result are explained.

[14] In the next section of this chapter, how competitiveness and regulations are related to the financial innovations are discussed

markets. The specific factors behind the difference between developed and developing countries in terms of the pace and frequency of financial innovations are explained as follows:

First, the difference between financial market structures can be one of the reasons why developing and developed countries experience different financial innovation development processes. Financial markets of the developed countries are more suitable for the creation of financial innovations because these financial markets have a more profound and efficient financial mechanisms (Wurgler, 2000). Furthermore, these countries show different patterns in terms of capital market development, which also induces differences in terms of financial innovation and adaptation processes. For instance, since the developed countries have a market structure providing more room for much sophisticated products as compared to developing countries, it is more likely to introduce an exotic product into the market and end up with a large sales volume in developed countries.

There are several aspects of market structure that varies across different countries. The first aspect of market structure is market size. Market size plays an essential role in the pace and frequency of development of innovations in different countries. In the real sector, market size affects growth and market demand. According to Frame and White (2004), a large market enables successful innovations while a growing market creates an incentive for the development of financial innovations. A higher market share also encourages banks to do innovations (Bhattacharyya and Nanda, 2000). Considering these, the large or growing market share significantly affects the strategies of banks related to the development or adaptation of financial innovations. For example, it is more likely to develop an innovation such as ATMs in a large market like the US while it is more likely to find the required incentive to adapt to innovation such as ATM in a growing market. Moreover, since larger banks have a higher capability of developing innovations and adaptation, they usually hold the first-mover advantage as opposed to smaller banks (Akhavein et al., 2005).

Another mechanism that the market size affects financial innovation capacity is through its effects on firm size. We claim that firm size has the potential to grow with growing market size and market demand because firms try to keep pace with the changing market conditions and meet the demand. We also believe that larger firms have more potential to innovate due to having better financial conditions and infrastructure. Schumpeter (1942) claims that larger firms have a bigger tendency to innovate since they are able to deal with fixed costs more efficiently and they can compensate for these costs more easily. Furthermore, according to Schumpeter (1950), larger firms are able to purchase and utilize more advanced technology in their business because they have access to a much bigger amount of capital, can do risk diversification more easily and have the advantage of economies of scale.

In a similar vein, these ideas can also be applied to the finance sector. The bank size affects development and the adaptation processes of financial innovations since it determines to what extent a bank can manage risks and how a bank handles the capital allocation. Demirguc-Kunt and Levine (1999) assert that high-income countries have a high rate of expansion in bank sizes and market shares. Therefore, these banks have a more active and more effective role in the economy. In this vein, high-income countries' banks help to increase new financial mechanisms related to innovative products and processes. As a result of these, banking systems in developed countries is more optimal for the creation of different financial innovations and leaves more room for the occurrence of new opportunities as compared to the banking systems in developing countries. ATM technology as a financial innovation is one of the examples of Schumpeter's idea in the finance sector. As mentioned before, banks function based on the objective of profit maximization. Hannan and McDowell (1984) claim that larger banks actualize this objective since they use a higher number of ATMs and they attain labor-saving and wage cost saving as a result. Moreover, we think that the reason behind why larger banks are able to adapt better to the use of ATM is related to the advantage of scale economies enhancing the access to better technology, a wider network, and more capital. Similarly, Tufano (1989) claims that larger investment banks have the advantage of being a leading innovator position for the securities.

Market structure might also vary across developed and developing countries with regard to competitiveness. Hoffmann and Urbansky (2013) claim that the competitive market structure includes innovation concept inherently because entrepreneurs always search for new opportunities to make more profit in a competitive environment. As a result, the number of real sector innovations tends to increase. This competitive approach in the real sector can also apply to the financial sector due to the relationship between profit maximization and financial innovation that we explained in Chapter 2.3. The behavior of entrepreneurs resembles the strategic approach of the banks. For example, banks can implement some financial innovations such as asset-backed securities and tranche practice to maximize profit and to raise the capital rate. Moreover, entrepreneurs work with a bank to manage their assets and banks use appropriate financial innovations to help their customers with realizing their objective of profit maximization (Carvajal et al., 2012). For this reason, the development of such financial innovations by banks can mean reaching out to more entrepreneurs and increasing their own profit too. Therefore, banks search for new ways to develop financial innovations and this effort triggers a deeper competition between banks.

Another aspect of market structure that differs across countries is market concentration. Schumpeter (1942) argues that the high concentration of industry plays an important role in the innovation incentive rate of the real sector. This incentive rate affects competition between firms. In a similar vein, the concentration of market also has a significant influence on competition in a market and it is effective on both the existing firms in a market and firms entering into a market for the first time in the real sector (Kraft, 1989). Similar to the real sector, high concentration and competitiveness are also crucial for the finance sector since they have a positive influence on the development and diffusion of financial innovations. For instance, commercial banks need to develop more product or process innovations to lend money or extend loans to firms in a highly concentrated financial market. Therefore, commercial banks increase their innovation, so that they can compete with the other banks.

Second, another reason why developing and developed countries experience different financial innovation development processes is their economic development levels.

Both economic development and financial innovation levels of countries are interdependent[15] because financial innovation can support economic growth as long as necessary conditions are fulfilled. According to Jaffee and Levonian (2001), economic growth is affected by developments in the banking system. As Knight (1998) points out, the banking system is influenced by the volatility of macroeconomic conditions due to the fact that banks tend to runs, crises, and contagion. That is to say, the banking system and economic growth are related to each other, and this relation can be a reason why financial innovations mostly emerge in developed countries. Economic growth will also influence financial innovation. Considering all of these relations, we can claim that there is no one-way relationship between financial innovation and economic growth. In other words, the relation between them is cyclical or bidirectional. The answer to the question of how this bidirectional relation can occur might be explained as follows: as the income level of a country increases the level of financial innovation development may increase as it does in the US. Some of the financial innovations can cause further credit expansion like derivatives as mentioned in the introduction part. As a result of this, economic growth increases further and this may feed the development of financial innovation. However, financial innovation can still create instability in the economy in the meantime.

Third, difference in technological infrastructure is another reason for having differences in the development and emergence of financial innovations in developed and developing countries. According to Frame and White (2004), better technological infrastructure such as faster and advanced computer technologies allows the development of more financial innovations. Therefore, developed countries have an advantage in creating financial innovations in this respect. Moreover, differences in the technological infrastructure can affect the innovative capacity of a country because each innovation provides new innovation opportunities and more room for improvement. That is to say, each innovation occurs as a result of different opportunity

[15] Financially developed countries have more investment opportunities and more efficiency in their financial markets due to having a better allocation of capital, saving and a better investment mechanism in the financial markets. Therefore, financial development can affect the economic growth (Wurgler, 2000)

combinations (Lerner and Tufano, 2011). Information and Communication Technologies (ICTs) is one of the examples of the factors that lead to differences in technological infrastructure. It triggers the occurrence of various financial innovations combining computer and internet technologies such as ATM and internet banking.

ICTs constitutes an essential part of all economic and innovative activities in today's world. Furthermore, it plays a key role in the development and diffusion of financial innovation because it provides an enhancement in digital platforms and financial services. Information technology (IT), which is one of the components of ICTs, affects financial innovations through hardware and software that are used in finance technologies[16]. The IT sector is underdeveloped in developing countries due to a lack of human capital, which crucially affects the adaption processes of financial innovations. Therefore, in developing countries, there is a need for qualified human capital and education regarding financial innovations (Dedrick et al. 2013).

In addition to ICTs, the infrastructure of telecommunication technologies may differ between developing and developed countries and affect the diffusion and adaption processes of financial innovations. Availability and quality of telecommunication technologies influence the access to computer programs and all IT works via the internet so that it influences the creation and use of financial innovations consequently. Moreover, Dedrick et al. (2013) claim that developing countries incur higher costs in order to access to the Internet and telecommunication technologies. Therefore, the pace of diffusion and adaptation process of some financial innovations in developing countries is low. For example, if banks have low-quality telecommunication technologies and low-speed internet, then their internet banking or mobile banking transactions can be slow. This may affect the diffusion of internet banking or mobile banking.

Forth, different regulatory approaches also cause differences in terms of development and occurrence of financial innovations in developed and developing countries. With

[16] According to Melville (2010), "an IT infrastructure serves as the basis for computer technology, communications and basic data system, within the technical framework that guides organizational work to meet management needs" (as cited in Jabbouri et al.,2016, p.862)

the increase in the number of financial innovations and development of financial systems and technologies, it is required of countries to regulate their financial structures accordingly since some financial innovations cause a rise in vulnerability and risks for the economy. For example, Basel III regulation is designed to strengthen the banking sector against liquidity risks and complex securitization problems (Baicu, 2011).

In other words, there are differences among the financial structures of countries and their financial regulations and this situation cause differences in terms of financial innovations. For example, banks play a dominant role in continental Europe and Japan, while the Anglo-Saxon stock market dominates the financial systems like the US and the UK (Kwok and Tadesse, 2005). Another example is related to the mortgage system. There is an American model mortgage system applied in America and European mortgage banking model successfully applied in Germany and Denmark in particular as different examples (Meen, 2000). Therefore, the mortgage system model varies among different countries and it is shaped based on these countries' regulations and specific needs.

As discussed in chapter 2, government regulations are one of the major factors that affect the emergence and development of financial innovations and one of the most important key factors in the implementation of the government regulations is to determine and apply convenient regulatory frameworks. The regulatory role of government is different in developed and developing countries. For instance, the Fed argues that early regulations might prevent innovations, so more relaxed regulations have been implemented on e-money. In contrast, most of European Central Banks take tight precautions against e-money use (Boehle & Krueger, 2001). As another example, the Estonian government supports the use of ICT in numerous fields. Therefore, e-government was introduced and public internet access points were established. By doing these, the use of electronic banking started to spread much easily in Estonia. In addition to these, the government has adapted some legal practices such as the use of digital signature (Eriksson et al. 2008). However, in developing countries, governmental regulations can remain restrictive and inhibit the development and diffusion processes of financial innovations (Norden et al. 2014).

To implement financial innovation regulations effectively, countries should have a strong legal structure. For instance, Rajan and Zingales (1998) argue that the lack of a strong legal structure in a country leads to serious problems in the financial market. Under such circumstances, banks start to internalize their transactions because banks can apply contracts on their behalf through the power they have on the market (Kwok and Tadesse, 2005). When regulations about financial innovation are not implemented properly or shaped through weak regulatory frameworks, financial innovations lead to fragility and bubble in the economy as they did in the 2008 crisis. Therefore, Stout (2011) claims that regulations regarding financial innovation should be shaped based on common-law and modern law.

In the common-law process, Pradier (2011) claims that the benefits and risks of financial innovations are analyzed. On the other hand, the modern law approach such as codification and de-codification methods include the introduction of transaction costs and the establishment of discretionary authority in order to discourage the firms and financial instruments about developing risky financial innovations. Such regulations aims to minimize the risks that could be brought by financial innovations while allowing the developments in financial innovation as well (as cited in Arthur, 2017).

In other words, there exist two main governance methods regarding financial innovations, which are statutory regulations such as using legal sanctions and self-regulation such as using corporate governance structures (Awrey, 2011). For example, according to Harper and Batiz-Lazo (2013), the development of ATM is related to the self-regulatory structure rather than legal structure. The reason is that the ATM Industry Association started out as a global self-regulatory organization that provides regulatory monitoring, and campaigning services in the late twentieth century (as cited in Arthur, 2017). Therefore, we think that regulatory approaches regarding financial innovations differ between developed and developing countries because of having differences in law structures and the regulatory role of governments.

Last, the culture of a society is one of the reasons why financial innovations differ between developed and developing countries because the culture has an influence on an institution's perspective on the development of financial innovation and people's behavior. According to Hofstede and Bond (1988), culture is one of the main factors which shape the behavior patterns of a society (as cited in Kwok and Tadesse, 2005). Furthermore, technological development and investment capacity of countries are mostly related to the dominant culture of societies, and macroeconomic and microeconomic conditions of countries have a direct influence on economies' innovation activity (Westwood & Low, 2003). In other words, culture and innovation are integrated with each other because innovation means learning and developing new ideas (Jaskyte & Dressler, 2004).

Cultural characteristics of consumers play a role in the creation of some local financial innovations because consumers' demands influence the banking sector. In other words, there are unique financial innovations, which are developed based on countries' cultural characteristics. For instance, Sanchez (2014) argues that group-based credit is used in Mexico as a result of a demand occurred to meet the needs of low-income households in Mexico (as cited in Herguner, 2015). On the other hand, in some cultures like the culture of Yemen, consumers tend to keep their money at home and to use cash in their transactions even while purchasing expensive goods. Therefore, in the Yemen culture, consumers are not particularly interested in banking services provided to make savings and investments to get finance (Alqasa and Balhareth, 2015). Even though online shopping is developed, it is not preferred. For this reason, according to Tiib, banks in Yemen developed internet card, which is a card that can be charged with the amount of money you need.

Like Yemen, Spain also has a culture of using cash. Spain's central bank data shows that in 2014, about 111 billion Euros of cash was withdrawn from cash machines in Spain and 105 billion Euros used in the cash purchases (as cited in Elpais, 2015). Moreover, according to Ovidio Egido, the MasterCard's operation director in Spain, whereas approximately the 80 percent of private purchases of Spaniards are made in cash, 20 percent of it is made through electronic payment systems such as by using a card. Therefore, the Spanish government takes precaution against possible risks by preventing cash payments of more than €3,000. Also, the area of use of credit cards is expanded. For example, a credit card can be used in the payment of taxi fare and parking fee (as cited in Elpais, 2015). Some of the new financial innovations are also developed in order to expand the area of use of credit card. Non-contact bracelets, which can act as a credit card and work compatible with POS machines, can be given as an example of this kind of financial innovations (Banco Santander)[17].

In the light of this information, it is expected that countries in the same region may tend to have nearly similar financial innovations. However, financial innovation is mostly shaped by the culture of countries and it is shaped in a different way across different countries. For example, payment methods of countries in the Asian region differ from each other. As an example of the culture in the same region countries', the payment methods of some Asian countries are discussed below:

Nowadays, a large part of China's population uses a smart mobile phone, and therefore mobile payment methods such as WeChat are mostly preferred and used. Furthermore, China is considered as the first cashless economy because Chinese people use mobile payment applications almost everywhere instead of using paper money or coins[18]. There are several major reasons for using mobile payment methods as a primary payment method in China. First, with the increasing number of mobile phone users, mobile market services that are integrated with mobile e-commerce have been used since 2009 in China (Lu et al. 2011). That is to say, Chinese people are developing their infrastructure of mobile applications due to increasing demand from mobile phone users and ICT use. Furthermore, mobile payment methods are embraced much more rapidly in China since they already had a cash payment culture before, which means Chinese people hardly ever use credit cards unlike the people in the US and

[17] For more information see: https://elpais.com/elpais/2015/06/09/inenglish/1433859074_583362.html

[18] For more information see: https://www.nytimes.com/2017/07/16/business/china-cash-smartphone-payments.html

Europe (Lu et al. 2011). That is to say, China benefits from being a late adaptor to the credit card technology. By doing so, China becomes able to transform its payment culture directly from cash to mobile payments thanks to the lack of credit card culture.[19] In addition, the Chinese government regulations, which support the development of the mobile payment system, play an important role in eliminating cultural barriers faced during the transition from the use of cash payment to mobile payment. For instance, Eleventh Five-Year plan verifies that e-commerce constitutes one of the core national policies of China. Another example is related to the government's support for users of the mobile payment system. If Chinese people make a down payment to the hospital by using mobile payment systems like WeChat and Alipay, they get the priority of making a doctor's appointment instead of waiting for registration first[20]. This attitude of the government is an important factor for the diffusion of mobile payment.

Japan has a large amount of smart mobile phone users and strong mobile Internet services, which offer many business functions such as banking transactions, and shopping (Lu et al. 2011), and Japanese people deny using a credit card just like Chinese people. However, Japanese people use prepaid cards, which is a different behavior than what Chinese people usually do.[21] In addition, unlike Chinese people, Japanese people do not prefer using mobile payment systems very often since they possess negative thoughts about digital payment. Although the Japanese government has tried to encourage people to use cashless payment methods like mobile payment

[19] For more information see: https://www.americanexpress.com/us/foreign-exchange/articles/rise-of-mobile-payment-services-in-china/

[20] For more information see : https://www.scmp.com/magazines/post-magazine/long-reads/article/2110118/going-cash-free-why-china-light-years-ahead

[21] For more information see : https://www.economist.com/finance-and-economics/2017/11/02/in-japan-the-move-from-cash-to-plastic-goes-slowly

in order to decrease the expense of printing money, Japanese people are still embarking on cash payment culture.

Similar to China, India provides an adequate infrastructure to support the development of mobile payment methods, and a large amount of Indian population uses smart mobile phones[22]. Moreover, one of the main aims of the Indian government is to be a cashless economy like the Chinese government. Therefore, the government tries to develop some strategies such as promoting banks to do digital transactions more. In contrast to Japan and China, credit card use is preferred by a large part of the population in India. [23]

Although Taiwan is one of the highest-ranking countries in the use of smartphones, Taiwan's mobile payment usage ratio is behind the other Asian countries such as China, Japan, and India. Moreover, like other Asian countries, Taiwan has a strong infrastructure for the mobile payment system. The reason for the lower ratio of mobile payment use in Taiwan is the traditional attitude of the government, which is based on considering traditional payment methods more secure than digital payment methods.[24] This approach is different from the approaches of governments of other Asian countries.

Considering these four Asian countries, the reasons why Asian countries have different payment methods can be based on the different ICT infrastructures, the approach of governments in eliminating cultural barriers and people's approach to these methods. Moreover, considering the case of the Asian region, the evolution of the countries' financial market is affected by the path-dependent characteristics of the society because a sophisticated financial market is related to the history of financial innovations and society. In other words, whether a financial innovation succeeds or

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[22] For more information see: https://technode.com/2018/03/26/explainer-taiwan-mobile-payments/

[23] For more information see: http://cashlessindia.gov.in/promoting_digital_payments.html

[24] For more information see: https://technode.com/2018/03/26/explainer-taiwan-mobile-payments/

fails depends on the evolution of the market, which is related to being path dependence (Boot and Thakor, 1997). [25]

Culture also affects the diffusion of financial innovation. For instance, most EU countries, which have a giro system culture, make their transactions via a remote payment system. In the U.S., this is mainly made via check or credit card. Another example is that traditionally, debit cards are used in Europe, while credit cards are mostly used in the US.

Norms and culture also have an influence on the institutional structure. Institutions or organizations which have strong cultural backgrounds embark on specific values and beliefs so that they do not tend to change their thoughts easily about a new environment (Barney, 1986). However, organizations with a culture of fast adaptation get used to a new environment more easily (Kotter and Heskett, 1992). That is to say, organizational culture is an important factor for adaptation because it incorporates values and beliefs about innovations (Love and Cebon, 2008). Furthermore, Thwaites and Edgett (1991) claim that organizational culture is a crucial factor for financial innovation because it supports the development of innovations through initiatives and the generation of a vision and ideas (as cited in Uzkurt et al 2013).

Considering the five main reasons discussed in this section, we can say that developed countries have a more suitable environment for the creation of financial innovations. Therefore, it is most likely to see a diffusion of financial innovations from developed countries like the U.S. to developing countries. For example, securitized products such as mortgage-backed securities, which are one of the financial innovations, emerged in the US throughout the 1970s and the 1980s. Afterwards, these products have diffused to other countries over time (Segoviano, et al. 2013). ATM is another example of the financial innovations which was rooted and spread from the U.S. to other countries. The first modern ATM was introduced in 1968 in the U.S. However, ATM has started

[25] The characteristics of path depended financial innovations are similar to the real sector innovations

to be used widely since 1972 after the commercialization of it. (Guner, 2005). Like securitized products and ATM, credit cards also emerged in the U.S. (Kaya, 2009).

3.3. Concluding Remarks

In the lights of literature, it is observed that developing and developed countries show differences in terms of their financial innovation development. Since financial innovation in developing countries is rarely discussed in the literature, we have tried to fill this gap by discussing possible reasons that can lead to financial innovation differences between developing and developed countries in this chapter.

As we explained in the history of financial innovations in chapter 2, we claimed that the origin of financial innovation actually dates back a long time. However, the speed of the financial innovation development has increased and the characteristics of financial innovations have changed with the rapid technological advancements especially after the 1980s (Comert, 2013). We believe that liberalization, globalization, and integration of financial markets are essential for the development of financial innovations in the developing countries because this development enables developing countries to adapt financial innovations to their financial systems or develop financial innovations.

Considering the development process of financial innovations after the 1980s in developing and developed countries, it is observed that financial innovation is seen as a solution for the financial deterioration that emerges due to the volatility of macroeconomic variables and policies of liberalization and globalization. However, financial innovation itself is also seen as a cause of financial deterioration at the same time like in the case of the 2008 crisis. While theoreticians have negative opinions about the effects of financial innovation on the economy, we observed that interviewees participated in our study never indicated that financial innovation would have such negative consequences. This situation can be explained that the participants mostly focused on profit maximization aspect and the customer-oriented side of the financial innovations.

Based on the development process of financial innovation, we realize that the economic structure and the structure of the financial system in the world is always changing. As a result of this change process, diversity in the economic and finance structure has emerged. We think that the relationship between this change process and this diversity can be explained by Schumpeter's creative destruction thought[26]. Schumpeter (1942) defines creative destruction as the process of constantly destroying what is old fashion and creating the new one instead. We give one example to illustrate creative destruction in the finance sector. Automatic Teller Machine (ATM) can perform almost all of the transactions that can be done through bank branches such as cash transactions and electronic fund transfers. Therefore, ATMs, internet banking and mobile banking are replacing bank branches to a further extent in time. Based on the example, the process of creative destruction can make a good basis for the birth of financial innovations. All of these may affect an increase in the dissemination of information and diffusion of financial innovations among developed and developing countries.

We believe that 3 of the 5 reasons explained in this chapter are the most crucial reasons that lead to financial innovation differences between developing and developed countries.

To begin with, we assert that implementing different regulatory approaches is the most important reason that causes differences in the financial innovation development processes of developing and developed countries. Regulatory approach directly affects the development process of financial innovation because the improvement and adaptation processes of financial innovation are shaped according to the regulations of a country. In addition, even if necessary conditions such as a proper financial market structure and technological infrastructure are provided for the development of financial innovation, it should comply with the law and regulations of a country first. Therefore, developing countries should design regulations and law structure in a way to support the development of financial innovations rather than enforcing restrictions. While

[26] Schumpeter's creative destruction argument is mostly valid for the real sector. On the other hand, we claim that it also applies to the finance sector.

designing their regulations and law structure, developing countries should also take the necessary measures to avoid the negative effects of financial innovations, such as increasing the vulnerability and financial risks in the economy. We can give one of the interview findings as an example of implementing restrictive regulations in developing countries. This finding is that the use of an open banking system and digital signature are not allowed in some of the banking transactions in the Turkish banking system.

Furthermore, differences in financial market structures are one of the important reasons creating differences in terms of financial innovation development processes of developing and developed countries. The market size in developing countries is smaller than it is in developed countries. We believe that market size also affects the emergence and development of financial innovations in developing countries as it affects capital flows and investment budget plans of financial institutions. Furthermore, we argue that the differences in the capital flows and investment budget plans also influence the technological infrastructure development of the financial system, which creates differences in terms of financial innovations between developing countries and developed countries. We think the reason is that the advanced technological infrastructure of developed countries occurs as a result of larger budget allocation and capital flows in the financial system. In addition to market size, we think that the competitive market structure of countries is also affecting the emergence and development of financial innovations. Since most of the financial innovations have emerged in developed countries and these countries have a more sophisticated market structure, we think that developed countries can become more competitive than developing countries.

Last, the culture of a society is another important reason why financial innovations are shaped differently between developed and developing countries because the culture has a strong influence on the development and diffusion of the financial innovations by affecting the behavior of people and perspective of financial institutions. The countries' financial markets are affected by the path-depended characteristics of society and the history of financial innovations. Examples of this situation are given in the next chapter. These examples are gold gift cheque and dowry account, which stem from the unique traditions of the Turkish society.

By considering the discussions provided above, in the next chapter, we will examine the Turkish banking sector and the emergence and development processes of financial innovations in Turkey as a case of developing countries. Since our goal is to investigate the factors that affect these processes in developing countries, we collected data about the emergence and development processes of financial innovations in Turkey and the findings were explained in chapter 5.

CHAPTER 4

FINANCIAL INNOVATION IN TURKEY

The previous chapter explains the factors that cause the emergence of financial innovations and give rise to differences in the development process of financial innovations between developing and developed countries. In this chapter, we discuss the factors that affect the development and diffusion of financial innovations in Turkey as a case study of developing countries.

The main findings of this chapter are as follows: Institutional changes in the Turkish financial system after the 1980s and culture of Turkish society influenced the adaptation and diffusion of financial innovation. Moreover, Turkey develops financial innovations and adapts them to its own needs.

Most of the studies in the literature only focus on specific types of financial innovation instead of considering all financial innovations in Turkey. Therefore, this chapter is the first comprehensive literature review to include all types of financial innovations in Turkey in general. It gives information about the changes in the characteristics and dissemination speed of financial innovations after the 1980s and also refers to some financial innovations that are being used in Turkey.

The outline of this chapter is composed of four main sections as follows: The first section discusses the existing literature on financial innovation in Turkey. The second section elaborates on Turkish derivative market and examines the emergence and adaptation process of derivative market products. In the third section, the main structure of the finance sector in Turkey is investigated. In the fourth section, specific financial innovations, which can be defined as mortgage system and the development of some payment methods in Turkey, are explained. In the last section, the main findings and discussion about chapter are given.

4.1. Financial Innovation in Turkey after the 1980s

The Turkish government intervened more in the economy between the 1930s and 1980s. The government's main objective was to protect the domestic industry against competitive foreign actors in the market and to make better resource allocation (Altunbas, et al., 2009). In addition, a fixed exchange rate regime was implemented in Turkey until the 1980s and it was forbidden to buy and sell foreign currency freely (Erol, 1999). In the light of this information, it can be inferred that the regulatory structure of Turkey was not very benign enough to lead to a change in the characteristics and dissemination speed of financial innovations until the 1980s. As previously discussed, macroeconomic conditions of the world have changed during the 1970s and at the beginning of the 1980s along with the dominant financial institutions in it. As a result of these, the Turkish government started to implement new economic policies and rules after the 1980s. These policies and rules were mainly related to the liberalization process (Arıkan, 2015). For example, restrictions on interest rates, capital movements, and foreign exchange trading were removed in Turkey after the 1980s as in the United Kingdom and Japan. Thus, interest rate applications and foreign exchange trading became relatively flexible in Turkey (Oktayer, 2011).

With the implementation of these policies and rules, Turkish financial market gained importance due to an increase in competition in the banking sector and domestic savings (Arıkan, 2015). In other words, it can be said that the introduction of new products and processes into the Turkish market was accelerated due to an increase in competition, capital flows, and financial globalization. As a result, the development of the Turkish financial sector and financial innovation gained momentum. Most of these developments are related to institutional changes that affected the characteristics and dissemination speed of financial innovation. Some important institutional changes are explained below:

The Capital Markets Board of Turkey (CMB) was established in 1982 and the Istanbul Stock Exchange (BIST) began to operate in 1986 (Akcaoglu, 1996). Primary and secondary markets were included in the system as a step taken in the liberalization process. In 1986, the treasury started to sell bonds, and these bonds were used to meet the public sector's borrowing requirement. In addition, an interbank money market began to operate in the same year. In 1987, the Central Bank started to conduct open market operations in order to control the liquidity in the market as an instrument of monetary policy. Turkish Lira (TRY) became a more convertible currency in 1989. Bonds and bills started to be traded on the ISE in 1991 (Kaplan, 1999). According to Aldis (2012), in 1994, all stock transactions, which included purchasing and selling, started to be made through an electronic environment with the development of technology. In 1999, the Banking Regulation and Supervision Agency (BRSA) was established to regulate the operation of financial institutions and ensure confidence and stability in Turkish financial markets while contributing to the economic development of the country (the Banks Association of Turkey, TBB, 2005).

In addition to institutional changes, cultural characteristics of the society also affect the development and emergence process of financial innovations because the culture has a strong influence on the decisions and opinions of the individuals and institutions about finance (Aggarwal et al 2016). Therefore, the unique cultures of the countries are one of the reasons leading to the development of unique financial innovations in different countries.

Like other countries, the Turkish financial system also has unique financial innovations due to local cultural effects. To illustrate, Herguner (2015) asserts that the credit card installments and gold accounts, which can be classified as financial innovations, emerge as a result of Turkish society's unique characteristics. The need for credit card installments occurred due to a specific spending behavior of Turkish society which is called *veresiye*[27].On the other hand, gold account, which may

[27] "Veresiye" can be described as a type of "store credit", where a customer has some amount of credit in a store due to some pre-payment or it is arising from a previous transaction where a person has to return the good, but not getting any refund in cash" (Herguner, 2015, p.56). For detailed information about veresiye, see Herguner (2015).

correspond to a concept called *altın günü*[28] by the society, emerged based on gold saving behavior observed in Turkish culture (Herguner, 2015). Gold gift cheque, which is one of the examples of gold account products, emerged as a result of Turkish society's gold giving behavior as a gift on special occasions such as wedding and engagement. Thanks to gold gift cheque, grams of gold can safely be delivered to anyone without any loss in value and paying labor costs (Garanti Bank)[29].

In addition to these financial innovations, *dowry account*, known as çeyiz hesabı in Turkish stems from a unique tradition of Turkish society[30]. The aim of this account is to start saving money over the years before marriage by making regular payments in order not to be financially straitened during marriage preparations. It is a time deposit product that can function on a monthly or quarterly basis depending on the preferences of customers. Moreover, the customers of the dowry account can receive government contribution up to 25% of the amount of their savings. However, this financial support by the government is given if couples are making their first marriage before the age of 27 and if they keep saving money in this account for at least 36 months (Garanti Bank)[31]. Children saving accounts also emerged as a result of Turkish society's saving behavior. These accounts aim to save money for customers to provide a better future

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[28] Altın günü, which can be translated as "gold day", is a leisure activity. On the gold day, women who have close relationship with each other gather as a social activity. In addition, there is also a financial purpose behind these gatherings, which is to exchange gold among the participants of the gold day. For detailed information about a*ltın günü, see* Herguner (2015).

[29] For more information see: https://www.garantibbva.com.tr/tr/bireysel/mevduat_ve_yatirim/mevduat_urunleri/hediye_altin_ceki.page

[30] Traditionally, before the marriage, couples need to do a comprehensive preparation such as buying household goods. The list of these goods consists of both the basic needs of the house such as kitchen tools and technological instruments, and handmade things such as embroidered things and lace. It is a huge financial burden to cover for all these goods. That's why couples may feel the need to make savings prior to this process.

[31] For more information see: https://www.garantibbva.com.tr/tr/bireysel/mevduat_ve_yatirim/birikim/ceyiz_hesabi.page

for their children. In addition, a housing account, which is also based on society's saving behavior, provides guidance in making savings to own a house. If you plan to purchase your home through Mortgage system, you will have enough saving for the payment of installments (Garanti Bank)[32].

Individual Pension System is another financial innovation, which also appeals to the saving behavior of Turkish society. However, Individual Pension System is not an innovation that is unique to the Turkish culture like *dowry account* and gold account. Soylu (2004) argues that many developed countries in the world have implemented the Individual Pension System since the 1980s. However, this system started to be implemented in the 2000s in Turkey. The implementation of the Individual Pension System in Turkey has started after the establishment of the legal infrastructure of Individual Pension Savings and Investment System Law in 2003 (as cited in Oktayer, 2007). The system aims to ensure money saving during the active working period of individuals. Then, these individuals can use this saved money when they get retired. The benefit of this system for the economy is to create a long-lasting resource (Can, 2010).

As we mentioned in chapter 3, adaptation and diffusion of financial innovation are affected by cultural differences. Differences among the banking culture of countries are given as an example of how culture influences the implementation of financial innovations. As an example of different banking cultures, the approach of the British and Turkish banking sector to internet banking can be compared because internet banking was introduced in the same year into these two countries. In addition, today, internet banking is one of the most widely used services in these countries. The cultures of the British and Turkish banks differ in their security approach against internet banking. Turkish banks take precaution by using technologies such as SMS alerts or one-time-password use. These technologies create a unique password that could be used only for one time and for a limited duration so that it cannot be used again even though the password is recorded by a key logger. Thanks to these

[32] For more information see:
https://www.garantibbva.com.tr/tr/bireysel/mevduat_ve_yatirim/birikim/konut_hesabi.page

technologies, it would not be wrong to say that it is almost impossible to access customer account information for a fraudster. On the other hand, British banks prefer to use a random code or memorable data characteristics. These two may make it difficult for fraudsters to access customer account information, but it is not as safe as the Turkish banks' preferences (Sayar and Wolfe, 2007).

In addition to security approaches, investment products provision is also significantly different between Turkey and England. Akıncı et al. (2004) state that a wide variety of investment instruments such as foreign exchange, mutual funds, and time deposits are offered by Turkish banks. Also, these instruments are mostly used along with some other services such as information services and money transfers. We argue that this wide variety of investment products is related to the investment culture of Turkish society. On the other hand, among the other internet branch investment instruments, only share trading is offered by British banks. Other investment methods are implemented through another platform in Britain, but they are not part of the internet branch (Sayar and Wolfe, 2007).

Based on the comparison of these banking cultures, we can say that one of the reasons behind the use of security measures by Turkish banks is the effort to eliminate the prejudices of Turkish people against technology use. The insecurity of the internet environment is one of the reasons for this prejudice because personal information can be stolen in this environment. Therefore, some of the customers tend to go to the bank branch for their transactions in Turkey even though it will mean spending more time than handling it through internet banking. However, based on our interview results and the internet and mobile banking statistics, it is observed that the prejudice against digital banking applications in Turkey has been decreasing year by year. According to our findings, only a group of people who are in their 60s and above 60s still have prejudices against digital banking system due to increasing fraudulent transactions. In other words, the customer demand and expectations about digital banking applications in Turkey have been increasing year by year. According to the results of our interview, to meet this increasing customer demand, new security measurements and products related to digital banking applications are being used in the Turkish banking sector.

4.2. Turkish Derivative Market

Although the new financial developments, which are mentioned in the previous section, positively affect the Turkish market, they also lead to the fragility in the market due to some disruptions in their functioning (Oktayer, 2011). As a result, such developments cause fluctuations in variables such as inflation, interest rate, and exchange rate. Therefore, economic units in Turkey started to need derivative products after the 1980s like other developing countries (Ersoy, 2001). [33]

The Turkish financial markets were subjected to strict regulations until the 1980s, which means that the interest rates were determined by the Turkish government and there was no price risk since the Turkish state already fixed the price. In other words, there was no room for hedging, which is the fundamental rationale of derivative markets. Moreover, the development of derivative transactions was not possible in the Turkish market until 1980s due to the implementation of the fixed exchange rate regime and the prohibition of free exchange trade (Erol, 1999).

In the 1980s, government regulations and institutional changes explained in the previous section laid the groundwork for the establishment of derivative markets in Turkey[34]. Dersaadet Securities Exchange, which was the first Turkish stock exchange established during the Ottoman Empire period in 1866, was organizing the transactions of bonds and bills trade. After the establishment of the Turkish Republic, Dersaadet Securities Exchange was reorganized and its name was changed into Istanbul Securities and Foreign Exchange Bourse (Akcaoglu, 1996). Even though this institution was renamed, it did not actively operate until 1985 due to insufficient

[33] We would like to also clarify where the name of derivative products come from. According to Redhead (1997), the reason why the instruments traded in financial markets are called derivative products is that these products are derived from the values of investment instruments such as bonds traded in the cash market. Moreover, some of the important functions of derivative markets are their significant contribution to the growth of world capital markets and causing an increase in liquidity (Korkmaz, 2001)

[34] The summary of main financial innovations in Turkey are shown chronologically in Appendix C.

demand and supply of primary market securities. After the reorganization of this institution, BIST began to operate in 1986 (Akcaoglu, 1996).

According to the Istanbul Gold Exchange (IGE), the first derivative market transactions in Turkey were applied to a gold futures contract by IGE in 1997. According to ISE, the ISE Futures Market has included TRY / USD futures contracts on 15 August 2001. At the end of 2003, TRY/ EUR futures contract also started to be used in the market (as cited in Oktayer, 2007). Chambers (2009) argues that these developments made a significant contribution to the establishment process of the Turkish Derivatives Exchange (TURKDEX) by establishing the required legal grounds (as cited in Ersoy, 2001). In progress of time, the futures market was established in 2001 and TURKDEX was also established in the same year. However, TURKDEX commenced its operations in 2005 (Ersoy, 2001). According to Vobjektif (2007), with the developments of the derivatives market in Turkey, Izmir Futures and Options Exchange, which is Turkey's first stock exchange derivative transactions, was established in 2005 (as cited in Oktayer, 2007). Since Turkish derivative market has recently developed further, the number of derivative market transactions exceeded the number of stock exchange spot market transactions of derivatives. On the other hand, in advanced markets such as the US, spot market movements are determined by stock and futures markets. Moreover, some future markets such as Dow Jones and institutions such as Standard & Poor's (S&P) in the US can act as an indicator owing to long transaction hours on the futures market and fewer capital transactions (Erdil, 2008).

After explaining the developments in the Turkish derivative market, developments regarding the varieties of derivative products, which are called swap, futures, options and forward, will also be explained. To begin with, the first currency swap implementation was in 1982 based on an agreement between IBM and the World Bank (Chambers, 1998). Regarding the implementation of swap in the Turkish market, for the first time in 1985, CBRT allowed the implementation of the currency swaps under certain conditions in Turkey (Cakar, 2009)[35]. Furthermore, according to Erol (1999), the first organized futures market was on the Chicago Board of Trade (CBT) in 1848. Then, France, Japan, and England also started to enter the futures markets by the 1990s as Mishkin specifies (1998)[36]. Afterward, the Chicago Board Options Exchange (CBOE), which is the first stock options organization for trade exchange, was established in 1973 (Millo, 2003)[37]. Considering the information about the development of the Turkish futures and options market, it can be said that Turkey's entry to the futures and options markets is pretty recent. The underlying reason for the late entry is that futures and options market may not be vital for developing countries because the development of these markets depend on some priorities such as regulations and the availability of resources. In other words, if these markets in developing countries do not meet these priorities, the late entry of these markets does not create a problem for developing countries (Leuthold, 1994).

Last, as previously explained, there was a need to use forward contracts in Turkey in order to avoid the volatility risks of interest and exchange rate before the 1980s because a fixed exchange rate regime was implemented. After the 1980s, forward contracts started to be used in Turkey. For instance, foreign exchange forwards have been introduced to the Turkish market in 1984 (Akcaoglu, 1996)[38]. However, forward transactions in Turkey have decreased since the 1990s because withholding tax and foreign exchange tax have started to be collected in the form of cash (Tezer, 2015).

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[35] A swap is "an agreement between two or more people or parties to exchange sets of cash flows over a period in future"(Bhagwat, More, and Chand 2012, p.7)

[36] Futures contracts are "an agreement between two parties to buy or sell a specified quantity of an asset at a specified price and at a specified time and place" (Bhagwat, More, and Chand 2012, p.6)

[37] Options are "derivative contract that gives the right, but not the obligation to either buy or sell a specific underlying security for a specified price on or before a specific date" (Bhagwat, Omre, and Chand 2012, p.6)

[38] A forward contract is "a customized contract between the buyer and the seller where settlement takes place on a specific date in future at a price agreed today" (Bhagwat, Omre, and Chand 2012, p.5)

To understand the development process of derivative products in Turkey, the change in the total derivative transactions over the course of many years is shown in the figure given below. Figure 1 shows total derivative transactions which include forwards, futures, options, and other derivative transactions except for swap compared to the Turkish lira between 2004 and 2017. Whereas derivative markets have generally an increasing trend between 2005 and 2013, they have a decreasing trend after 2013. It can be said that the implementation of derivative products can be seen as a standardized process in today's world because institutions and companies such as banks and insurance companies use a wide variety of derivatives.[39]

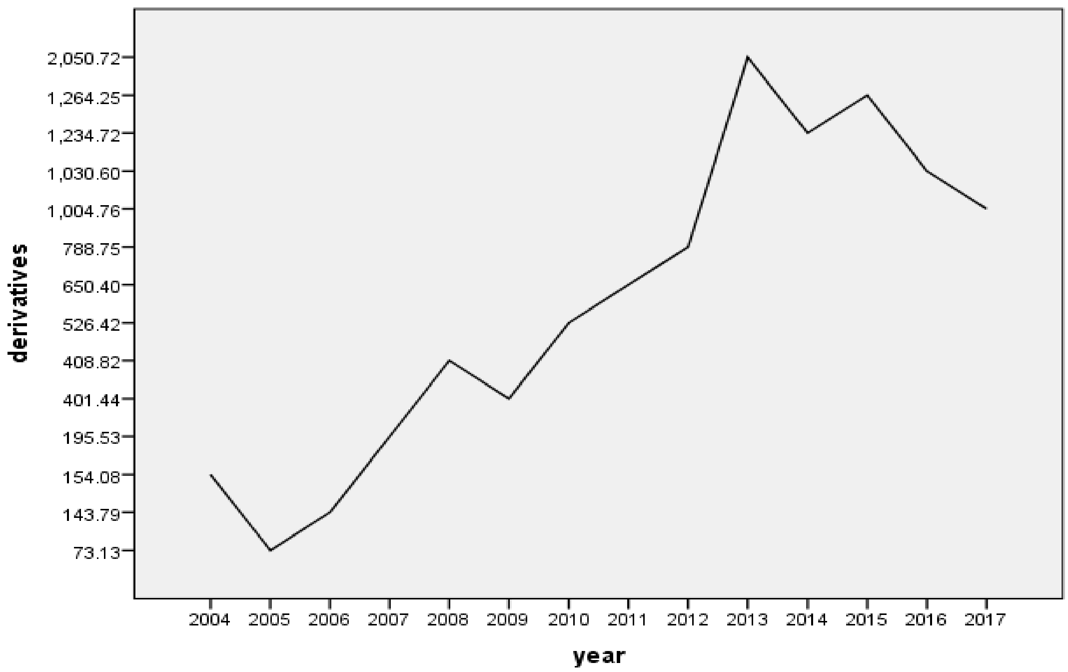

Figure 1: Total derivative transactions in Turkey (Million $)

Source: Compiled by the author on the data provided by the CBRT

[39] In addition to the use of these derivatives, companies such as Telerate and Reuters later on provided immediate access to data collected from the world market through electronic devices and thus instant currency trading became possible in the Turkish financial market (Cakar, 2009).

As a result of the developments in the derivatives market explained in this section, banks that operate in the Turkish financial system improved their technologies and increased the number of their provided services to improve the derivative market. Therefore, all of these improvements have a significant influence on the imitation and diffusion of financial innovations in Turkey because technological developments in the finance, ICTs, and regulatory framework are considered as a financial innovation.

4.3. Banking Sector in Turkey

The Turkish finance sector is composed of several actors such as banks, Bank Regulation and Supervision Agency (BRSA), BIST, Central Bank of Turkey (CBT) and some other institutions. Previously mentioned before, banking system plays a crucial role in the Turkish financial system; therefore, many regulations were made in the banking sector especially after the 2001 crisis. Information about banks operating in Turkey is shown in table 2. Based on the table, the number of banks operating in 2018 is 53. Of these, 32 are deposit banks, 13 are development and investment banks, 6 are participation banks, and 2 operate within the scope of Savings Deposit Insurance Fund (SDIF) (Bddk.org)[40]. That is to say, the Turkish banking sector is a system focused on deposit banks. Considering the table, although the number of banks has remained almost the same for these 4 years, the number of branches and personnel has been decreasing year by year. We think that the reason behind this decrease is to the development of financial innovations to some extent. As mentioned in the previous sections, with the development of mobile and internet banking in Turkey, many banking transactions are done without going to a bank branch. Therefore, there is a decrease in the number of branches as digital banking develops, which leads to a decrease in the number of banking personnel as well. In addition, the number of personnel needed in banks decreases because some financial innovations using artificial intelligence technology such as robots, personal assistants and written software have been developed.

[40] For more information see: https://www.bddk.org.tr/Institutions-Category/Banks/22

Table 2

Number of banks, branches and personnel in Turkey

Year	Number of Banks	Number of Branches	Number of Personnel
2015	52	12.269	217.504
2016	52	11.747	210.910
2017	51	11.585	208.280
2018	53	11.565	207.716

Source: Compiled by the author based on the data provided by BRSA Main Indicators Report

Figure 2 is taken from BRSA's Turkish banking sector-main indicators report (2018, p.3). The asset size of the Turkish banking sector decreased by December 2018 compared to the previous quarter and fell to the level of 3,867 billion Turkish Liras. Moreover, the total assets of the Turkish Banking Sector have shown an increasing trend between 2010 and 2018. Although total assets to GDP ratio fluctuates in general, it shows an increasing trend in the last years and this increasing ratio shows the potential growth of the banking sector. Considering the total asset / GDP ratio of the Turkish financial system, it can be said that it consists of a bank-based financial system.

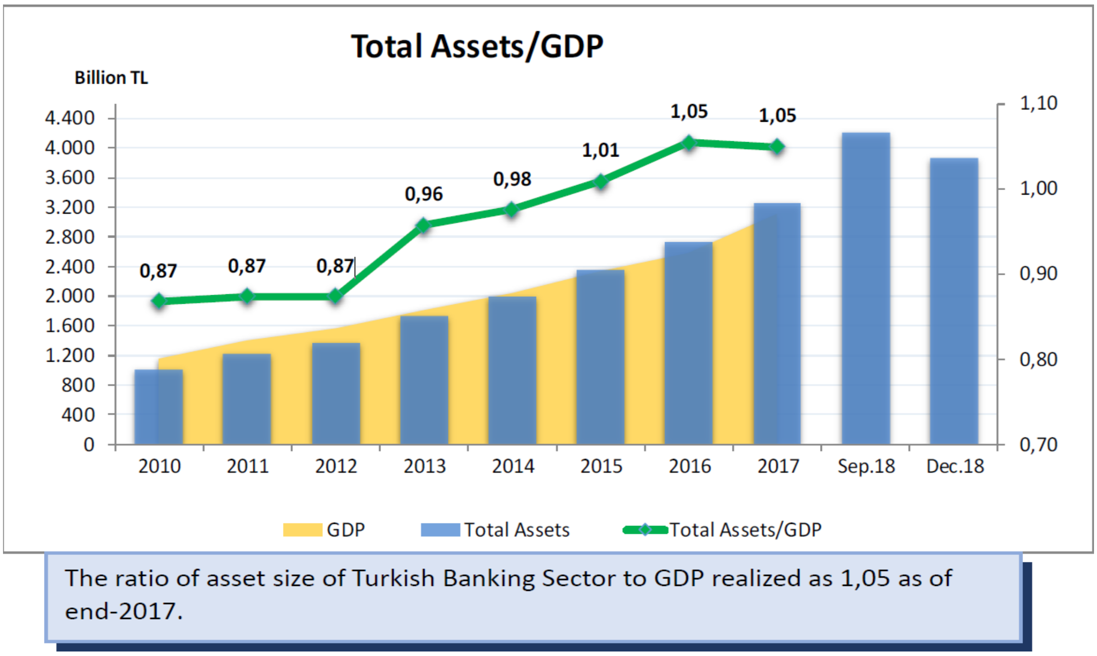

Figure 2: Ratio of asset size of Turkish banking sector to GDP

Source: BRSA Turkish banking sector main indicators report (2018, p.3)

Table 3 shows the top 15 banks in 2018 according to their total assets. 12 of them are deposit banks and 3 are development and investment banks. 3 of these deposit banks are state-owned banks, 4 are privately-owned banks and 4 are foreign-owned banks (TBB).

Table 3

List of total assets of banks in Turkey in 2018

Banks	**Total Assets (Million TL)**
Türkiye Cumhuriyeti Ziraat Bankası A.Ş.	537.156
Türkiye İş Bankası A.Ş.	416.388
Türkiye Halk Bankası A.Ş.	378.422
Türkiye Garanti Bankası A.Ş.	359.477
Yapı ve Kredi Bankası A.Ş.	348.044
Türkiye Vakıflar Bankası T.A.O.	331.356

Table 3 (continued)

Akbank T.A.Ş.	327.642
QNB Finansbank A.Ş.	157.416
Türk Eximbank	139.429
Denizbank A.Ş.	137.658
Türk Ekonomi Bankası A.Ş.	96.997
ING Bank A.Ş.	58.519
Türkiye Sınai Kalkınma Bankası A.Ş.	38.298
HSBC Bank A.Ş.	32.811
İller Bankası A.Ş.	32.221

Source: TBB

4.4. Mortgage System and Some Payment Methods in Turkey

The mortgage system is one of the financial innovations that affected the financial developments in Turkey like it did in other developed and developing countries and became one of the main causes of the 2008 global crises[41]. Mortgage law, which includes amendments regarding the housing finance system, entered into force in 2007 in Turkey (Kabatas, 2007). In Turkey, all households either as a tenant or landlord can benefit from the mortgage credit only if they provide the necessary conditions (Sarıoglu, 2007). Some of the rules in the Turkish mortgage law created some financial risks due to not taking due precautions. For example, the terms of agreement suggesting that customers do not have to pay the credit installments under the circumstances of sickness or death and this term was not designed in a way to protect either financing institutions' rights or the customer's rights in the insurance system

[41] According to Bostan and Kelleci (2010), mortgage system, which is a home loan system started in the US, offers the possibility of being a passive host for 20-30 years. In this system, home buyers repay the loans they receive with fixed or floating interest rates. Those who want to use credit are primarily rated according to their credit history. Furthermore, regardless of whether they can be classified as risky customers on a credit basis, large-scale mortgage loan requests have been met by banks with low interest rates (as cited in Kodaz, 2014)

(Kabatas, 2007). Consumers, who live in Turkey, have started to benefit from mortgage sales in the last decade.

Figure 3 shows mortgage sales in Turkey between 2009 and 2017. According to the figure, apart from 2012 and 2014, mortgage sales in Turkey show an increasing trend between 2009 and 2017.

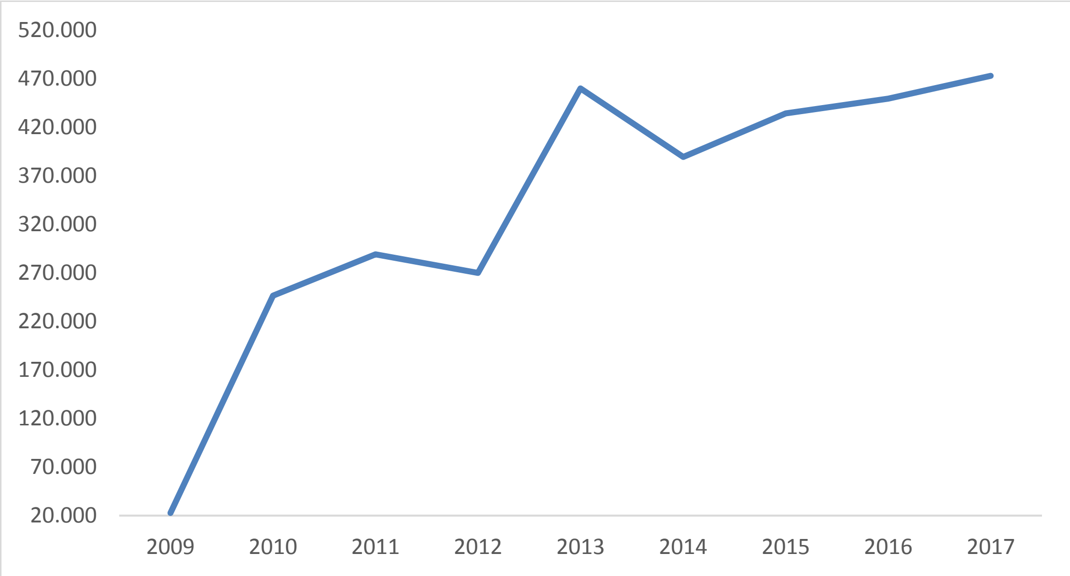

Figure 3: Mortgage sales in Turkey (Number of house sale)

Source: Compiled by the author based on the data provided by TURKSTAT

Mortgage system that applies in Turkey is different from other countries' mortgage systems because Turkey adapts this system in accordance with its own needs. Furthermore, Berberoglu (2009) claims that this adapted mortgage system in Turkey allows the implementation of both the American model and the European model. To give an example of different adaptations of the mortgage system, The Netherlands and Turkey's mortgage systems can be compared. Before the establishment of this system, in the Netherlands, incentive arrangements for different household characteristics, such as first-time hosts, certain age groups or lower-income groups, were determined by the government. However, such an incentive is not included in mortgage lending laws in Turkey. Moreover, there are many actors such as the Capital Markets Board of Turkey (CMB) and the Banking Regulation and Supervision Agency (BRSA) playing a significant role in the implementation of the mortgage law in Turkey. On the other hand, institutions in the Netherlands are specialized in a specific regulation. For example, Nationale Hypotheek Garantie (NHG), which is one of these institutions, is acting as a guarantor of the debts of households to the bank (Sarıoglu, 2007).

The banking sector is the cornerstone of the Turkish financial system. Due to the results of liberalization process like trade openness and free capital movement, foreign banks have started to enter the Turkish market (Altay, 2006). As a result, competitiveness in the Turkish banking sector increased based on the banks' aim of gaining more profit. In addition, the developments in the field of ICT affect the financial sector, such as changes in payment systems and derivatives markets. The influence of the financial innovations on the Turkish market has increased substantially because banks need to follow up with the financial innovations being used in the world market and adapt these innovations to the Turkish market or they should develop new financial innovations in order to remain competitive. To give an example of the development process of financial innovation in Turkey, some of the payment systems are discussed below:

One of them is the Automated teller machine (ATM). In Turkey, ATM was first adapted by Turkiye Is Bankasi A.S. in 1987. The number of ATMs increased after 1987 as the provinces of Turkey developed. In the world, the first examples of automatic teller machines were adopted in the 1960s and commercialized in 1967 (Guner, 2005)

Another payment method is the credit card. Interbank Card Center (ICC, 1997) claims that the first credit card was introduced in 1950 in the US by Diners Club (as cited in Kaya, 2009). According to the ICC (1997), representative of the first credit card in Turkey was Servis Turistik INC, which depended on the Koc Group. In 1968, the company started to use Diners credit cards, which was authorized by the United States (as cited in Duramaz and Dundar, 2014). Considering the introduction dates, Turkey adapted the credit card much later than the US.

Tuncer (2004) considers that widespread use of credit card, which is one of the financial innovations, affects financial markets because the demand for cash can decrease with the use of credit cards (as cited in Yardım, 2005). In addition, we think that some financial innovations have been developed as a result of the widespread use of credit cards. One of these innovations is the Point of Sale (POS) system. This system was firstly used in New Jersey in 1973. This system was developed by IBM. However, the POS system was firstly used in 1991 in Turkish financial market by Yapı Kredi Bank (Kaya, 2009).

Although the adaptation of ATM, credit and debit card and POS system happened very late in the Turkish financial market, the further development of these payment systems happens very fast. According to table 4, the number of ATMs in Turkey has reached 51.941 at the end of 2018, which means that the number of ATMs has increased by more than eight times in these 17 years passed by since it was first introduced. Furthermore, both the number of credit cards and the debit cards had an increasing trend through these 17 years. Apart from 2017 and 2018, the rise in the number of POS machines was parallel to the increase in the number of ATMs and credit cards between 2001 and 2018.

Based on our interview results and these statistics, it is observed that the late adaptation of financial innovation does not affect its diffusion in Turkey. This can be explained by the curious nature of Turkish people about new technological methods in general. It facilitates the diffusion of new technological methods.

Table 4

Number of ATM, credit and debit card, and POS (Million)

Year	ATM	Credit card	Debit card	POS Terminal
2001	12,127	13,996,806	31,656,944	364,636
2002	12,069	15,705,370	35,057,308	495,718
2003	12,857	19,863,167	39,563,457	662,429

Table 4 (continued)

2004	13,544	26,681,128	43,084,994	912,118
2005	14,823	29,978,243	48,243,369	1,140,957
2006	16,511	32,433,333	53,464,057	1,282,658
2007	18,800	37,335,179	55,510,092	1,453,877
2008	21,970	43,394,025	60,551,484	1,632,639
2009	23,800	44,392,614	64,661,947	1,738,728
2010	27,649	46,956,124	69,916,462	1,823,530
2011	32,462	51,360,809	81,879,926	1,976,843
2012	36,334	54,342,148	91,263,042	2,134,444
2013	42,011	56,835,221	100,164,954	2,293,695
2014	45,576	57,005,902	105,513,424	2,191,382
2015	48,277	58,215,318	112,383,854	2,158,328
2016	48,421	58,795,476	117,011,685	1,746,220
2017	49,847	62,453,610	131,593,443	1,656,999
2018	51.941	66,304,603	146,375,337	1,586,747

Source: Compiled by the author based on data on ICC

In addition, figure 4 shows customers' total expenditure such as travel, shopping, and health expenditures made by using a credit card and debit card. Based on this figure, it can be said that the usage of credit and debit card has been increasing year by year. Moreover, the increasing number of credit card users is related to the benefits of credit card such as the installment opportunity and extra rewards it provides. Like some of the Asian countries mentioned in chapter 3, Turkish society is well adjusted to both credit and debit card culture. Like the Turkish mortgage system, these systems also designed based on a combination of the European and US systems.

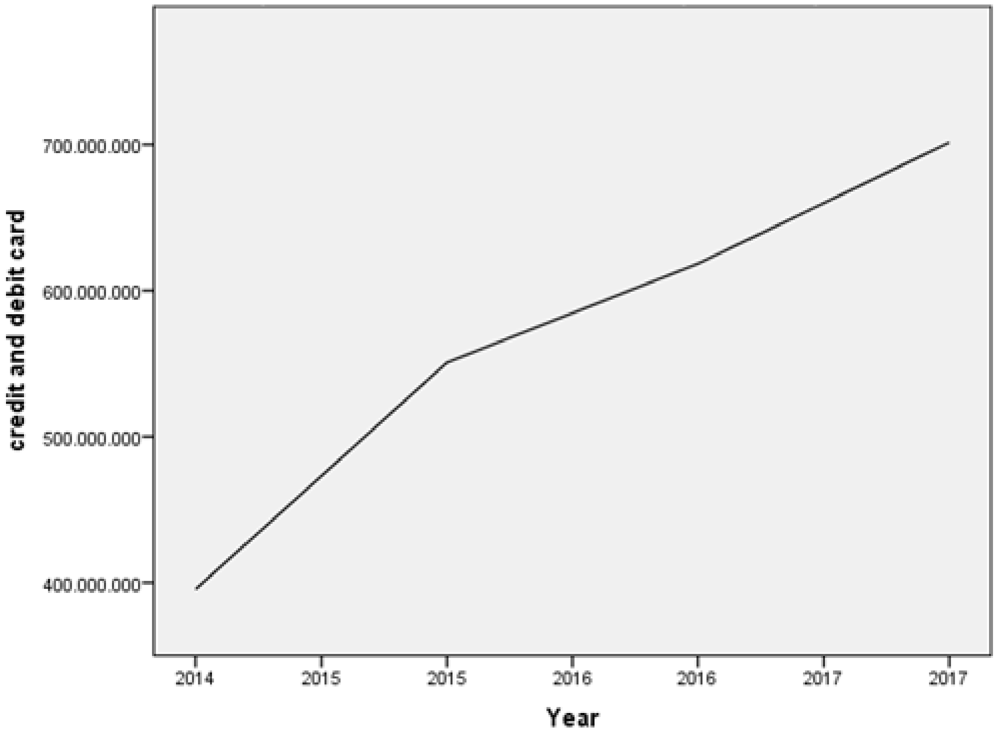

Figure 4: Total expenditure on credit and debit cards (Thousand TL)

Source: Compiled by the author based on the data provided by CBRT

Another payment system is VISA, which was introduced in the 1970s but put into operation in 1974. VISA had entered the Turkish financial market 10 years after its first introduction into the world markets, and this positively affected credit card spending and credit card use in the Turkish financial market (Aldis, 2012). VISA dominates more than 83% of the Turkish credit card market (Isın, 2006). Following the footsteps of VISA, Turkey also developed its own payment system in 2016, which is called TROY (ICC)[42]. TROY has been functioning as a local alternative for Turkish bank customers and it has been extending its technological infrastructure facilitating some payment methods such as contactless, and mobile payments. We claim that TROY can play a vital role in the development of financial innovations in the Turkish market because banks in Turkey become able to develop their own innovations through TROY without being dependent on any firm or Fintech firm abroad and without

[42] For more information see: https://bkm.com.tr/wp-content/uploads/2015/07/troy-Basin-Bulteni.pdf

waiting for a permission to use innovations that would be provided by these firms. Considering our interview results, nowadays, most of the Turkish banks focus on the digital banking system and specifically on the development of payment methods and internet and mobile banking applications because of increasing customer expectations and market demand. In addition, the results of the interviews also overlap with the statistical results showing that the number of customers using mobile and internet banking has increased. Therefore, Turkey's creation of its own payment system seems to occur as a result of the increasing customer demand about the development of payment methods.

With the widespread use of credit cards, new credit card systems are developed such as contactless credit card system. In chapter 2, we mentioned that financial innovation and technology evolve together. The emergence of contactless credit card system is related to this argument because this system includes development in POS machine and credit card. According to Kaya (2009), contactless credit card system, which works by bringing the card closer to the POS device, offers the possibility of quick payment; therefore, there is no need for an additional process such as password entry. He claims that the first country to use this system in Europe is Turkey, who started using it in 2006.

The other payment system is Society for Worldwide Interbank Financial Telecommunication (SWIFT), which is an electronic communication network. The SWIFT system is used for financial transactions of member banks and financial institutions, such as money transfer, and payment order. The SWIFT system has been used since 1977, and its center is in Brussels (Aldis, 2012). As Kaplan (1999) mentions, Turkish financial market started to implement this system in 1989. Aldis (2012) stated that Turkey's interbank foreign exchange transfers are carried out safely and faster through the SWIFT system.

Also, Electronic Funds Transfer (EFT) is another payment method widely used. Thanks to EFT technology, individuals and institutions can easily buy and transfer values such as funds and securities. All EFT transactions are made based on the instructions given to banks or online systems (Ozmen, 2012). Whereas the first EFT was carried out in 1913 by the Federal Reserve Bank (Tufano, 2003), it has been implemented only since 1992 in Turkey (CBRT)[43]. Compared to the introduction of the EFT system into the world, it wouldn't be wrong to claim that the Turkish market has adopted this system very late. With the use of the EFT system in the Turkish financial market, the Turkish Lira payments are transferred between banks in an electronic environment and in real-time (Duramaz and Dundar, 2014). Also, fond flows of Turkish Lira can also be performed quickly and regularly through the EFT system (Aldis, 2012). Additionally, the EFT system prevents dud cheque incidents because there is no possibility to transfer funds without having sufficient funds in the EFT system (Isın, 2006). Thanks to the new financial innovations such as SWIFT and EFT, it is possible to have easy to use and more secure payment systems. Also, both of these systems help to reduce transaction costs (Yardım, 2005).

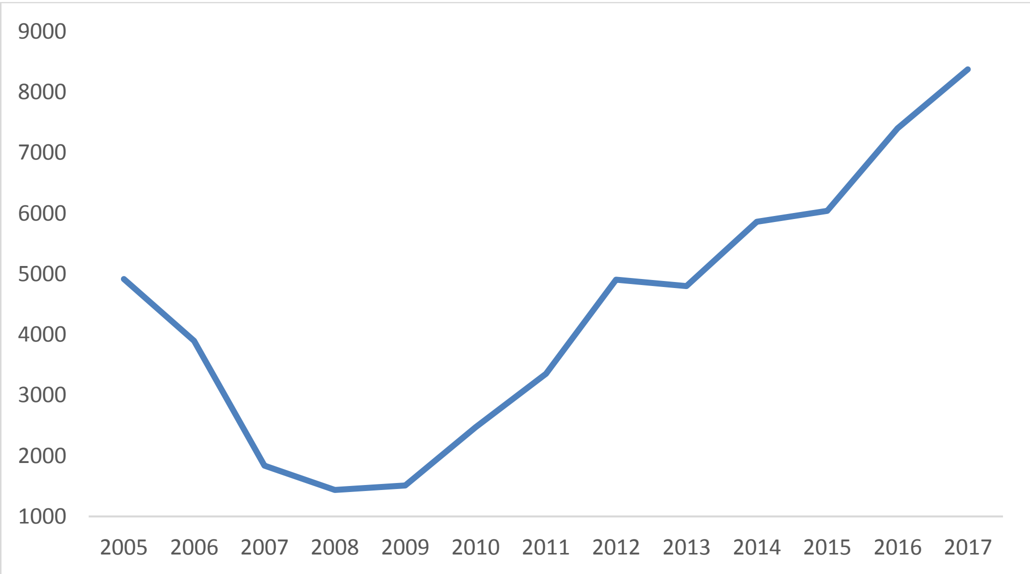

Figure 5: Ratio of volume of EFT transactions (Million TL) in bank assets in Turkey

Source: Compiled by the author based on the data provided by TBB

[43] For more information see:
https://www.tcmb.gov.tr/wps/wcm/connect/TR/TCMB+TR/Main+Menu/Temel+Faaliyetler/Odeme+Sistemleri/Turkiyedeki+Odeme+Sistemleri/Elektronik+Fon+Transfer+%28EFT%29+Sistemi

Figure 5 shows the volume of EFT in Turkey from the start of 2005 to December 2017. To find this figure, $\frac{\text{The volume of EFT}}{\text{Bank Assets}}$ ratio is used. The figure can also illustrate the money transfers. According to the figure, there was a sharp decrease in the volume of EFT transfers until December 2008. However, the volume of EFT transfer gradually increased between December 2008 and 2012, even in the 2008 crisis. Therefore, it may be claimed that the crisis of 2008 had no dramatic effect on the volume of EFT transfer. In December 2013, the volume of EFT was slightly declined, and then it started to increase until December 2017. In fact, this drop continued at a low level during 2008. Other than these two declines, after 2012, the volume of EFT fluctuates.

Apart from this, internet banking is also one of the payment methods. According to Bulut (2013), internet banking provides time-saving, faster service and cost reduction. The first internet banking application was introduced in the US in 1996 (Gefen and Straub, 2005). Then, Cartwright (2000) claims that this application spread out with the increasing use of the internet at home (as cited in Sanlı and Hobikoglu, 2015). In Turkey, internet banking services began with Turkiye Is Bankasi A.S in 1997. Then, Garanti Bank followed the Turkiye Is Bankasi A.S in the same year (Eroglu and Yucel, 2012).

In the previous part of this chapter, we mention that Turkish society has a prejudice against the use of digital banking applications due to the insecurity of the internet environment. However, according to figure 6, which illustrates total number of active individual and corporate users of internet banking in Turkey, Turkish society seems to overcome this prejudice. Our interview results prove that these prejudices have almost disappeared, and customer demands on internet banking are increasing day by day. According to the figure, until 2016, the total number of active individual and corporate users of internet banking have been increasing year by year. We think that the decline in the number of users after 2016 is related to mobile banking. We will explain this argument in the mobile banking figure.

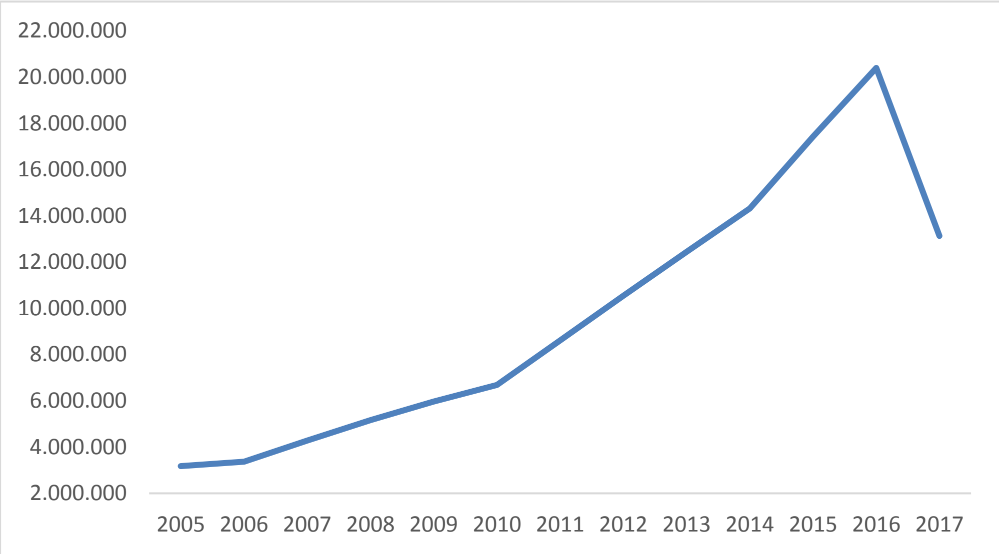

Figure 6: Total number of active users of internet banking (Thousand)

Source: Complied by the author based on the data provided by TBB

Moreover, after a growing trend in the total number of internet banking usage, it is expected that the volume of internet banking also shows an increasing trend. Therefore, internet banking activities in Turkey are analyzed. Figure 7 shows $\frac{\text{The volume of internet banking}}{\text{Bank Assets}}$ ratio between 2006 and December 2017. The volume of internet banking data includes internet transactions, which include money transfers, payments, investments, credit card data, and others. According to the figure, it is observed that the volume of internet banking in Turkey has a sharp decrease until 2007. After 2008, the volume of internet banking shows an increasing trend.

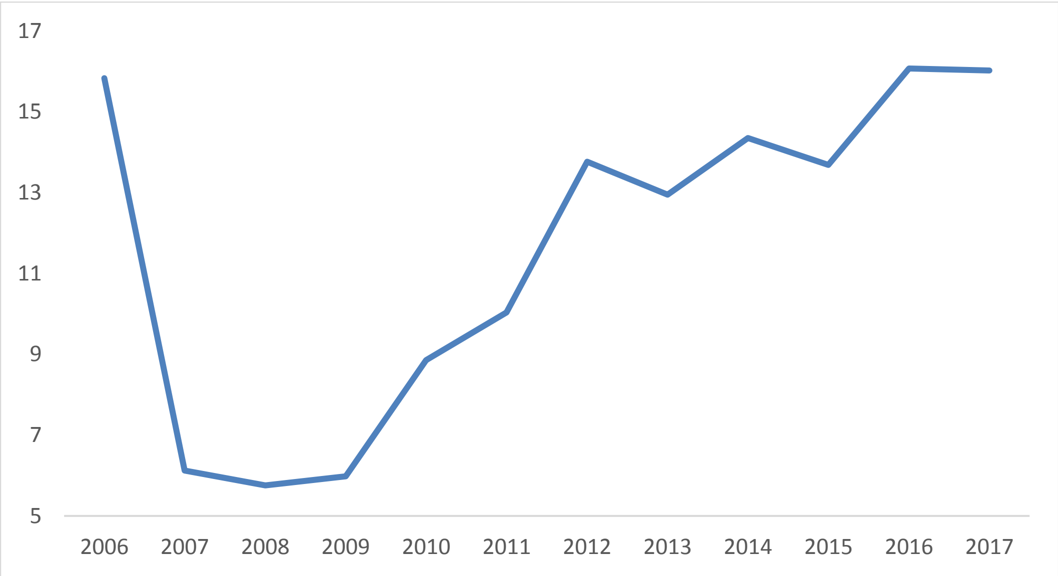

Figure 7: The ratio of volume of internet banking (Million TL) in total bank assets

Source: Complied by the author based on the data provided by TBB

Mobile payment methods have been adapted and developed due to the growing number of smartphone users in Turkey. According to figure 8, although using mobile banking is a more recent payment method than internet banking use, the total number of mobile banking customers are increasing year by year. Even, the total number of mobile banking customers in 2017 is almost more than 2 times of the total number of internet banking. Therefore, we believe that the increase in the number of mobile banking customers causes a decline in the number of active individual users of internet banking in 2017. The reason can be explained with the fact that mobile internet banking became more useful and practical with the development of smartphones. Moreover, this increasing number of mobile banking customers leads to improvements in the infrastructure of mobile payment methods like in some of the Asian countries mentioned in Chapter 3.

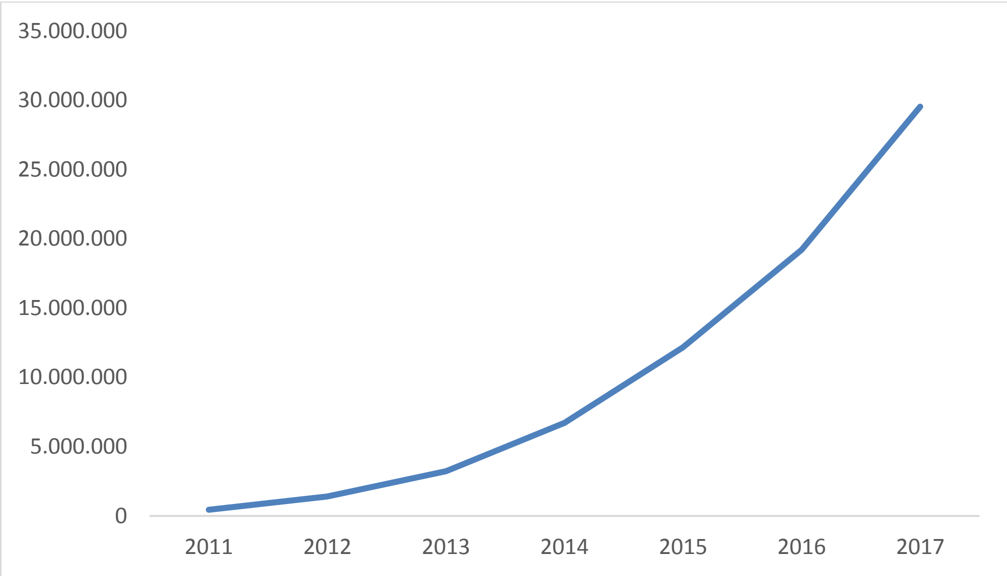

Figure 8: Total number of mobile banking customers (Thousand)

Source: Complied by the author based on the data provided by TBB

Turkey has significantly improved its innovation skills in digital banking by adopting practices from other countries. Especially after the 2000s, most of the bank transactions can be made through internet banking. Some examples of these transactions are making payments, investments, and money transfer (Bulut, 2013). After the adaptation process, Turkish banks started to improve their original internet banking innovations. One of the examples of the original internet banking innovations is the first financial Windows 8 application developed by Garanti Bank. By using this application, customers are able to instantly access market rate information.[44] Afterward, Deniz Bank launched the world's first Facebook banking application in 2012, bringing social media and banking together for the first time[45]. Moreover, in 2013, Garanti Bank and Intel developed Identity Protection Technology (IPT) together, which is a first too. Thanks to IPT, customers who use Garanti Bank internet

[44] Garanti Bank Annual Report (2012), https://www.garantibbvainvestorrelations.com/tr/images/pdf/2012_yillik_raporu.pdf

[45] For more information see: https://www.denizbank.com/en/about-us/our-communication-agenda.aspx#

banking and Intel products made verification processes quickly and practically without waiting for a password entry or a second device involvement (Arıkan, 2015).

Apart from the original internet banking innovations of Turkish banks, Turkey introduced the first application of credit cards with photo to the world in 1992. In addition, in 1994, the first multi-partner card applications in the world applied in Turkey. A mobile signature was put into use for credit card shopping in 2008 after its first use in banking transactions (ICC, 2017)[46]. Moreover, BKM Express, a local digital wallet, was developed in 2012 by ICC to increase the number of customers using the mobile payment for online shopping, and transfers. It combines all cards types such as credit, debit and prepaid cards for the first time in the world (ICC)[47]. By the year 2017, it has more than 1.5 million users and it collaborates with 17 banks. More than twenty-one thousand retail members have taken part in over 3.8 million transactions since its launch in 2012 up to May 2017. This is twice the number of transactions made in 2015. BKM is heavily focused on increasing the share of mobile payments, and in 2016, for the first time, more than half of the payments made on the platform were mobile (ICC, 2017)[48].

Like the contactless credit card system, all of these original financial innovations of Turkish banks can be an example of the argument that financial innovation and technology evolve together.

With the development of payment systems, banks need to increase the security of payments. As a result of this, new security payment methods have emerged. One of them is the Chip & PIN payment method. This payment method is made up of a combination of Chip and PIN technology. The former requires to introduce different

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[46] For more information see: https://bkm.com.tr/kronoloji/

[47] For more information see: https://bkm.com.tr/urunler-ve-hizmetler/bkm-express/

[48] Interbank Card Center Annual Report (2017), https://bkm.com.tr/wp-content/uploads/2018/07/2017_BKM_FAALIYET_RAPORU.pdf

values for each transaction. Moreover, the latter requires more security verification. These two methods protect customers against counterfeiting and fraud (King, 2012). The Chip and PIN method, which is adapted from the world market, has been implemented since 2006 and it has greatly reduced credit card copying and stealing risk in Turkey. Moreover, Turkey is the 3rd European country which has implemented the Chip & PIN method following France and the United Kingdom (ICC)[49]. Another secure payment method example is 3D secure payment system (Aldis, 2012).

The 3D payment system is based on the use of a validated password by a bank during shopping (Gokgul, 2014). Turkey has been using this system since 2006 (Kaya, 2009). Moreover, to make banking transactions more secure, some Turkish Banks uses biometric identification. For instance, Türkiye Ziraat Bankası uses palm authentication in ATM transactions[50].

Considering the implemented security methods for the payment systems in Turkey, it is expected that the fraudulent transaction rate will get lower each year. Based on our interview results, this rate is quite high in Turkey. Therefore, strict regulations about these methods are implemented. Regarding the original financial innovations and payment systems developed in Turkey, it is predicted that the development of digital banking systems plays a crucial role in the Turkish banking system. According to our interview results, nowadays, customer expectations and market demand regarding the digital banking systems in Turkey is increasing, especially regarding mobile and internet banking applications. Therefore, Turkish banks focus on the development of digital banking systems nowadays.

4.5. Concluding Remarks

This chapter examines the emergence and development processes of financial innovations in Turkey as a case study of financial innovation in developing countries.

[49] For more information see: https://bkm.com.tr/en/kronoloji/

[50] For more information see: https://www.ziraatbank.com.tr/en/our-bank/press-room/ziraat-novelties/atm-biometric-identification-system

Therefore, this chapter is the first comprehensive literature review on financial innovation in Turkey, which is one of the unique contributions of this study to literature since most of the studies in the literature only focus on specific types of financial innovation instead of considering all financial innovations in Turkey in general.

We argue that the speed of the financial innovation development has increased and the characteristics of financial innovations have changed in Turkey after the 1980s with the institutional and regulatory changes that mainly occurs as a result of liberalization and globalization like in the case of other developing countries as we discussed in the previous chapter. As in the case of developing countries such as Asian countries that previously mentioned in chapter 3, we believe that the cultural characteristics of the Turkish society also have an important influence on the development process of financial innovations in Turkey since the culture affects the individuals' decisions and opinions about financial innovations.

In the lights of information explained in this chapter, we think that culture has both negative and positive effects on the development process of financial innovation in Turkey. Some unique financial innovations such as dowry account and gold account emerged as a result of specific cultural features of the Turkish society as in the case of other countries. Another example can be given based on our interview results. Because of its hasty nature and the desire to get fast results while using any technology, Turkish people tend to adapt and use financial innovations very quickly. In some cases, however, the cultural characteristics of society can be one of the factors preventing the development of financial innovations. According to the interview results, Turkish people mostly prefer to communicate verbally, and some of them want to speak with a bank employee in person while doing any financial transaction. Therefore, some of the society have prejudices against digital banking applications. This affects the diffusion of financial innovation in Turkey.

Like in other developing countries, some of the financial innovations in Turkey such as ATM and credit card are adapted from developed countries and some of them are developed domestically, which means that some of the financial innovations are developed and used for the first time in Turkey. With the growing demand for internet and mobile banking in Turkey, there is a decrease in the number of banking branches and personnel. Moreover, due to increasing fraudulent transactions, many security measurements are applied in the Turkish banking system.

Based on the discussions in the literature about financial innovations in developing countries and Turkey, we will conduct a qualitative analysis in the next chapter to examine the emergence and development processes of financial innovations in Turkey.

CHAPTER 5

A QUALITATIVE ANALYSIS: FINANCIAL INNOVATIONS

A comprehensive literature review which is about financial innovation is explained in chapter 2. In the lights of this information, it is observed that the emergence and development process of financial innovation differs in developing and developed countries. Therefore, factors that cause these differences between developing and developed countries are discussed in chapter 3. Considering all of this information, factors that affect the emergence and development process of financial innovation in Turkey are examined in chapter 4 as a case study of developing countries. Since this study aims to investigate the factors that influence the emergence and development process of financial innovation in Turkey and to obtain information related to the development process of financial innovation in developing countries, this chapter provides information about our qualitative research which was conducted according to the information discussed previously. This chapter describes the general research process, research methodology, and findings of the research.

The main contribution of this chapter is to conduct an interview to examine the emergence and development processes of financial innovations in Turkey because it has never been used in the previous studies in the literature.

The plan of this chapter is divided into 5 parts: The first section of the chapter starts with a research design which describes the approach, aim, and importance of the research. The second section elaborates on the data collected related to the research. Specifically, it gives information about data sources as well as the data collection and data analysis processes. The third section explains the limitations of the research. The fourth section presents the findings and gives the discussion of the research. The last section summarizes and discusses the main findings of the interview.

5.1. Research Design

5.1.1. Approach of the Research

As we mentioned in the literature review, there is no agreed measurement technique for the evaluation and analysis of financial innovation. Quantitative techniques are not generally employed in studies about financial innovation. Therefore, in this study, we used a case study approach, which is one of the qualitative research methods, to investigate the financial innovation in Turkey. Many studies related to financial innovation in the literature are conducted by employing the case study approach and it is also a suitable method considering our research question. The case study approach is based on conducting an empirical investigation and the research questions beginning with “How”, “Who” and “Why” are asked during this investigation. In addition, a case study requires the investigation of multiple or single study units by using data collection methods such as making interviews and surveys (Farquhar, 2012).

5.1.2. Aim and Importance of the Research

Considering the literature review, some important research gaps are observed in studies about financial innovation. One of these gaps is that the existing studies mostly focus on financial innovation in developed countries, especially in the US. That is to say, further research is needed on financial innovation in developing countries. Another one is that most of the research discusses only one angle of financial innovation such as financial innovation products or definition of financial innovation. Therefore, there is a need for further research on financial innovation with a broader focus as well. Considering these gaps in the literature, we decided to focus on developing countries in a broader manner. Then, we chose Turkey as a case study for financial innovations in the developing countries since the number of studies in the literature investigating financial innovation in Turkey are very rare, and these studies only focus on specific types of financial innovation.

After an examination of existing literature on financial innovations and financial innovations in developing countries, we realize that there are differences in terms of the emergence and development processes of financial innovation between developing and developed countries. In consideration of these points, we decided the aim of this study; which is to understand the factors that influence the emergence and development of financial innovations in Turkey and to obtain information related to the development process of financial innovation in developing countries. As we mentioned in the previous chapters, the studies in the literature discussing financial innovation in Turkey are mostly focused on very specific examples of financial innovations such as ATMs and internet banking. On the other hand, this research focuses on the development and emergence processes of financial innovation in Turkey in a broader sense and there is no similar study about Turkey in the literature conducted in this respect, which makes this study very crucial.

We developed a main research question that reflects the purpose of the study and this question is as follows: "What are the factors influencing the emergence and development of financial innovations in Turkey?"

5.2. Data

5.2.1. Data Sources

We conducted semi-structured interviews, which are one of the qualitative analysis methods, in order to collect data for this research. In the semi-structured interviews, the researcher follows an interview guide, but the flexibility in the implementation of the instructions in the guide is allowed at the same time (Farquhar, 2012).

The questions asked in the interview were designed by considering the relevant main discussions in the literature on financial innovation, and on the emergence and development of financial innovation in developing countries and Turkey. In addition, since this research aims to investigate the factors that influence the emergence and development of financial innovation in developing countries, the interview questions mainly were devised by focusing on these factors in Turkey. The interview structure consists of specific, open and close-ended questions regarding roughly[51]:

- Basic information about financial innovation such as its definition and factors that leads to its emergence
- General and specific information about financial innovations in Turkey
- Policy recommendations for financial innovations in Turkey

To conduct semi-structured interviews, two different data sampling techniques are used as part of this research in order to obtain the relevant data. One of the techniques is purposive sampling. In this type of sampling, the departments, organizations or people are selected with respect to the research questions (Bryman, 2012). The other technique is snowball sampling. At the beginning of the snowball sampling, the researcher makes interviews with a group of selected people to discuss the research questions and these people suggest the next participants to be included within the research among people having similar characteristics (Bryman, 2012).

While conducting a qualitative research, sample size should not be either too small or too large in order not to have any problem related to data saturation or analysis (Onwuegbuzie and Collins, 2007). Therefore, the sample size of this research is selected as 10 banks. When we conducted our 10th interview, we observed that we had similar findings of the interview results. Therefore, we thought that the data reached saturation; hence, we did not increase our sample size.

As we previously explained in chapter 4, the number of banks operating in 2018 is 53 which 32 of them are deposit banks, 13 are development and investment banks, 6 are participation banks, and 2 operate within the scope of Savings Deposit Insurance Fund (SDIF).[52] Considering the asset size of the banks, we conducted an interview with the

[51] The interview questions can be found in Appendix B

[52] For more information see: https://www.bddk.org.tr/Institutions-Category/Banks/22

employees from the first 9 out of the 15 highest-ranking banks in Turkey according to their total asset size of the banks. Of these 9 banks, 2 of them are privately-owned deposit banks, 5 of them are foreign deposit banks, and 2 of them are state-owned deposit banks. In addition to these banks, we also interviewed an employee from a participation bank to provide diversity in terms of bank type. All of these banks were not coded according to their asset size in the analysis of the research.

5.2.2. Data collection and Data Analysis Process

Before designing the semi-structured interviews, all of the field research instruments were submitted to Human Subject Ethics Committee of Middle East Technical University (METU) for approval and the necessary approval was given that the research questions would not create any ethical problems[53]. When we sent an e-mail to each interviewee about our research, we also sent the ethical approval document in the attachment. The interview program starts with the explanation of information about the research to all participants, such as background information and the purpose of the study. We also reassured all participants that their names and the banks they work for will be kept confidential.

Among the titles of the participants interviewed, there were general manager of innovation department, manager of R&D department, IT specialist or innovation specialist. Also, all of the participants were working at the headquarter office of the relevant banks. The time and date of the interview appointments were determined by communicating through e-mails or WhatsApp (a messenger app for smartphones). Interviews were made face to face, on skype or via phone calls, and they were conducted by the researcher herself starting from the mid of February 2019 till the beginnings of May 2019. The interview sessions usually lasted about 40 minutes. During these sessions, notes were carefully taken and reviewed several times to interpret the results more accurately and to render data into a more well-structured

[53] A copy of the Ethics Approval can be seen in Appendix A

form in order to enable an easier analysis. These sessions could not be recorded due to participants' ethical concerns and rules employed by the regulations of the banks.

In the data analysis process, firstly, each interview result was converted from draft to report. Then, the main findings of the interview results were categorized to verify information, and also this categorized information was sorted into groupings. Moreover, we coded banks by numbers and this codification is not related to their asset sizes. In other words, the names of the banks were coded randomly in this study. All of the findings were analyzed with respect to the aim of the research. As a result, similar and different aspects between the interview results were observed more clearly.

The list of codification and the important features such as bank groups and interviewees' departments are shown below in table 5:

Table 5

List of codification of banks that interviewed

B#	Bank group	Current Department
B1	Privately-owned Deposit Bank	Innovation department
B2	Privately-owned Deposit Bank	Innovation department
B3	Foreign Deposit Bank	Innovation department
B4	Foreign Deposit Bank	Innovation department
B5	Foreign Participation Bank	Innovation department & R&D department
B6	Foreign Deposit Bank	Innovation department & R&D department
B7	State-owned Deposit Bank	Innovation department
B8	Foreign Deposit Bank	Innovation department
B9	Foreign Deposit Bank	Innovation department
B10	State-owned Deposit Bank	Innovation department

5.3. Limitations of the Research

The biggest difficulty experienced during the field research was to find the names and contact information of employees working at innovation, R&D, and IT departments of the banks' headquarters since this information was not available at the website of banks. Therefore, we made a search on Google and LinkedIn to access to the required names and contact information. Another limitation was that the e-mails sent to the general e-mail addresses published on the websites of the banks usually remained unanswered. Moreover, since the interviewees mostly had very busy schedules, we needed to rearrange the interview time for several times. Therefore, a longer time was required than expected for the data collection period.

5.4. Findings and Discussion

5.4.1. Definition of Financial Innovation

When we asked participants to define financial innovation, the participants defined it in a specific or broader manner. Similar to the literature, some of the participants (B1, B2, B5, B6, B8) defined financial innovation as changes or improvements specifically in products, processes, and organizations in the banking system. On the other hand, other participants defined financial innovation in a broader manner as in our financial innovation definition, which says that financial innovation means a new financial tool or improvements in any financial activity. To give an example, two of the participants (B7, B10) claimed that "financial innovation means any developments or changes in the financial activity". Moreover, the participant B3 defined financial innovation as "an innovation that facilitates meeting the needs of people in the field of finance that enhance the customers' living standards and increases the profit rate of those who are making use of it". Additionally, according to the participant B9, anything that adds value to both the bank and the customer by using a new idea, business model, technology and solves the financial problems can be called financial innovation. Besides, increasing productivity, improving the current situation of the banks and making people's lives easier were the other key phrases that came up in the descriptions made regarding the financial innovation by the participants.

In the light of interview results, we observe that the fundamental definition of financial innovation made by the participants is mostly based on innovations regarding products or processes whether it is a specific or broader definition and it is not much different than the definitions found in the literature. That is to say, the core element of financial innovation is mostly described as redesigning the banking system or making partial changes in the existing system in terms of product and process. Moreover, regarding the definitions of participants, it was observed that the participants working at the state banks and privately-owned banks made general definitions. When considering the definitions in the literature and specific financial innovation definitions that expressed by some of the participants, it can be clearly seen that most of the keywords that were used in the description of financial innovation were similar to each other. Although the definitions in the literature emphasize some concepts like decrease in risk and tax advantages, none of the participants mentioned these points. We think the reason behind is that participants focus only on the advantages that would be brought by financial innovation such as productivity and profitability.

As we previously discussed in chapter 2, real sector innovations and financial innovations are not exactly the same thing. Therefore, we asked participants to discuss these two definitions. By doing this, we shared the real sector innovation definition made in the OECD Oslo Manual with the participants and asked them to tell the similarities and differences between the real sector innovations and financial innovations. As an answer, all of them said that the definition of real sector innovation defined by OECD bears a close resemblance to the definition of financial innovation. Nevertheless, the participants claimed that there were only a few differences between these two types of innovation. Since the two definitions were so similar, it took longer for the participants to answer this question about the differences between these two innovations than answering the other questions. These differences are explained below:

Being specific or general was one of the differences argued by some of the participants (B3, B5, B7). They thought that financial innovation was a more specific concept because it was generally thought of as an innovation in a product or process. On the contrary, real sector innovation was considered to be a more generic term because it was perceived as everything that was changing human life, including product and process innovations.

Some of the participants (B1, B5, B10) claimed that the aim of the real sector and financial sector innovations were different from each other. They asserted that the main aims of the financial sector were to increase the profit rate and meet the demand of customers, then many financial innovations emerged as a result of these objectives. However, according to them, although the fundamental aim of the real sector innovations varies depending on the parameters such as the demand of the firms, increasing the profit rate was also one of the main aims in the real sector innovation. Increasing digitalization was given as another example of having different aims by these participants. The participants stated that while digitalization gained importance in accordance with the aims of the real sector, it sure played a vital role in the financial sector.

Other participants (B7, B8, B9) stated that having a different focus was another difference between these innovation types. They explained their opinions like this: Whereas the focus of financial innovation was to meet the needs of customers and financial institutions, the real sector innovation focused on creating new products, processes, and marketing strategies.

Having different system parts was another difference argued by participants B5 and B6. The participant B5 explained that the products, services and organizational innovations used in the real sector were different from those used in the financial sector. In other words, these two sectors were not directly coordinated with each other. Therefore, some parts of the two systems were different from each other. The participant B6 had similar thoughts about these two sectors' having different system parts, but the participant said that they can also be adapted to each other in terms of how they function despite the differences they had. For example, some large supermarket chains began to use banking functions such as online money transfer and cash management.

Apart from these differences, how the government regulations affected the real sector and financial sector innovations were mentioned to be as another difference by the participants B4 and B5. They pointed out that the development of financial innovation crucially depended on government regulations; however, government regulations did not have the same effect on the development of real sector innovation.

Summary of the main differences between financial innovation and real sector innovation are given in table 6 below:

Table 6

Main differences of financial innovation and real sector innovation

Having different aim
Having different focus
Being specific or general
Having different system parts
Different effects of government regulations

The lack of studies in the literature that is clearly explaining the differences between these two concepts proves that to make the distinction between the financial sector innovations and real sector innovations is difficult. In other words, we observe that both participants and theoreticians have difficulty in distinguishing between these two types of innovations. In chapter 2, we compare these two definitions based on the data found in the literature. However, the participants made a better distinction between these two definitions based on their personal experience and knowledge. At this point, theoreticians should benefit from this knowledge of the participants. By doing so, they will probably be able to eliminate one of the existing uncertainties about financial innovation definitions in the literature. Moreover, apart from the suggested ideas regarding the effect of government regulations on both types of innovations, we agree with all explained differences. We think that the regulations affect the development of innovations in any sector; therefore, it does not really make sense to say that it is much more effective in the financial sector alone. We also think that the approach of both the real sector and the financial sector regarding innovations is based on solving a problem although they have different focus and aim.

5.4.2. Development and Emergence Process of Financial Innovation

Later in the interview sessions, the participants were asked about the factors that trigger the emergence of financial innovations and affect the development of it, and they responded that these factors were directly associated with each other. Therefore, these factors are combined and explained together as follows:

A common opinion expressed by various participants was that technological developments were one of the most crucial factors in the development and diffusion of financial innovation. These participants stated that nowadays, with the development of technology, a lot of financial interactions could be made online through a technological device such as a smartphone or a personal computer. Therefore, they said that the banks started to use technology in the financial sector and were trying to keep up with the digital world to make use of the current financial innovations. Moreover, these participants expressed that the available technological infrastructure such as internet infrastructure affected the development of financial innovation. In addition, they also argued that the number of banks' transactions were increasing day by day, so that the banks started to enhance their infrastructure and produce new products to meet the need.

Changes in customer demand was another factor highlighted by most of the participants. These participants stated that the customers wanted to make faster, easier and more reliable banking transactions with the increasing use of the internet, smartphones, and computers in everyday life and in order to live up to customers' expectations, banks kept developing new banking methods. For example, with the escalating popularity of e-commerce (online) marketplaces such as Amazon and social media platforms as the online marketing intermediaries like Facebook, people are able to do online shopping.

In general, most of the participants responded that the market conditions were the other factor that triggered the emergence of financial innovation and affected the development of financial innovation. These participants explained that both plans and strategies of the banking sector were changing in parallel with the future technologies and methods expected to be developed. Moreover, according to most of the participants, new players such as startups and fintechs started to enter the market to meet the demands and expectations of the customers. Thus, they thought that the competitive environment of the market also increased and this situation affects the market conditions. According to them, these new players offer both better quality and lower-cost products by analyzing the customers' demands and requests better than banks do. For this reason, banks work with fintechs and startups. In addition, these participants argued that the development of financial market affects market conditions and development of financial innovation as well. According to them, if a financial innovation was not compatible with the financial market conditions, then it was less likely for it to become popular and widely used. These participants also stated that the marketing strategies that were developed to keep pace with the digital transformation affected the development of financial markets too.

Increasing profitability also was seen as one of the important factors by some of the participants (B1, B2, B7, B9). These participants said that banks did not want to waste time with the non-value-added processes, and they thought of financial innovations as a way to decrease cost and increase profit. Therefore, the participants argued that this was the reason for the existing tendency to make financial innovations in the banking sector. In addition, due to increasing competition conditions in the market, the participants believed that the banks must keep trying to get ahead of their rivals in order to increase their profit rates and that would be why banks were always trying to innovate.

Some of the participants (B4, B5, B6, B8) pointed out that government regulations were the factors that had an influence on both the emergence and development of financial innovation. The behaviors of the government such as applying strict or supportive regulations shaped financial market structure, as well as financial innovations.

Having a qualified workforce was another important factor that was claimed by some of the participants (B5, B7, B9). They said that it was crucial to develop technology and create their own technological methods for the banks; therefore, it was one of the factors that triggered the emergence of financial innovation.

Apart from the above-mentioned factors, participant B4 thought that the developments in the real sector innovations were also one of the effective factors since some of the customers wanted to use similar innovations both in the real sector and financial sector. That was the mentioned reason why innovations in the real sector affected the development of innovations in the financial sector. Moreover, participant B5 said that the attitude of the bank managers against financial innovation was another factor. The participant asserted that it affected the emergence of these innovations in the banks because it had an impact on the perspective of banking employees regarding innovation and innovation policy of the bank.

Summary of the factors that affect the emergence and development of financial innovation are given in table 7 below:

Table 7

General factors that affect the emergence and development of financial innovation

Technological developments
Change in customer demand
Market conditions
Increasing profitability
Government regulations
Having a qualified workforce

Considering the interview results given above, it is observed that technological developments, changes in customer demands and market conditions are regarded as the most important factors affecting the emergence and development of financial innovations. Based on the interview results, we assert that technological developments majorly change the customer experience and their expectations. Furthermore, we think that the change in customer demands has an important effect on market conditions as well. At the same time, it seems like the change in customer demands, technological development, and competitive market structure affect the demands and expectations of the market likewise. Therefore, we believe that banks always keep looking for innovations and new opportunities in order to survive in the market as a competitive player. We think that this behavior of banks is an example of the creative destruction process in the financial sector as they adopt and make use of current innovations while leaving the old methods behind.

Based on the results, we observe that only profit maximization concept and technological developments described by the participants are parallel to corresponding descriptions in the literature. Although agency and asymmetric information problems, the volatility of financial innovation and avoiding financial risks are discussed as one of the reasons behind the emergence of financial innovations within the studies found in literature, none of the participants mentioned this kind of reasons. Like in the previous section covering the interview results, the reason behind this situation is that the participants did not think of financial innovation as a solution to a financial problem. In other words, none of the participants think of the problem-solving aspect of financial innovations. As previously explained, before the 2008 financial crisis, theoreticians also had positive opinions about financial innovation. However, these positive opinions changed. In the literature, market-related concepts that have an influence on the emergence of financial innovation are stated as the complete financial market and market limitations. On the other hand, in the results of the interview, these concepts were explained as the change in customer demands and the entry of new competitors into the market. This difference is related to the perspectives of interviewees that focused on the meeting customer expectations and increasing the profit. However, we think that some of the concepts seen in the literature and the interview results are still related to each other. Thanks to the complete market, customers can reach their demands more easily because it makes financial markets more integrated and it increases capital mobility.

5.4.3. Financial Innovations in Developing and Developed Countries

In this section of the interview results, the answers of all participants to the reasons why financial innovations differ between developed and developing countries are explained.

A common opinion expressed by many participants was that the structure of the financial markets and economic conditions were some of the reasons why financial innovation differs between developed and developing countries. Many of these participants saw capital flows, investment budget plans and market search as the main factors that created this difference. Moreover, they thought that developed countries had a more structured financial market and better economic opportunities, and thus these countries made financial innovations appealing to all countries. Availability of many different technological opportunities was one of the differences that argued by some of the participants (B1, B2, B9, B10), and these participants asserted that the developed countries had better technological opportunities. Therefore, developed countries were the pioneers in financial innovation. However, participant B9 said that making the desired changes in the infrastructure in order to enable the emergence of financial innovations was creating a bigger financial burden in developed countries than it did in developing countries. For this reason, developing countries had an advantage in this respect.

Some of the participants (B4, B6, B8) expressed that the differences between concerned regulations of the developing and developed countries were one of the crucial reasons lying behind the differences between the financial innovations developed. They claimed that the regulations and policies regarding financial innovations were more supportive in terms of creating an environment where financial innovations can easily occur in developed countries. They also expressed that these regulations and policies were actually strict and more restrictive in developing countries as opposed to the ones in developed countries. In addition, these participants stated that the developed countries were using innovations like digital signature and an open banking system, which they referred to as an example of more supportive regulations in effect.

The participants B3 and B5 thought that the different needs of customers were one of the reasons, and they explained their opinion by giving examples. The participant B3 argued that people living in developing countries tended to use more loans due to their economic problems. Since the customer demand and expectations in developing countries are related to financial products that solve their economic problems, while the developed countries focus on the innovations regarding any part of the banking system, developing countries make innovations mostly about payment and loan management systems. The participant B3 asserted that the financial inclusion rate, which means to make sure that all types of customers even including the ones with low income have access to banking services for affordable costs, varies between developed and developing countries. According to the participant B3, while financial inclusion rate in developing countries is about 60%, it reaches up to 95% in developed countries.

The participant B7 asserted that the cultural differences between developing and developed countries were also important in terms of shaping the financial innovations. The diffusion of financial innovations is related to the culture of a society; therefore, financial innovations should be aligned with the culture of the country and the culture of the targeted region. Although only one participant specifically mentioned about cultural differences, the participants B5 and B6 said that how the people adapt to the financial innovations could also make a difference. These two participants said that people living in developing countries were able to adapt faster to the innovations because they interacted with the current innovations without the need to use some technologies that were being used in developed countries.

The reasons why financial innovations differ in developing and developed countries are summarized in table 8 below:

Table 8

The reasons lie behind different financial innovations in developing and developed countries

Having different structure of the financial markets and economic conditions
Implementing different regulations
Having different needs of customers
Having different cultural features of the society

Based on the interview results, financial markets and economic conditions are regarded as the most important factors that cause differences between developed and developing countries in terms of financial innovations. These conditions explained by the participants are also mentioned in chapter 3, but they are examined in a different aspect. Financial markets and economic conditions discussed in the literature elaborate on the aspects such as market size and concentration. In addition, we think that the competitiveness aspect of the markets explained in chapter 3 has an important effect on these main factors. However, the participants did not mention anything about competitive structure while answering the interview questions included in this chapter. Still, the participants regarded competitiveness as important for the emergence of financial innovation as an answer to the mentioned questions in the previous section. Moreover, gathered information shows that since the developing countries run late to adapt the current innovations, they gain an advantage in terms of cost due to decreasing costs of innovation infrastructures in time. However, about the cost of financial innovation infrastructure in developing countries, we explained a different example in chapter 3, which is related to spending higher cost to access the internet and telecommunications in developing countries. Therefore, we can say that the cost of infrastructure in developing countries varies in these premises.

In the light of the examples given for the explanation of different needs of customers, we point out that the differences in financial markets and economic conditions are also related to the needs of customers living in both developed and developing countries, because people's different living standards shape their demands. The differences in expectations and demands of people have an influence on the development of financial innovation in a country as well. Moreover, we think that the QR payment method mentioned in the literature can be given as an example of the adaptation differences mentioned above. For instance, since the Chinese community did not use credit cards, they quickly adapted to the QR code payment method. Based on the example and our interview results, the habits of customers have a close relationship with the culture of their society, and this relationship plays a vital role in the adaptation to financial innovations. Furthermore, it can be clearly observed that the path dependency of society has also a crucial role in the adaptation process of financial innovation.

5.4.4. Factors Considered When Developing or Adapting a Product

In this section, the participants' thoughts about the factors considered when developing or adapting a product are explained as follows:

A common argument repeated by all of the participants was that a product should meet the expectations and needs of customers. They thought that the demands and needs of the market were determined by trial and error. For this reason, they stated that a product should be user-friendly and time-saving due to its practical and rapid use. In addition, solving customer problems about a product and taking their feedback into account is important in terms of meeting the expectations and needs of the customers.

In general, most of the participants argued that concerns about increasing profitability might be another factor. According to them, in order to increase the profit rate of a bank, the performance of these products should be high and performing a large number of transactions should be made possible. Also, they said that the cost analysis of product innovation played a crucial role in both increasing profit rate of bank and analyzing the market conditions.

In addition to these general answers, analyzing the demands of markets and market conditions were seen as another important factor by some of the participants (B3, B5, B6, B10). According to them, when analyzing market demands and market conditions, factors such as outscoring the other players in the market, appealing to the majority of the society and being able to meet the needs of customers worldwide should be taken into consideration. Therefore, these participants stressed the importance of current developments made by various competitors in the market from all over the world.

By some participants (B1, B3, B5), the product security was seen as an important factor for both the product adaptation and development process because they argued that the product security had a significant impact on both the bank's security system and the software system.

The participants B4 and B6 responded that the regulations in a country are perhaps the most important factor affecting the adaptation of a product of foreign origin because an adapted product should comply with the law and regulations of a country. These participants gave an example to explain their opinions. The open banking system is widely used in Europe. On the other hand, its use is not allowed in Turkey. Even if it was allowed, the banks would be very cautious about implementing this system due to the risk of losing customers and the risks related to the system itself.

Summary of the factors that considered when developing or adapting a product are given in table 9 below:

Table 9

Factors that are considered when developing or adapting a product

Meeting expectation and needs of customers
Increasing profitability
Analyzing the demands of markets and market conditions
Product security
Complying with law and regulations

Based on the interview results, the most important factors effective in developing or adapting a product are customers' demands and profit maximization approach. Furthermore, most of these factors are related to the aim and focus of financial innovation explained in the previous interview results.

5.4.5. The Originality of Financial Innovation in Turkey

In this section, the explanations of the participants' answers about the original and adapted financial innovation in Turkey are analyzed. Before explaining the interview results, we should share that most of the participants said these rates were not really important because the most important things in financial innovation were to meet market and customer demands.

Some of the participants (B1, B2, B10) claimed that the percentage of original financial innovation in Turkey is 50 whereas the percentage of adapted financial innovation is 50. One of them said that the main financial innovations such as mobile banking and internet banking were adapted from abroad. Afterward, these main financial innovations were improved according to the needs in Turkey.

Some of the participants (B3, B4, B6, B9) thought that the original financial innovation percentage is 85, which means it is higher than the adapted financial innovation percentage. Furthermore, these participants claimed that Turkey was one of the pioneer countries in financial innovation in the world. However, participant B6 claimed that Turkey was late to adapt some financial innovations that were widely used in abroad already. To give an example, a digital wallet was one of the mobile payment methods widely used in the past in the United States while it is currently popular in Turkey.

Other participants (B5, B7, B8) thought that most of the financial innovations in Turkey are adapted from abroad and this adapted financial innovation percentage is 70.

5.4.6. Examples of Financial Innovation in Turkey

When we asked participants to give an example of financial innovation developed by their banks, the examples given by most of the participants were related to the digital banking systems. Specifically, almost all of the participants gave development and improvement of mobile and internet banking applications such as digital wallet, personal assistant and QR code payment method. Moreover, most of the participants said that their banks have a strategy on the transformation of bank branches into digital bank branches. In other words, the establishment of a more practical and digital bank branch is aimed. For example, the participant B1 said that their new sales service model was based on the use of tablet and kiosk devices. In this sales service model, the customers can do transactions on their own like withdrawing money up to a certain limit. Like this service model, the participant B2 said that his bank used robots in some of their banking branches to help customers' needs such as waiting in the queue and receiving a loan. In addition, POS application from the web, digitalization of the letter of guarantee and creation of digital archives were given as the examples regarding the implementation of some applications performed for the transformation of bank branches into digital banking by some of the participants.

In general, most of the participants pointed out that their banks created platforms where innovative ideas were shared and encouraged so that people get more likely to think of developing innovations. In this way, the original financial innovation in Turkey is increased, and also consumer demand is satisfied.

About the development of software and establishment of technological infrastructure, some of the participants (B3, B5, B9, B10) said that their banks had its own R&D center, and they had both developed and exported some software programs to be used in the financial sector. By doing so, they said that the software import rate of their banks can decrease at the same time.

In the light of the findings from the examples that are explained in this section, we think that the market and customers' expectations and their demands have a significant effect on focusing on the digital banking systems. Similarly, considering the statistics of financial innovations as about the use of credit card, internet, and mobile banking that are shown in chapter 4, it is observed that the market and customer demands in Turkey focus on digital banking. Moreover, according to our interview results, it is realized that the banks of participants who said that the original financial innovation percentage is 85 in Turkey have an R&D center. In addition, we believe that such platforms that are explained above emerge as a result of the attitude of bank managers towards financial innovation, which is one of the important development factors affecting financial innovation as described in the previous section.

5.4.7. Development of Financial Innovation in Turkey

The participants' arguments about affecting the development and diffusion process of financial innovation in Turkey are explained in this section:

A common argument repeated by all of the participants was that culture is one of the crucial factors that affect the development and diffusion of financial innovation in Turkey. The participant B1 claimed that Turkish society has a tendency to excessively use technological products and methods instead of contributing to the development of such technology. The participant B1 also gave an example of this claim: Turkey is one of the leading countries in using smartphones; therefore, it has an influence on the development and diffusion of mobile banking in Turkey. In addition, some of the participants (B1, B2, B7, B8, B10) said that culture affects regional financial innovations too. Sometimes, it does not matter how many financial innovations are developed. The important thing is whether it is compatible with the culture of the region according to them. These participants gave examples of regional financial innovation in Turkey. After making a banking transaction, receiving bank transaction receipt is one of the widely used financial innovations unique to Turkish culture. Therefore, with the development of financial innovations such as ATMs, mobile and internet banking, banking transaction receipts are sent via e-mail now. This method is widely used in Turkey because it is suitable for Turkish culture. In addition, the dowry accounts and the gold accounts that emerged as a result of regional culture in Turkish society are the other examples given by the participants.

The participant B3 said that Turkish society has a saving behavior and an inability to adjust its budget. These features affect the developments of financial innovations in Turkey. The participant gave the credit card installments as an example of this situation. It is one of the most frequently used financial innovations in Turkish society since the Turkish people are mostly having a hard time trying to balance their income and expenses. Furthermore, the participant said that the Turkish government applies some regulations like prohibiting credit card installments while buying smartphones due to excessive using of credit card installment options. For this reason, banks give credit to their customers when they want to purchase a smartphone.

According to the participant B5, Turkish society is fast to adapt to any new technology. In addition, because of its hasty nature, Turkish society wants to get quick results while using any technology. Therefore, their nature makes them more prone to adapting and using financial innovations more quickly, and it increases their demand for financial innovations. On the other hand, the participant B6 asserted that the hasty nature of Turkish society prevents the developments of financial innovations because this nature led the fintechs and startups to desire more profits at the early stages and act impatiently. Another characteristic feature of Turkish society is finding practical and meaningful solutions to the problems according to the participant B9. This feature underlies the original financial innovations in the Turkish banking sector. Moreover, the participant B2 said that the friendly character of Turkish people, like building a good neighborly relationship, influenced the spread of financial innovations. According to the participant, because of this feature, people often get together in close friendships environments and talk about banking applications. For this reason, the applications could spread by word of mouth.

Almost all of the participants emphasized that government regulations were maybe the most important factor that affected the development of financial innovations. About the governmental regulations, the participant B2 argued that the Turkish government put emphasis on the banking sector and applied the relevant regulations after 2001, which affected the development of financial innovation in Turkey since then. Thanks to these regulations, the banking sector in Turkey is well developed and structured, which affects the development of financial innovation in Turkey. Moreover, some of the participants (B3, B4, B6, B9) claimed that some of the restrictive regulations had an important restrictive influence on the financial innovation development process of banks. On the contrary, startups and fintechs are not held responsible for these restrictive regulations. Therefore, banks do not encounter any problems when purchasing financial innovations developed by startups and fintechs. Another example of strict governmental regulation can be given. Almost all of the banking transactions are done by a wet-ink signature in Turkey instead of a digital signature. However, with the introduction of digital applications, some amendments were made within the regulations regarding the use of the digital signature. For instance, the customers now are able to do some transactions online by using their digital signature and they can receive a loan without going to the branch physically. The last example of strict governmental regulations is related to the open banking system. This system started to spread throughout European countries. On the other hand, in Turkey, due to strict governmental regulations, such as the regulation about payment services directive 2 (PSD2), which has been implemented since 2016 in Europe, it has started to apply most recently in Turkey. Therefore, implementing the open banking system in Turkey was not one of the focuses on the market.

Some of the participants (B1, B2, B4, B10) claimed that technological developments were one of the factors that affected the development of financial innovations. According to them, with technological developments, changes happen in the demands of the customers, marketing strategies and technological infrastructure of banks are developed.

The change in the market conditions was another factor expressed by some of the participants (B1, B3, B4, B7, B8). They said that the increase in the number of investors and entrepreneurs related to financial innovation affects the development of financial innovation in Turkey. In addition, they also argued that increasing the number of foreign investors in the Turkish financial market had also an influence on the development of financial innovations. Moreover, they asserted that marketing strategies such as advertising also affect the diffusion of financial innovations.

The participants B5 and B6 thought that having a qualified workforce was another factor that affected the development of financial innovations. They expressed that most of the people working in the innovation departments of banks in Turkey were not that qualified since their educational backgrounds were just insufficient.

Apart from these factors, the participant B5 said that the attitude of the bank managers towards financial innovation was important for the employees in terms of encouraging them to think and do research about financial innovations.

Important factors that affect the development process of financial innovation in Turkey are given in table 10 below:

Table 10

Factors that influence the development process of financial innovation in Turkey

Cultural features of society
Government regulations
Technological developments
Change in the market conditions
Having a qualified workforce

In light of the above findings, the Turkish culture is regarded as one of the most important factors that affect the development and diffusion of financial innovations. The effect of culture is similar in other developing countries such as Asian countries that we mentioned in chapter 3. Therefore, we can say that culture is an important factor in the development and diffusion of financial innovations, especially in developing countries which have profound historical backgrounds and distinctive characteristics. In addition, the strict role of the Turkish government was one of the examples of barriers to the creation and dissemination of financial innovations in developing countries as we discussed in chapter 3. Moreover, we claim that the core competencies and knowledge level of the young population should be improved in order to increase the percentage of original financial innovations developed in Turkey. About the technological development arguments of the participants, considering the financial innovations developed by the banks described in the previous sections, we observe that these are related to digital banking applications. This shows us that the demands of the customers and the market are changing with the increasing use of available technology and recent developments in technology.

5.4.8. Prejudices against Digital Banking in Turkey & Its Effects

In this section, we discussed the answers of participants to the questions regarding the prejudices against digital banking in Turkey and its effect on banks' new product development processes.

All of the participants claimed that there were prejudices against digital banking in Turkey, but these prejudices were dealt with nowadays. According to them, recently, only a group of people who are in their 60s and above 60s have prejudices, and this is related to increasing fraudulent transactions, the need they feel to speak with a branch staff in person instead of going digital and being afraid of losing money as a result of doing something wrong while doing any transaction.

All participants agree with the effects of these prejudices on banks' new product development processes. According to them, due to these prejudices, Turkish banks use new security measurements and new products to increase the demand for a digital banking application. The participants B1 and B7 also pointed out that the use of artificial intelligence technology in banking products such as personal assistant and robots can be given as examples of this effort. Moreover, the participant B6 argued that such banking products helped the people at this age with the need they felt for speaking to bank branch staff. In addition, the participant B1 said his bank preferred utilizing artificial intelligence technology to prevent the possible prejudices to occur while designing their new credit machine. In this credit machine, which is designed as self-service use, a virtual person contacts with you to answers your questions about receiving loans and making credit card applications. If the credit machine was designed by using a software system that only allowed making transactions without any verbal communication with the artificial intelligence, the usage rate of the machine would be low because people mostly prefer to communicate verbally in Turkish culture. Apart from the artificial intelligence technology, the participant B7 also said that his bank was planning to start a new process regarding banking branches. Based on this new process, it was intended that some of the bank officers will explain the digitalization process and financial innovations of the bank to its customers who seemed like having prejudices against the use of innovations. The participant B3 thought that the banks were trying to break down the prejudices by encouraging these people to change their habits. For example, if these people withdraw their salaries by coming to the bank's branch, more transaction fees are charged. For this reason, banks are trying to convince these people to use the ATM, so that they get used to making transactions via ATMs.

When the thoughts of the participants shared in this section are considered, apart from the capability of the customers to use financial innovations, it is inferred that the customers' prejudices are based on the cultural factors too. As mentioned in the previous chapters, being friendly and interacting with other people in person is a part of Turkish culture. Therefore, while searching for a solution to some prejudices of Turkish people against digital banking, this characteristic of the community shall be taken into consideration. Moreover, considering the increasing the demand of financial innovations in Turkey such as internet and mobile banking that explained in chapter 4, we can understand the prejudices against digital banking have decreased to a large extent.

5.4.9. The Security Measurement Methods in the Turkish Banking System

In this section, we explained the security measurement techniques employed in the Turkish banking system according to the responses of the participants.

Most of the participants thought that the security measurements of the Turkish banking system were more various and different than other countries because the digital banking transactions were regarded as at high risk. However, they stated that taking precautions against this security risk was crucial in the Turkish banking system because the Turkish banking system dealt with a lot of fraudulent transactions. Furthermore, some of the participants said that the percentage of fraudulent transactions in European and US banking sectors is quite less when compared to Turkey. Therefore, these participants thought that the banks in Turkey had to have a strong infrastructure and take security measures to prevent fraudulent transactions.

Most participants explained that the Turkish people may be prejudiced against digital banking due to this increasing fraudulent transactions. In addition to the fraudulent transactions, they also pointed out that the cultural factors can affect the occurrence of this prejudice at the same time; therefore, the confidence of people in both each other and in the banks was decreasing. As a result, different security measurement techniques were used in the Turkish banking system according to these participants.

In the interviews, some of the participants gave examples of implemented regulations, which were related to the security measurements applied in the Turkish banking system. One of them was the use of biometric features such as fingerprint and palm vein via screening. These features were used by some banks to interact with some financial innovations such as ATMs and mobile banking. However, due to the law on the protection of personal data, the banks are now hardly using biometric features in such financial transactions. In addition, another one was the opportunity to match and synchronize the personal bank information of the customers with some applications such as a budget application like in the United States. However, due to governmental regulations in Turkey, such personal information is to be kept confidential and not allowed to be shared with any application that could jeopardize its safety. Furthermore, a two-factor authentication system is decided to be used in the Turkish banking system by the Banking Regulation and Supervision Authority (BRSA) in order to increase the safety level and make sure the customers feel safe while using digital banking.

Based on the interview results, the fraudulent transactions were thought to be the reason lying behind the prejudices against digital banking in Turkey, and this led to more diverse and different security measures to be taken in banking systems. In addition to the interview results, considering the comparison made between Turkey and England in chapter 4, the creation of unique password security measurement techniques such as SMS alerts and one-time passwords are also observed in Turkey.

Furthermore, these affect the adaptation and development process of a product, which is mentioned in the previous sections. Regulations are restructured and tightened by the BRSA against these fraudulent transactions. To take the BRSA regulations into consideration is important in order to understand the regulatory factor imposed by the government affecting the development of financial innovations and security measurement techniques in the Turkish banking system. We think that these regulations are related to the Turkish culture because Turkish people do not hesitate to share their personal information most of the time, which is related to being a friendly community and being curious about new technological methods. Therefore, making regulations that protect personal data and prevent fraudulent transactions is vital for Turkish society.

5.4.10. Recommended Policies Related to Financial Innovations

One of the interview questions was related to the policy recommendations for the development of financial innovations and the responses to this question are discussed in this section.

Supporting a wide range of sectors by using financial innovations was one of the recommended policies revealed by some participants (B1, B2, B10). According to them, various sectors such as industry and agriculture should be supported by financial innovations. They thought that one of the methods may be providing private loans and derivative products for these sectors. In addition, another method suggested was practicing the digitalization applications for the SME sector which constitutes a large part of the financial markets in Turkey. This kind of digitalization would make it easier for both the customers and suppliers to communicate and trade in a digital environment.

Being more supportive and creating a financial resource for the newly established institutions and firms was a commonly recommended policy by almost all of the participants. These participants claimed that the most important thing was to establish a fund that would help the new players grow in the market starting from their early stages. In other words, they claimed that there should be policies developed to provide opportunities for small players in the market and support their development.

Some of the participants (B4, B5, B6, B8) emphasized that government regulations were one of the most important factors affecting the development of financial innovations. Therefore, they also said that strict regulations should not be applied in Turkey since they would affect the development of financial innovations adversely. In addition, according to these participants, the existing strict regulations should be rearranged by looking at the regulations of developed countries that have a higher rate of financial innovation use.

Some of the participants gave specific examples in order to explain their opinions about regulations and supportive policies regarding financial innovations. One of the examples was to support fintechs with special licenses. With these special licenses allowing the supervision of mutual funds and payment of invoices, startups and fintechs can handle their financial problems more easily in their incubation period. Another example was related to allowing the use of Application Programming Interface (API). They thought that implemented restrictions on the open banking applications in Turkey are needed to be rearranged. Otherwise, according to them, the development process of financial innovation in Turkey can fall behind of the other countries because most of them such as Germany and England started to rearrange their regulations about open banking in order to keep up with the developments in the world. Another example was to make changes in the law on the protection of personal data. Some participants highlighted that this law should be rearranged by still considering the protection of personal information but allowing the development and better use of financial innovations.

The participant B5 suggested that there should be regulations encouraging the cooperation between the universities and industries. The participant stated that the establishment of business incubation centers and fintechs within the universities was very important in terms of the development of financial innovations because fintechs were able to access information more accurately and easily within these centers. In addition, as the number of articles published at the universities increased, initiatives of fintechs would also increase according to this participant.

Based on the interview results shared in this section, we can say that almost all of the recommended policies have the aim of helping financial institutions take more analytical decisions at short notice by providing them with more support by any means possible and changing the strict regulations accordingly. As previously mentioned in chapter 3, Turkey should make an effort for keeping up the pace with the always-changing market conditions like the other developing countries. Moreover, our policy recommendations are given in the conclusion part.

5.4.11. Negative Side Effects of Financial Innovations

In this section, we shared the answers of the participants to the question about the negative side effects of financial innovations.

Most of the participants mentioned the same negative side effects. One of them was about the decreased confidence in the digital banking system. Especially in Turkey, with the widespread use of digital banking, fraudulent transactions are increasing day by day. Therefore, the confidence of people in both each other and the banking system has been decreasing. Another one was the decrease in the rate of banks' profit. The competition in the market is increasing with the new players entering the market such as fintechs and startups. For this reason, the profit rate of the banks is in danger of decreasing.

The increasing tendency to spend more money was another negative effect of financial innovations claimed by some of the participants (B1, B7, B10). According to these participants, people were spending extra money by using financial innovation methods such as credit cards or loans. Then, they were experiencing difficulty in the payment of these debts. They also thought that the decrease in the rate of cash usage was also a negative aspect of financial innovations. Additionally, financial innovation advertisements were suggested to be the main reason stimulating people to spend extra money.

In addition to these negative effects, most of the participants claimed that the unemployment rate can increase due to the use of some financial innovations such as the artificial intelligence applications and sophisticated software programs since they can substitute for the actual employees working in the banks.

Apart from these negative side effects, the participant B5 argued that the negative side effects of financial innovation stem from its poor management and malpractice of regulations, not the financial innovation itself. To elaborate on the example of this participant, we can give the economic crisis occurred in 2008. As opposed to the general perception, the mortgage system itself as a financial innovation was not the problem, but the malpractice of the mortgage was the real problem that triggered the economic crisis according to the participants.

In the light of the answers given, we understand that all of the participants think of financial innovations as something useful and beneficial to the community since they focus only on the profit maximization aspect and the customer-oriented side of the financial innovations. Therefore, we cannot really expect them to think of the negative side effects of financial innovations as suggested in the literature. If theoreticians inform the practitioners of financial innovation about the negative effects mentioned in the literature, then these practitioners become more aware and may try to take necessary precautions.

5.5. Concluding Remarks

In this section, we review the main findings of our research and then explain our general observations based on these findings. It is observed that participants made a better distinction between financial innovation and real sector innovation. Moreover, all of the participants had a positive attitude about financial innovation and they also thought that financial innovation has a positive influence on people's daily life and finance sector. That is to say, they did not think that financial innovation leads to risky financial environment unlike in the literature.

Like in the other developing countries, technological developments, customer expectations, and market conditions are the crucial factors that affect the emergence of financial innovation in Turkey. Moreover, considering the interview results, we realize that developments of these 3 factors are interrelated to each other. That is to say, technological developments affect the emergence and development process of financial innovation, especially with the increasing use of internet and technological devices in daily life. Customers' demand and expectations also change with respect to these technological developments. Furthermore, banks form their strategies in an effort to increase profitability and meet customer expectations by considering these changing conditions. In addition, like in other developing countries, government regulations and behavior about financial innovation in Turkey influence on both the emergence and development process of financial innovation.

The cultural characteristics of society are one of the crucial factors that affect the emergence and development process of financial innovation in Turkey. Characteristics of the Turkish society such as saving behavior, friendly character of Turkish people and fast adaptation to any technology influences these process. Moreover, we think that cultural characteristics that affect these processes in Turkey are related to the historical background of Turkish society and path-depended characteristics of the society as well. Considering our interview results, the prejudice against digital banking system has been decreasing day by day and only a group of people who are generally in their 60s have prejudices nowadays. In addition, for a deal with the prejudices against digital banking and solving the problem of high-security risk in digital banking transactions, security measurements of the Turkish banking system are more various and different than other countries.

Considering the interview results, we observe that the type of banks such as state-owned banks, participation banks, foreign banks, and privately-owned banks have an influence on the aspects and focuses of the participants about financial innovations. For example, except for the state banks, other bank types focus on the use of financial innovations in both foreign and domestic markets. Thus, this would affect the development of original financial innovations and the rate of adaptation to financial innovation for the banks. To give a specific example, state-owned banks focus on creating their own codes and using these codes in their innovations. On the other hand, other bank types focus on selling the codes they generate to the actors in other markets in addition to using them in the national market. Based on the interview results, it can observe that the adaptation rate to financial innovations and development rate of original financial innovations is high in Turkey. Most of these financial innovations are related to payment methods, mobile and internet banking. Moreover, about creating original financial innovation, it is noticed that banks which have their own R&D center have more advantages.

CHAPTER 6

CONCLUSION

In this part, the novelty and the main findings of the study are presented to begin with. After that, some policy recommendations are proposed. Last, some suggestions have been made for further research.

6.1. Summary and Novelty

Financial innovation is one of the much-debated matters related to the finance sector and it is expected that the debate will continue since there is still disagreement about a lot of points related to financial innovation. While some researchers argue that financial innovation has positive side of financial innovations on economy like minimization of transaction costs and allowing better risk management, some other researchers emphasize the negative side of financial innovation on economy like rising complexity and encouraging risk-taking behavior as in the case of 2008 global crisis.

The aim of this thesis is to investigate financial innovation in developing countries in terms of factors that affect the emergence and development process of financial innovation in Turkey. This study fills the gaps in the literature from several aspects. First of all, this study is one of the rare studies in the literature since it focuses on Turkey as one of the developing countries while the other studies about financial innovation in the literature mostly elaborate on the developed countries. Furthermore, after literature review, it is seen that this study is the first study to examine the general aspects of financial innovation in Turkey in a broad sense since most of the research about financial innovation in Turkey are based on specific financial innovations such as internet banking and ATM. Moreover, the factors that cause financial innovations to function differently in developed and developing countries have not been enough discussed in the literature. Therefore, this study contributes to the literature in this respect. Last, to our knowledge, this is the first research in which semi-structured interviews are conducted with people who are working in innovation, R&D, or IT department at the headquarters of banks. Other studies in the literature mentioned in chapter 4 use secondary data about ATM or internet banking in Turkey.

Many factors influence the emergence and development process of financial innovations. According to our research, we obtain that technological developments, changes in customer demand, market conditions and increasing profitability are the most important factors that trigger the emergence and development process of financial innovations. Moreover, after the examination of the literature, it is obviously seen that developing and developed countries have differences in terms of financial innovations. Based on our research, these differences occur as results of differences in the structure of financial markets and economic conditions, and government regulations.

6.2. Policy Recommendations

After summarizing the main findings of our research, several obstacles that complicate the development and emergence process of financial innovations in Turkey are identified based on the previous chapters:

- A shortage of qualified workforce
- An increased fraudulent transactions rate
- Negative effects of financial innovation on economy like the 2008 economic crisis
- Shortcomings in government regulations, especially with regard to small players in the finance sector

We can give the following policy recommendations regarding the obstacles given above respectively:

- We believe that the policy recommendation for increasing the amount of qualified workforce can be made at both macro and micro levels. One of the reasons for the shortage of qualified workforce is the insufficient educational backgrounds of employees. Therefore, at the macro level, undergraduate programs should be redesigned to teach software programs and code writing at an advanced level. In addition, these programs should be improved by enabling the students to participate in related projects and to do internships in the real sector. At the micro level, banks should encourage employees to improve themselves in their own field. Providing the necessary conditions for the employees to do a master's degree or doctorate in their related fields, organizing more frequent in-service training programs, and organizing talent camps for the development of creative thinking are examples of the policies that can be implemented at the micro level.
- All banks have a security system for fraudulent transactions. However, due to some troubles in this system, the rate of fraudulent transactions is quite high in Turkey. For this reason, the BRSA should take the necessary precautions like establishing a security operation center for the finance sector. In this center, leak tests on financial innovations should be conducted and necessary IT infrastructures related to safety against fraudulent transactions should be developed.
- Financial innovations can lead to some disruptions in the economy like in the 2008 crisis. Therefore, financial innovations should be controlled to reduce associated risks of harm and unforeseen side effects. With respect to this aim, a special unit, which is responsible for monitoring, analyzing and limiting financial innovations and financial sector risks, should be founded in CBRT. This unit should set national priorities about financial innovations. Then, based on the results of the analysis, necessary precautions should be taken.
- Small players such as fintechs and startups in the finance sector face some troubles undermining their development process, especially in their early incubation period. Therefore, the government should implement some supporting regulations to protect and encourage these small players. To illustrate, incentive funds and tax deductions should be implemented for fintechs and startups.

- One of the features of Turkey's financial market is having a huge potential for growth. Therefore, Turkey can be one of the financial centers in the world if national policies are redesigned and the government abandons its strict behavior inhibiting the implementation of financial innovations. There are two important paths to take when changing policies in the financial sector. The first one is to review and adapt the structure of the necessary policies implemented abroad to the system in Turkey, especially those related to fintechs and the banking sector. The second one is to collaborate with a bank manager who has an idea about the obstacles of the banking system and the solutions for these obstacles like the open banking system. After redesigning the policies, the government should be focused on designing some special programs for becoming a finance center in accordance with the demand of the market. For example, a scale-up program for fintechs and startups can be established to become a brand in this sector at the international level.

Table 11 shows a summary of the policy recommendations discussed in this chapter.

Table 11

Recommended Policies

Policy Level	Policy Aim	Policy Recommendation	Policy Tool
Micro	To improve the qualifications of employees at banks	Banks should encourage employees to improve themselves in their own field	Banks should stipulate to do a master's degree or doctorate for employees in their related fields to get a promotion and they should organize more frequent in-service training programs

Table 11 (continued)

Micro	To support small players in the finance sector and to allow the development of new financial innovation ideas in the market	The government should review and redesign the regulations in such a way that fintechs and start-ups are supported in the finance sector.	Implementing incentive funds and tax deductions for fintechs and startups
Meso	To decrease fraudulent transaction rate	The BRSA should take the necessary precautions	Establishing a security operation center
Meso	To reduce risk of harm and unforeseen side effects of financial innovation	A special unit should be founded in CBRT	The unit monitor, analyze, and limit financial sector risks. Then, based on the results of the analysis, necessary precautions should be taken.
Macro	To have a more qualified workforce	Undergraduate university programs should be rearranged to provide a better education	Undergraduate programs should be redesigned to teach software programs and code writing at an advanced level
Macro	To make Turkey a finance center supporting the development and creation of financial innovation	National policies in finance sector should be redesigned and the government should abandon its strict behavior inhibiting the implementation of financial innovation	Establishing scale-up programs for fintechs and startups. Government should review and adapt necessary policy frameworks from abroad to Turkey

6.3. Future Research

For the future research on financial innovation in Turkey, conducting also case sampling from other players in the finance sector would give the opportunity to do a comparative analysis between financial innovation processes of banks and these players. Moreover, in addition to the interviews, possible research in the future can be conducted by using both qualitative and quantitative methods by creating an index to measure financial innovation.

REFERENCES

Aggarwal, R., Faccio, M., Guedhami, O. & C.Y. Kwok, C. (2016). Culture and Finance: Introduction, Journal of Corporate Finance, 41, 466-474Akcaoglu, E. (1996). Financial Innovation in Turkish Banking, Master Thesis, the Loughborough University of Technology

Akhavein, J., Frame, W.S.& White L.J. (2005). The Diffusion of Financial Innovations: An Examination of the Adoption of Small Business Credit Scoring by Large Banking Organizations, Journal of Business, 78 (2), 577-596

Akıncı, S., Aksoy, Ş. and Atılgan, E. (2004), Adoption of Internet Banking among Sophisticated Consumer Segments in an Advanced Developing Country, International Journal of Bank Marketing, 22 (3), 212-32

Aldis, A.O. (2011). Finansal Yeniliklerin Piyasalara Olan Etkisi, Master's Thesis, Gazi University

Allen, F., Yago, G. & Barth, J.R. (2012). Financial Innovation (collection). New Jersey: Pearson Education

Allen, F. & Gale, D. (1994). Financial Innovation and Risk Sharing. Cambridge, MA: MIT Press

Altunbas,Y., Kara, A. & Olgu, O. (2009). Turkish Banking: Banking under Political Instability and Chronic High Inflation. Palgrave Macmillan studies on banking and financial institutions, England

Alqasa, K.M & Balhareth, H. (2015). The Impact of Service Quality and Cultural Beliefs on Intention to Use Financial Services: The Moderating Role of Trust, Asian Social Science, 11 (21), 20-27

Altay, O. (2006). Türk Bankacılık Sistemi. Ege Universitesi Yayınları

Arıkan, B. (2015). Türk Bankacılığında Inovasyon ve Kreatif Bankacılık, Master's Thesis, İstanbul Ticaret Üniversitesi

Arthur, K.N.A. (2017). Financial Innovation and its Governance: Cases of Two Major Innovations in the Financial Sector. Financial Innovation, ISSN 2199-4730, Springer, Heidelberg, 3 (10), 1-12

Ayres, R.U. (1989). Technological Transformations and Long Waves, International Institute for Applied Systems Analysis. Laxenburg, Austria: RR-89-1

Ayrıcay (2003). Türev Piyasaların Gelişmekte Olan Piyasalara Olası Etkileri. Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 5, 1-19

Awrey, D. (2011) Regulating Financial Innovation: A More Principles-Based Proposal?, Brooklyn Journal of Corporate, Financial & Commercial Law, 5, 273–315

Bank for International Settlements (1986). Recent Innovations in International Banking, BIS, Group of Ten Countries Central Banks Study Report, Basel

Banking Regulation and Supervision Agency of Turkey (2018). Turkish Banking Sector Main Indicators Report

Barney, J.B. (1986). Organizational Culture: Can It Be a Source of Sustained Competitive Advantage? The Academy of Management Review, 11 (3), 656-665

Baicu, C.G. (2011). The Impact of Financial Innovation on Banking rRgulation: Evidence from the Global Financial Crisis. Annals of Spiru Haret University, Economic Series, Universitatea Spiru Haret, 2 (4), 31-40

Beck,T., Chen, T., Lin,C.& Song, F.M. (2012). Financial Innovation: The Bright and the Dark Sides, Journal of Banking & Finance, 72, 28-51

Ben-Horim, M. & Silber, W.L. (1977). Financial Innovation: A Linear Programming Approach. Journal of Banking Finance, 1 (3), 277-296

Bernand, A., Jensen, B. & Schott, P. (2006). Trade Costs, Firms and Productivity. Journal of Monetary Economics, 53 (5), 917-937

Berberoglu, M. (2009). Mortgage Ipotekli Konut Sistemi ve bu Sistemin Türkiye'de Uygulanabilirliği. International Journal of Economic and Administrative Studies, 1 (2), 1307-9832

Bhattacharyya, S. & Nanda, V. (2000). Client Discretion, Switching Costs, and Financial Innovation, The Review of Financial Studies, 13 (4), 1101-1127

Bhagwat, S., More, R. & Chand, D. (2012). Development of Financial Derivatives Market in India and its Position in Global Financial Crisis. International Journal of Scientific & Engineering Research, 3 (12), 1-15

Blach, J. (2011). Financial Innovations and Their Role in the Modern Financial System – Identification and Systematization of the Problem, e-Finanse: Financial Internet Quarterly, 7(3), 13-26

Boehle, K.O & Krueger, M. (2001). Payment Culture Matters-A comparative EU-US perspective on Internet Payments, European Communities, Report EUR 19936

Boot, A.W.A. & Thakor, A.V, (1997). Banking Scope and Financial Innovation. The Review of Financial Studies, 10 (4), 1099-1131

Brunnermeier, M.K. (2009). Deciphering the Liquidity and Credit Crunch 2007–2008. Journal of Economic Perspectives, 23 (1), 77–100

Bryman, A. (2012). Social Research Methods. 4th ed. New York: Oxford University Press

Bulut, Y.E. (2013). Internet Banking as a Case of Financial Innovation in Turkey, Master's Thesis, METU

Cakar (2009). Türev Ürünler ve Vadeli İşlem Piyasaları, Bitirme projesi, Ankara University

Can, Y.(2010). Bireysel Emekliliğin Türkiye'deki Durumu ve Gelişimi, Ekonomi Bilimleri Dergisi, 2, 2010

Carvajal, A., Rostek, M. & Weretka, M. (2012). Competition in Financial Innovation. Journal of the econometric society, 80 (5), 1895-1936

Centeno, C. (2004). Adoption of Internet Services in the Acceding and Candidate Countries, Lessons from the Internet Banking Case. Telematics and Informatics, 21, 293-315

Chambers, N. (1998). Türev Piyasalar, Avcıol Basım, İstanbul

Comert, H. (2013). Central Banks and Financial Markets: The Declining Power of US Monetary Policy.

Comert, H. & Epstein, G. (2016). Finansal Yenilik Yazınındaki Son Gelişmeler. Science and Technology Policies Research Center Working Paper, No: 16/04

Crotty, J. (2009). The Bonus-Driven "Rainmaker" Financial Firm: How These Firms Enrich Top Employees, Destroy Shareholder Value and Create Systemic Financial Instability, University of Massachusetts, Amherest, Economics Department Working Paper Series, No: 2019-13

Dedrick, J. Kraemer, K.L.& Shih,E. (2013). Information Technology and Productivity in Developed and Developing Countries, Journal of Management Information Systems, 30 (1), 97–122

Demir, M. (2015). 2008 Küresel Krizin Türk Bankacılık Sektörüne Etkileri, Master thesis, Istanbul Ticaret University

Demirguc-Kunt, A. and Levine, R.(1999). Bank-based and Market-based Financial Systems. Policy Research Working Paper, No: 2143. Washington, D.C.: World Bank

Duffie, D. & Rahi, R. (1995). Financial Market Innovation and Security Design: An Introduction, Journal of Economic Theory, 65 (1), 1-42

Duramaz, S. & Dündar,S. (2014). Elektronik Ödeme Sistemlerinin Karşılaştırılması: Türkiye ve İtalya Örneği, Uşak Üniversitesi Sosyal Bilimler Dergisi , 7(1), 24-37

Eichengreen, B. (2008). Globalizing Capital: A History of the International Monetary System, Princeton: Princeton University Press

Eichengreen, B., Mussa, M., Dell'Arriccia, G., Detragiache, E., Milesi-Ferretti,G.M. & Tweedie, A.(1998). Capital Account Liberalization Theoretical and Practical Aspects. IMF Occasional Paper, No: 172

Engin, C. & Golluce, E. (2016). 2008 Küresel Finans Krizi ve Türkiye Üzerine Yansımaları, Kahramanmaras Sütcü İmam Universitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 6 (1), 27-40

Erdil, T.B. (2008). Finansal Türevler ve Kredi Temerrut Swaplarının Teori ve Uygulamaları, Phd Thesis, Kadir Has University

Eroglu, N. & Yucel, I. S. (2012). Türkiye'deki Kurumsal Banka Müşterilerinin İnternet Bankacılığı Kullanımı Eğilimlerini Belirleyen Başlıca Faktörler Üzerine Ampirik Bir Çalışma, Bankacılık ve Sigortacılık Enstitüsü E-Dergisi, 2, 1-25

Erol, Ümit (1999): Vadeli Işlem Piyasaları, IMKB Yayınları, Istanbul

Eriksson, K., Kerem, K. & Nilsson, D. (2008). The Adoption of Commercial Innovations in the Former Central and Eastern European Markets: The Case of Internet Banking in Estonia, International Journal of Bank Marketing, 26 (3), 154-169

Ersoy, E. (2001). Türkiye'de ve Dünyada Organize Türev Piyasaların Gelişimi, The Journal of Accounting and Finance, 63-80

Fabozzi, F. J., Modigliani, F. & Ferri, M. G., (1998). Foundations of Financial Markets and Institutions, Second Edition, Prentice Hall International Inc, New Jersey

Farquhar, J. (2012) Case study Research Methods for Business. London: Sage Publications

Flood, M.D. (1992). Two Faces of Financial Innovation, Federal Reserve Bank of St. Louis Review, 74, 3-16

Frame, W.S. & White, L.J. (2004). Empirical Studies of Financial Innovation: Lots of Talk, Little Action?, Journal of Economic Literature, 42 (1), 116-144

Frankel, A.B. & Mann,C.L. (1986). A Framework for Analyzing the Process of Financial Innovation. International Discussion Paper, No: 283

Gefen, D. & Straub, D. W. (2005). The Relative Importance of Perceived Ease-of-Use in IS Adoption: A Study of E-Commerce Adoption, Journal of the Association for Information Systems, 1(8), 1-30

Goetzmann, W. N. & Rouwenhorst, K. G. (Eds) (2005). The Origins of Value: The Financial Innovations that Created Modern Capital Markets, Oxford, New York: Oxford University Press, 13

Gokgul, M. (2014). Türkiye' de Elektronik Ticaret ve İşletmelere, Tüketicilere Sağladığı Avantajlar, Dezavantajlar, Master thesis, İstanbul Kültür University

Guner, M.S. (2005). The Diffusion of Financial Innovation in Turkey: The Case of ATM, Master's Thesis, METU

Gurel, Y.U. (2016). Evrimci İktisat ve Teknoloji. In a Bilim,Teknoloji ve Yenilik: Kavramlar, Kuramlar ve Politika, Istanbul Bilgi Universitesi Yayınları, 236-256

Greenbaum, S.I., Thakor, A.V. & Boot, A.W.A. (2016). The Evolution of Banks and Markets and the Role of Financial Innovation. Contemporary Financial Intermediation, 429-440

Grinblatt, M. & Longstaff, F.A. (2000). Financial Innovation and the Role of Derivative Securities: An Empirical Analysis of the Treasury STRIPS Program, The Journal of Finance, 55 (3), 1415-1436

Hannan,T. & McDowell, J. (1984). The Determinants of Technology Adoption: The Case of the Banking Firm. The RAND Journal of Economics, 15 (3), 328-335

Hayali, A.S. (2014). A Time Series Cross Section Analysis of the Role of Financial Derivatives in the Emerging Market Financial Crises of the 1990s, Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, 28 (4)

Henderson, B.J. & Pearson, N.D. (2011). The Dark Side of Financial Innovation: A Case Study of the Pricing of a Retail Financial Product. Journal of Financial Economics, 100 (2), 227-247

Herguner, A.O. (2015). Financial Innovations in Developing Countries: The Case of Turkey, Master's Thesis, METU

Hoffmann, A., Urbansky, B. (2013) Recurring Financial Crises in a Hayekian Framework, Available at SSRN: http://ssrn.com/abstract=2019819

Houston, J.F., Lin, C. & Ma, Y. (2012). Regulatory Arbitrage and International Bank Flows, Journal of Finance, 67 (5), 1845-1895

Isın, F.B. (2006). Teknoloji Araçlarının Bankacılık Sektöründe Uygulanabilirliği ve Türkiye'deki Bu Doğrultudaki Bankacılık Uygulamalarının Değerlendirilmesi, Atatürk University IIBF dergisi, 20(2), 107-120

Jabbouri, N.I, Sirona, R., Zaharic, I. & Khalida, M. (2016). Impact of Information Technology Infrastructure on Innovation Performance: An Empirical Study on Private Universities In Iraq, Procedia Economics and Finance, 39, 861 – 869

Jaffee, D. & Levonian, M. (2001). The Structure of Banking System in Developed and Transition Economics, European Financial Management, 7 (2), 161-181

Jaskyte, K. & Dressler, W.W. (2004). Studying Culture as an Integral Aggregate Variable: Organizational Culture and Innovation in a Group of Nonprofit Organizations. Sage Journals, 16 (3), 265 – 284

Kabatas, Y. (2007). Ipotekli Konut Finansman (Mortgage) Sistemindeki Riskler ve Mortagage Sigortası, Marmara University IIBF Dergisi, 22 (1), 189-199

Kane, E. J. (1977). Good Intentions and Unintended Evil: The Case Against Selective Credit Allocation, Journal of Money, Credit and Banking, 9 (1), 55-69

Kaplan, C. (1999), Finansal Yenilikler ve Piyasalar Üzerine Etkileri: Türkiye Ornegi, Ankara: TC Merkez Bankası Araştırma Genel Mudurlugu

Kaya, F. (2009). Türkiye'de Kredi Kartı Uygulaması, Türkiye Bankalar Birliği, Istanbul, 263

Kindleberger, C. (2000). Manias, Panics, and Crashes: A History of Financial Crises, 4th ed. New York: Wiley

Knight, M (1998). Developing Countries and the Globalization of Financial Markets, IMF Working Paper, No:105

Kodaz, S.S. (2014). 2008 Küresel Krizin Türkiye'deki Bankacılık Sisteminin Etkinliği Üzerine Etkisi, Master Thesis, Selcuk University

Kogar, C.İ. (1995). Financial Innovations and Monetary Control, The Central Bank of the Republic of Turkey, Discussion Paper, No: 9515

Komulainen, M. & Takalo, T. (2013). Does State Street Lead to Europe? The Case of Financial Exchange Innovations, European Financial Management,19,(3), 521–557

Korkmaz, T. (2001). Yeni Gelişmekte Olan Sermaye Piyasalarında Yatırım ve Türev Ürünlerin Rolü, İMKB Dergisi, 5(17), 69–99

Kose, M.A. & Prasad, E.S. (2010). Resilience of Emerging Market Economies to Economic and Financial Developments in Advanced Economies, European Commission Economic Papers, Economic Papers 411, Directorate General for Economic and Financial Affairs, European Union

Kotter, J.P. & Heskett, J.L. (1992). Corporate Culture and Performance, New York: The Free Press

Kraft, K. (1989). Market Structure, Firm Characteristics and Innovative Activity. The Journal of Industrial Economics, 37(3), 329-336

Kwok, C. & Tadesse, S. (2005). National Culture and Financial Systems, William Davidson Institute Working Paper, 884

Lerner, J., Tufano, P. (2011). The Consequences of Financial Innovation: A Counterfactual Research Agenda, NBER Working Paper Series, No: 16780

Leuthold, M. R. (1994). Evaluating Futures Exchanges in Liberalizing Economies, Development Policy Review, l2, 149-I63

Levich, R. M., Corrigan, E. G., Sanford Jr, C. S.& Vojta, G. J. (1988). Financial Innovations in International Financial Markets, In: The United States in the World Economy, University of Chicago Press, 215-277

Levich, R. M. (1987). Financial Innovations in International Financial Markets. NBER Working Paper, No: 2277

Llewellyn, D. T. (2009). Financial Innovation and the Economics of Banking and the Financial System. In: Anderloni L, Llewellyn D. T., Schmidt R (eds) Financial innovation in Retail and Corporate Banking, Edward Elgar, UK

Love, E. G., & Cebon, P. (2008). Meanings on Multiple Levels: The Influence of Field-level and Organizational-level Meaning Systems on Diffusion. Journal of Management Studies, 45(2), 239-267

Lu, Y., Yang, S., Chau, P.Y.K. and Cao, Y. (2011) Dynamics between the Trust Transfer Process and Intention to Use Mobile Payment Services: A Cross-Environment Perspective. Information and Management, 48, 393-403

McConnell, J.J. & Schwartz, E. S. (1992). The origin of LYONS: A Case Study in Financial Innovation, Journal of Applied Corporate Finance, 4(4), 40-47

Meen, G. (2000). Why do Mortgage Markets Matter?, Economic Outlook, 24(4), 12-17

Michalopoulos, S., Laeven, L. & Levine, R. (2009). Financial innovation and Endogenous Growth, NBER Working Paper Series, No: 15356

Miller, M.H. (1986).Financial Innovation: The Last Twenty Years and the Next. Journal of Finance Quantitative Analysis, 21(4), 459-471

Millo, Y. (2003). Where Do Financial Markets Come From? Historical sociology of Financial Derivatives Markets, Phd thesis, University of Edinburgh

Mishkin, F.S.(1998). The Economics of Money, Banking and Financial Markets, 5th ed., Boston: Pearson/Addison Wesley

Mishkin, Frederic S. (2006) The Economics of Money, Banking, and Financial Markets, 7th ed. (update), Boston: Pearson/Addison Wesley

Moore,W. (2010). Managing the Process of Removing Capital Controls: What Does the Literature Suggest, MPRA Paper No. 21584

Napoli, R. (2008). Innovation in the Financial Sector: Persistence and Schumpeterian Hypotheses, Journal of Service Science and Management, 1(3), 215-225

Norden, L., Buston, C.S. & Wagner, W. (2014). Financial Innovation and Bank Behavior: Evidence from Credit Markets, Journal of Economic Dynamics & Control, 43,130-145

OECD (2005). Oslo Manual: Guidance Collecting and Interpreting Innovation Data, 3rd edition, Paris, OECD Publications

Oktayer, A.(2007). Finansal Derinleşmenin Ekonomi Performans Üzerine Etkileri: Teori ve Türkiye Uygulaması, Phd thesis, Yıldız Teknik University

Oktayer, A. (2011). Finansal Yenilikler ve Para Talebi, Maliye Dergisi, 160, 351-368

Onwuegbuzie, A. J., & Collins, K. M. (2007). A Typology of Mixed Methods Sampling Designs in Social Science Research . The Qualitative Report, 12(2), 281-316

Ozatay, F. (2009). Finansal Krizler ve Türkiye, 1. Basım, İstanbul: Doğan Kitap

Ozmen, Sule; (2012), Ağ Ekonomisinde Yeni Ticaret Yolu: e-ticaret, İstanbul Üniversitesi Bilgi Üniversitesi Yayınları, İstanbul

Podolski, T. M. (1986). Financial Innovation and Money Supply, Basil BlackweIl, Oxford

Ross, S.A. (1989). Institutional Markets, Financial Marketing and Financial Innovation, Journal of Finance, 44(3), 541-556

Sanlı, B. & Hobikoglu, E. (2015). Development of Internet Banking as the Innovative Distribution Channel and Turkey Example, Social and Behavioral Sciences, 195, 343 – 352

Sarıoglu, G.P. (2007). Hollanda'da Konut Politikaları ve Ipotekli Kredi Sistemi, METU JFA, 24(2), 1-16

Sayer, C. &Wolfe, S. (2007). Internet Banking Market Performance: Turkey versus the UK. International Journal of Bank Marketing, 25(3), 122-141

Segoviano, M., Jones, B., Lindner, P. & Blankenheim, J. (2013). Securitization: Lessons Learned and the Road Ahead, IMF Working Paper, No.13-255

Schrieder, G. & Heidhues, F. (1995). Reaching the Poor through Financial Innovations, Quarterly Journal of International Agriculture, 34 (2), 132-148

Schumpeter, J.A. (1939) Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process. McGraw-Hill, New York

Schumpeter J.A. (1942). Capitalism, Socialism and Democracy, Harper & Row, New York, 36, 132-145

Schumpeter, J. A. 1950. Capitalism, Socialism, and Democracy, New York: Harper & Brothers

Shin, J.S. (1996). The Economics of the Latecomers: Catching-Up, Technology Transfer and Institutions in Germany, Japan and South Korea. Rouledge studies in the growth economies of Asia. London: Rouledge

Silber, W.L. (1983). The process of Financial Innovation. American Economic Review, 73(2), 89-95

Smith, C., Smithson,C. & Wilford, D. (1990), Managing Financial Risk, Journal of Banking & Finance, 14 (4), 825-828

Stout, L.A. (2011). Risk, Speculation, and OTC Derivatives: An Inaugural Essay for Convivium, Accounting, Economics, and Law, 1 (1), 1-15

Tezer, S.S. (2015). Borsa ve Bankacılıkta Opsiyon İşlemleri, Master Thesis, Marmara University

The Banks Association of Turkey, (2005). Financial Sector and Banking System in Turkey

Tufano, P. (2003). Financial Innovation in Constandinides G.M., Harris M., Stulz R.M. (Eds.), The Handbook of the Economics of Finance, vol. 1A. North-Holland, Amsterdam, 307-336

Uzkurt, C., Kumar, R., Kimzan, H.S.& Eminoglu,G. (2013). Role of Innovation in the Relationship between Organizational Culture and Firm Performance: A Study of the Banking Sector in Turkey, European Journal of Innovation Management,16 (1), 92-117

Van Horne, J. C. (1985). Of Financial Innovations and Excesses, The Journal of Finance, XL (3), 621-663

Westwood, R. & Low, D.R. (2003). The Multicultural Muse: Culture, Creativity and Innovation. International Journal of Cross Cultural Management, 3 (2),235 – 259

Wurgler, J. (2000). Financial Markets and the Allocation of Capital. Journal of financial economics, 58 (1), 187-214

Yardım, O. (2005). Finansal yenilikler ve ekonomik etkileri, Master thesis, Kahramanmaras Sutcu imam University

Yavuz, C. (2010). Isletmelerde Inovasyon (Yenilicilik) Stratejileri ve Örgutsel Performans Iliskisinin Çanakkale Seramik A.S. Isletmesi Örneginde Boylam Analizi Yöntemiyle Incelenmesine Dönuk bir Arastırma. Master thesis, Çanakkale Onsekiz Mart Univesity

APPENDICES

A. APPROVAL OF METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

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22 OCAK 2019

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Erkan ERDİL

Danışmanlığını yaptığınız Seda KILIÇASLAN'ın "**Türkiye'de Finansal Yenilik**" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **021-ODTÜ-2019** protokol numarası ile onaylanmıştır.

Saygılarımla bilgilerinize sunarım.

Prof. Dr. Tülin GENÇÖZ
Başkan

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Prof.Dr. Yaşar KONDAKÇI (Y.)
Üye

Doç. Dr. Emre SELÇUK
Üye

Doç. Dr. Pınar KAYGAN
Üye

Dr. Öğr. Üyesi Ali Emre TURGUT
Üye

B. INTERVIEW QUESTIONS

1) How would you define financial innovation?

2) What are the main similarities and differences between real sector innovations and financial innovations?

3) Could you explain the factors that trigger the emergence of innovation in the financial sector?

4) What are the factors that affect the development of financial innovation according to you?

5) What could be the reasons lie behind different financial innovations in developing and developed countries?

6) What factors do you consider when developing or adapting a product?

7) According to you, how much of the financial innovation in Turkey is original and how much of it is adapted from abroad?

8) Could you give an example of the financial innovations developed by your bank?

9) What are the factors that affect the development and diffusion of financial innovation in Turkey according to you?

10) Do you think there is a prejudice against digital banking in Turkey? If so, does this prejudice affect banks' new product development processes?

11) Do you think the security measures used in the Turkish banking system are more various and different than other countries? If so, do these measures have a relationship with cultural factors and prejudice?

12) If you were a policy maker, how would you support the innovations in the financial sector in Turkey?

13) Is it possible to mention about negative side effects of financial innovation?

C. MAIN FINANCIAL INNOVATIONS IN TURKISH MARKET

Financial innovation	**Year**
Dersaadet Securities Exhange	1866
Credit Card	1968
Capital Market Board	1982
SWIFT	1983
Foreign Exchange Forwards	1984
VISA	1984
SWAP	1985
Istanbul Stock Exchange	1986
Interbank Money Market	1986
ATM	1987
POS	1991
Bonds and Bill Market	1991
EFT	1992
Gold Future Contracts	1997
Internet Banking	1997
Individual Pension System	2003
TURKDEX	2001
Izmir Futures and Options Exchange	2005
Contactless credit card system	2006
Chip & PIN	2006
3D Security Payment	2006
Mortgage	2007

D. TURKISH SUMMARY/TÜRKÇE ÖZET

20. yüzyılın başından beri, hemen hemen her alanda benzeri görülmemiş bir teknolojik değişim yaşandı. Özellikle bilgisayar ve internet gibi bilgi ve iletişim teknolojilerinin (BİT) geliştirilmesi ve yaygın kullanımı ile bu değişim hızlanmıştır. Günümüz modern dünyasında yenilik, teknolojik değişimin ve gelişmenin temelini oluşturmaktadır. Ayrıca, yenilikçilik insanların yaşamlarının ayrılmaz bir parçasıdır. Bu nedenle, dergilerde, televizyonlarda ve gazetelerde tartışılan en ilginç konulardan biridir. 20. yüzyılın başlarında, birçok araştırmacı temel olarak reel sektör yeniliğine odaklanmıştır ve bu yeniliğin ortaya çıkmasının sebeplerini ve etkilerini araştırdılar. Özellikle, Schumpeter ve takipçileri yenilik literatürüne büyük katkılar sağlamıştır.

Reel sektöre ek olarak, tarih boyunca meydana gelen teknolojik gelişmeler, özellikle BİT‘teki gelişmeler, finans sektörünü de etkilemiştir. Özellikle bankacılık sektörü bu teknolojik gelişmelerden etkilenmiştir. Reel sektördeki yenilikler ve diğer bazı gelişmeler sayesinde, finansal sektörde, yeni ve daha gelişmiş finansal araçlar, kurumlar, mallar ve hizmetler ortaya çıkmıştır. Reel sektördeki yenilikler gibi, finansal yenilikler de finansal sistemi, finansal kurumları, makro-ekonomik değişkenleri ve tüketicilerin refahını hem doğrudan hem de dolaylı olarak etkilediklerinden ekonomide çok önemli bir rol oynamaktadır (Schumpeter, 1939).

Finansal yenilikler olgusu yeni değildir. Aksine, tarih boyunca paranın icadından bu yana farklı biçimlerde ve hatta daha erken zamanlarda bile var olmuştur (Cömert ve Epstein, 2016). Bununla birlikte, finansal serbestleşme ve dünya çapında bilgi ve iletişim teknolojilerindeki hızlı değişiklikler nedeniyle, finansal yeniliklerin gelişimi hızlandı ve özellikle 1980'lerden sonra, kapsamı genişledi. Miller (1986), hem finansal araçlarda hem de kurumlardaki bu gelişmelerin bir devrim olarak değerlendirilebileceğini savunuyor.

Finansal yenilik, ekonomi için hem avantaj hem de dezavantaj olarak düşünülebilir. Literatürdeki pek çok araştırmacı, finansal yeniliğin olumlu yönlerini vurgulamıştır. Onlara göre, finansal yenilikler daha iyi bir sermaye tahsisi, işlem maliyetlerinin en aza indirilmesi ve çeşitlendirmenin iyileştirilmesini sağlayabilir. Ayrıca, finansal yenilik, daha iyi bir risk yönetimi sağlayarak finansal sistemin istikrarını artırabilir (Llewellyn, 2009). Bunlara ek olarak, finansal yenilikler uygun ödeme araçlarının kullanılmasını ve para birimleri arasında para alışverişinin yapılmasını mümkün kılar (Levich, 1987). Akhavein ve diğerleri (2005) finansal yeniliğin olumlu yanlarını "verimli ve duyarlı sermaye piyasalarının can damarı" olarak nitelemiştir (s.577).

Bununla birlikte, finansal yeniliğin olası olumsuz etkileri konusunda birçok akademisyen uyarmasına rağmen, yalnızca 2008 finansal krizinden sonra, çalışmaların çoğu finansal yeniliğin olası olumsuz etkilerini vurgulamaya başlamıştır (Cömert ve Epstein, 2016). Örneğin, türev ürünler krize yol açan aşırı kaldıraç nedeniyle suçlanmıştır (Llewellyn, 2009). Türev ürünlere ek olarak, düşük faizli menkul kıymetler, kredi temerrüt takasları ve diğer menkul kıymetleştirme uygulamaları krize katkıda bulunan önemli faktörler olarak tartışılmıştır (Allen ve diğerleri, 2012). Crotty (2009), ipoteğe dayalı menkul kıymetler ve konut ipoteğine dayalı menkul kıymetler gibi yüksek kredi değiştirme araçlarının aşırı kullanılmasının, finansal kurumların yüksek ikramiye kültürünün desteklediği bankaların aşırı risk alma davranışına yol açtığını savunuyor. Özellikle türevler, konut fiyatlarının yükselmesine neden olan fazla kredi genişlemesine yol açmıştır. Bu bağlamda, türevler ABD pazarında balonlaşmaya neden oldu çünkü ev fiyatları gerçek değerlerini aştı. 2008 küresel krizine neden olan temel faktörlerden biri budur (Brunnermeier, 2009). Genel olarak, finansal yeniliğin, finansal çevrede artan karmaşıklık ve finansal kaldıraçta rol alması, risk alma davranışını teşvik etmesi ve finansal piyasalarda oynaklığı arttırması üzerinde artan vurgular yapılmıştır.

Finansal yeniliğin farklı yönleri literatürde incelenmiştir. Ancak, mevcut finansal inovasyon literatürü çoğunlukla gelişmiş ülkelere, özellikle de birçok finansal inovasyonun gerçekleştiği ABD'ye odaklanmaktadır. Finansal yeniliklerin çoğu gelişmiş ülkelerde ortaya çıkmış olsa da, finansal yenilikler gelişmekte olan ülkelerin finansal pazarında da önemli rol oynamaktadır. Literatürdeki bilgiler göz önüne alındığında, finansal yeniliklerle ilgili çalışmalarda bazı önemli araştırma boşlukları gözlenmektedir. Bunlardan ilki, gelişmekte olan ülkelerdeki finansal yenilikler konusunda daha fazla araştırmaya ihtiyaç olmasıdır. Bir diğeri, yapılan araştırmaların çoğunun, finansal inovasyon ürünleri veya finansal inovasyonun tanımı gibi finansal inovasyonun yalnızca bir açısını ele almasıdır. Bu nedenle, finansal inovasyon konusunda daha fazla araştırma yapılmalıdır ve bu araştırmalar daha geniş bir bakış açısı ile yapılmalıdır. Bu çalışma, literatürdeki bu boşlukları gelişmekte olan ülkelerde finansal yeniliğin farklı yönlerini ve gelişme süreçlerini inceleyerek doldurmaya çalışmaktadır.

Başka bir değişle, bu çalışmanın amacı, Türkiye'deki finansal yeniliklerin ortaya çıkışını ve gelişimini etkileyen faktörleri araştırmak ve bu bilgiler doğrultusunda, gelişmekte olan ülkelerdeki finansal inovasyonun gelişim süreci ile ilgili bilgi edinmektir.

Türkiye'deki finansal yeniliği tartışan literatürdeki çalışmalar, çoğunlukla, ATM'ler ve internet bankacılığı gibi finansal yeniliklerin özel örneklerine odaklanmaktadır. Öte yandan, bu araştırma, Türkiye'de finansal yeniliğin ortaya çıkış ve gelişme süreçlerine daha geniş bir şekilde odaklanmaktadır. Literatürde Türkiye ile ilgili benzer bir çalışma bulunmadığından, bu çalışmanın literatüre önemli bir katkı sağlayacağı düşünülmektedir.

Bu çalışmanın literatüre katkıları şu şekildedir: Birincisi, bu çalışma, gelişmekte olan ülkelerdeki finansal inovasyon konusundaki sınırlı çalışmalar olan literatüre Türkiye örneği üzerinden katkı sağlamayı amaçlamaktadır. İkincisi, literatürde çok fazla kıyaslama yapılmayan, finansal yenilikler ile reel sektör yenilikleri arasındaki farklara ışık tutmaya çalışır. Üçüncüsü, bu çalışma, Türkiye'de finansal yeniliklerin gelişimini etkileyen faktörleri nitel araştırma yöntemi kullanarak inceleyen ilk çalışmadır.

Bu çalışma 5 ana bölümden oluşmaktadır: İkinci bölümde, finansal yenilik literatürü tartışılmaktadır. Bu bölüm, finansal inovasyonun tanımı, sınıflandırması ve ölçüm yöntemlerini açıklayarak tezdeki diğer tartışmalara zemin hazırlamaktadır. Bu bölümde, finansal inovasyonların ortaya çıkışının ardındaki nedenlerle birlikte finansal inovasyonun kısa tarihçesi de tartışılmaktadır.

3. bölüm, gelişmekte olan ülkelerde finansal yeniliğe odaklanmaktadır. Gelişmekte olan ülkelerde finansal yeniliklerin ortaya çıkışını etkileyen faktörler tartışılmaktadır.

Bu faktörleri belirlemek için, öncelikle, finansal yeniliğin gelişimini etkileyen kurumsal ve ekonomik değişimler üzerinde duruyoruz. Özellikle, Bretton Woods'un sisteminin çöküşünün ve serbestleşme politikalarının gelişmekte olan ülkelerde finansal inovasyonun gelişme süreci üzerindeki etkileri tartışılmaktadır. 3. bölümün geri kalanında, gelişmekte olan ve gelişmiş ülkelerde finansal yeniliğin işleyişindeki temel farklılıkları incelemektedir. Bu ülkeler arasında bir karşılaştırma yapmak için, finansal yenilik literatüründe bu konuda çalışma olmadığından, reel sektör yenilik teorilerini finansal yenilik teorilerine uyarladık. Buna göre, bu ülkeler arasında finansal piyasa yapısı, düzenleyici çerçeve, bankacılık sistemi ve teknolojik altyapı açısından farklılıklar olduğundan finansal inovasyonun gelişme süreçlerinin fark ettiği açıklanmaktadır.

Bu çalışmanın 4. bölümde ise, önceki bölümlerdeki anlatılan tartışmalar takip ederek, Türkiye örneğine odaklanılmaktadır. Yani, bu bölümde, Türkiye'de finansal yeniliğin ortaya çıkış ve gelişme süreçleri incelenmektedir. Öncelikle, bu süreçleri etkileyen özellikle 1980'lerden sonraki faktörler açıklanmaktadır. 4. bölümün geri kalanında, Türkiye'deki finansal yeniliğin kapsamlı bir incelemesini sunmaktadır. Türkiye türev piyasası ve ipotek sistemi gibi bazı özel finansal yeniliklerin adaptasyon ve yayınım süreci, ödeme yöntemleri ve Türkiye'deki bankacılık sektörü incelenmektedir.

Bu çalışmanın belkemiğini oluşturan 5. bölümde nitel araştırma yöntemi ve araştırmanın bulgularının analizi detaylıca anlatılmaktadır. Araştırmanın son bölümü olan 6. Bölümde, araştırmanın genel bulguları ve gelişmekte olan ülkelerde finansal yeniliklerin ortaya çıkış ve gelişim süreci ile ilgili bilgiler kısaca özetlenmektedir. Ayrıca, bu bölümde, Türkiye'de finansal inovasyonun gelişme sürecinde uygulanabilecek bazı politika önerileri ve gelecekteki araştırmalar için yapılabilecek bazı önerileri sunulmaktadır.

Çalışmanın ikinci bölümü olan literatür taramasını daha ayrıntılı özetlemek gerekirse; bu bölümde, finansal inovasyon ile ilgili literatürdeki belirsiz kısımlarına ve finansal inovasyonun ana özelliklerine yer vermekteyiz. Bu belirsiz kısımlar şöyledir:

Finansal inovasyonun tarihi eski zamanlara kadar gitmesine rağmen, 1980'lerden beri literatür finansal inovasyona daha fazla önem vermiştir. Finansal inovasyonun tarihi göz önünde bulundurulduğunda, günümüz dünyasında kullandığımız finansal yeniliklerin tarih boyunca sürekli değişerek bugün ki haline dönüştüğünü gözlemliyoruz. Dolayısıyla, sürekliliğin finansal yenilik gelişmesinde önemli bir özelliği olduğu söylenebilir.

Finansal yenilik tanımlarına bakıldığında çoğunun ürün ve süreç yeniliği tanımına çok benzediği görülmektedir. Bu bölümde, mevcut literatürden faydalanarak, finansal inovasyon ile reel sektör inovasyon kavramları arasındaki benzerlikleri ve farklılıkları bulmaya çalışıyoruz. Bu iki kavram arasındaki en önemli farkın onların fonksiyonları açısından olduğunu düşünüyoruz. Finansal yenilik tanımlarının çoğu, risk çeşitlendirmesini önlemek ve maliyet azaltma gibi olumsuz finansal durumlara karşı çözümler içerir. Ancak, reel sektör yeniliği olumsuz çevreye karşı herhangi bir çözüm içermemektedir. Başka bir deyişle, finansal yenilik tanımlarının daha özel bir çerçevede oluşturulduğunu gözlemliyoruz.

Finansal yeniliklerin nasıl ortaya çıktığı konusu da en az tanımı kadar literatürde tartışılan en önemli kısımlardan biridir. Bu konu hakkında birçok farklı açıklama vardır ve bu nedenlerden en önemlileri kâr maksimizasyonu ve devlet düzenlemeleridir. (Flood 1992, Miller 1986). Diğer önde çıkan nedenler ise teknolojik gelişmeler (Tufano, 2003), piyasa koşullarının değişmesi (Levich, 1987) ve makroekonomik değişkenlerin değişkenliğidir. (BIS, 1986).

Finansal inovasyonun tanımında ve ortaya çıkmasını etkileyen faktörlerde olduğu gibi, finansal inovasyonun sınıflandırılması ve ölçülmesinde de literatürde birçok farklı görüş vardır. Literatürde finansal inovasyon genelde türüne, işlevlerine ve nedenlerine göre sınıflandırılmaktadır (bkz: Frame and White 2004, Merton 1992, , Llewellyn 1992). Reel sektör inovasyonu gibi belli bir ölçüm tekniği olmadığından, bazı araştırmacılar yeniliği ölçmek için kendi inovasyon göstergelerini geliştirmeye çalışmaktadır (bkz: Tufano 1989, Lerner 2006).

Literatür göz önüne alındığında, finansal yeniliğin gelişme sürecinin gelişmekte olan ve gelişmiş ülkeler arasında farklılık gösterdiği görülmektedir. Bu nedenle, 3. bölümde, finansal yeniliklerin gelişim sürecini etkileyen ve finansal yeniliklerin gelişmiş ve gelişmekte olan ülkeler arasında farklılaşmasına neden olan faktörleri tartışıyoruz. Öncelikle, özellikle 1980'lerden sonra yaşanan hızlı teknolojik gelişmelerle birlikte, finansal yeniliklerin gelişim süreçlerinin hız kazandığını ve özelliklerinin daha hızlı değiştiğini düşünüyoruz. Gelişmekte olan ülkelerde finansal yeniliklerin gelişme sürecinde finansal piyasaların serbestleşmesinin, küreselleşmesinin ve bütünleşmesinin önemli olduğunu düşündük. Böyle düşünmemizin nedene ise, finansal çevrede yaşanan bu gelişmelerin, gelişmekte olan ülkelerin finansal yenilikleri finansal sistemlerine uyarlama veya geliştirme konusunda daha fazla imkan sağlamasıdır. Gelişmekte olan ve gelişmiş ülkelerde 1980'lerden sonra finansal yeniliklerin gelişme süreci göz önüne alındığında, finansal yeniliğin makroekonomik değişkenlerin oynaklığı, serbestleşme ve küreselleşme politikaları nedeniyle ortaya çıkan finansal bozulma için bir çözüm olduğu görülmektedir. Ancak, finansal yeniliğin kendisi 2008 krizinde olduğu gibi aynı zamanda finansal bozulmaların bir nedeni olarak görüldüğü unutulmamalıdır.

Bu bölümde açıklanan 6 nedenden 3'ünün, gelişmekte olan ve gelişmiş ülkeler arasındaki finansal yenilik farklılıklarına yol açan en önemli neden olduğuna inanıyoruz. Bu 3 neden şunlardır: farklı düzenleyici yaklaşımların uygulanması (bkz: Kwok ve Tadesse 2005, Meen 2000), finansal piyasa yapılarında farklılıklar (bkz: Wurgler 2000, Hannan ve McDowell 1984), toplumun kültürel özelliklerindeki farklılıklar (bkz: Kwok ve Tadesse 2005, Boehle ve Krueger 2001).

3. bölümde anlatılan tartışmalar göz önünde bulundurularak, 4. bölümde, gelişmekte olan ülkelerde finansal yeniliklerin bir örnek çalışması olarak, Türkiye'deki finansal yeniliklerin ortaya çıkış ve gelişme süreçlerini incelemektedir.

Bu nedenle, bu bölüm, Türkiye'deki finansal inovasyon üzerine yapılan ilk kapsamlı literatür taraması olup, bu özelliği ile literatüre katkıda bulunmaktadır, çünkü literatürdeki çalışmaların çoğu, genel olarak Türkiye'deki tüm finansal inovasyonları incelemek yerine sadece belirli finansal inovasyon türlerine odaklanır.

Diğer gelişmekte olan ülkelerde olduğu gibi serbestleşme ve küreselleşme sonucu meydana gelen kurumsal ve düzenleyici değişikliklerle, Türkiye'de 1980'lerden sonra finansal gelişmenin hızının arttığını ve finansal yeniliklerin özelliklerinin değiştiğini savunuyoruz. Bölüm 3'te daha önce belirtilen Asya ülkeleri gibi gelişmekte olan ülkelerde olduğu gibi, kültürün bireylerin kararlarını etkilediğinden dolayı, Türk toplumunun kültürel özelliklerinin de Türkiye'deki finansal yeniliklerin gelişim süreci üzerinde ve finansal yenilikler hakkındaki görüşlerde önemli bir etkisi olduğuna inanıyoruz.

4. bölümde açıklanan bilgiler ışığında, kültürün Türkiye'deki finansal yeniliğin gelişim süreci üzerinde hem olumsuz hem de olumlu etkileri olduğunu düşünüyoruz. Diğer toplumlarda olduğu gibi, çeyiz hesabı ve altın hesabı gibi bazı benzersiz finansal yenilikler, Türk toplumunun kendine özgü kültürel özelliklerinin bir sonucu olarak ortaya çıkmıştır. Bu düşünceye mülakat sonuçlarımızdan da bir örnek verilebilir. Aceleci doğası ve herhangi bir teknolojiyi kullanırken hızlı sonuç alma isteği nedeniyle, Türk halkı finansal yenilikleri çok hızlı bir şekilde adapte etme ve kullanma eğilimindedir. Bununla birlikte, bazı durumlarda, Türk toplumunun kültürel özellikleri finansal yeniliklerin gelişimini engelleyen faktörlerden biri olabilir. Mülakat sonuçlarımızdan birine göre, Türk halkı çoğunlukla sözlü iletişim kurmayı tercih ediyor ve onlardan bazıları ise herhangi bir finansal işlem yaparken şahsen bir banka çalışanıyla konuşmak istiyor. Bu nedenle, Türk toplumunda bazı kişilerin dijital bankacılık uygulamalarına karşı önyargıları olduğu sonucu ortaya çıkmıştır. Bu durumun, Türkiye'de finansal yeniliğin yayılmasını etkilediğini düşünüyoruz.

Diğer gelişmekte olan ülkelerde olduğu gibi, Türkiye'de de ATM ve kredi kartı gibi finansal yeniliklerin bir kısmı gelişmiş ülkelerden uyarlanmıştır ve bir kısmı da yurt içinde geliştirilmiştir, bu da bazı finansal yeniliklerin Türkiye'de ilk kez geliştirildiği ve kullanıldığı anlamına gelir. . Türkiye'de internet ve mobil bankacılığa olan talebin artmasıyla birlikte, banka şubesi ve personel sayısında azalma vardır. Ayrıca, artan sahtekarlık işlemleri nedeniyle, Türk bankacılık sisteminde birçok güvenlik önlemi uygulanmaktadır.

Literatürdeki gelişmekte olan ülkelerdeki ve Türkiye'deki finansal yenilikler hakkındaki tartışmalara dayanarak, Türkiye'deki finansal yeniliklerin ortaya çıkış ve gelişme süreçlerini incelemek için 5. bölümde nitel bir analiz yapılmıştır. Aynı zamanda, nitel analiz yönteminin kullanılması, bu çalışmanın literatüre katkılarından biridir çünkü literatürdeki daha önceki çalışmalarda bu yöntem kullanılmamıştır.

Literatürde yer alan boşluklar ve varsayımlar doğrultusunda, araştırma sorumuz oluşturulmuştur. Bu sorumuz şöyledir: Türkiye'de finansal yeniliklerin ortaya çıkışını ve gelişimini etkileyen faktörler nelerdir? Bu araştırmaya veri toplamak için nitel analiz yöntemlerinden yarı yapılandırılmış mülakatlar yaptık. Yarı yapılandırılmış görüşmelerde, araştırmacı bir görüşme rehberini izler, ancak kılavuzdaki talimatların uygulanmasındaki esnekliğe aynı anda izin verilir (Farquhar, 2012). Yaptığımız mülakatlar, belirli, açık ve kapalı uçlu sorulardan oluşmaktadır. Bu soruları, diğer bölümlerde tartıştığımız bilgiler doğrultusunda hazırladık. Bu mülakat sorularının genel çerçevesi şöyledir:

- Finansal inovasyonun tanımı ve ortaya çıkması gibi faktörler gibi temel bilgiler
- Türkiye'deki finansal yenilikler hakkında genel ve özel bilgiler
- Türkiye'deki finansal yenilikler için politik tavsiyeler

Yarı yapılandırılmış görüşmeler yapmak için, bu çalışmada iki farklı veri örnekleme tekniği kullanılmıştır. Tekniklerden biri, amaçlı örneklemedir. Bu tür örneklemede, bölümler, kuruluşlar veya insanlar araştırma sorularına göre seçilir (Bryman, 2012). Diğer teknik ise kartopu örneklemesidir. Kartopu örneklemesinin başlangıcında, araştırmacı, araştırma sorularını tartışmak üzere seçilen bir grup insanla röportajlar yapar ve bu kişiler bir sonraki katılımcıların benzer özelliklere sahip kişiler arasında araştırmaya dahil edilmesini önerir (Bryman, 2012). Bu araştırmanın örneklem büyüklüğü, 10 banka olarak seçilmiştir. Bankaların aktif büyüklüğünü göz önünde bulundurarak, Türkiye'deki ilk 15 bankanın ilk 9undaki banka çalışanlarıyla mülakatlar yapılmıştır. Bu bankalara ek olarak, banka türü bakımından çeşitlilik sağlamak için katılım bankasında çalışanla bir kişi ile de mülakat yapılmıştır. Görüşülen katılımcıların tamamı ilgili bankaların merkez ofisinde çalışıyordu ve katılımcıların iş unvanları inovasyon departmanı yöneticisi, Ar-Ge departmanı yöneticisi, BT uzmanı veya inovasyon uzmanydı. Görüşmeler yüz yüze, skype veya telefon görüşmeleri ile yapılmıştır ve tüm katılımcıların adları ve çalıştıkları bankaların gizli tutulmuştur.

Saha araştırması sırasında karşılaşılan en büyük zorluk, inovasyon, Ar-Ge ve bankaların genel müdürlüklerinin BT departmanlarında çalışanların isimlerini ve iletişim bilgilerini bulmaktı çünkü bu bilgiler bankaların web sitesinde bulunmuyordu. Bu nedenle, gerekli isimlere ve iletişim bilgilerine erişmek için Google ve LinkedIn'de detaylıca bir araştırma yaptık. Diğer bir sınırlama ise, bankaların web sitelerinde yayınlanan genel e-posta adreslerine gönderilen e-postaların genellikle cevapsız kalmasıydı.

Veri analizi sürecinde, öncelikle her görüşme sonucu taslaktan rapora dönüştürülmüştür. Daha sonra, bu rapordaki görüşme sonuçlarının ana bulguları kategorize edilerek tekrardan incelenmiştir ve ayrıca bu kategorize edilmiş bilgiler daha sonra gruplara ayrılarak tekrardan gözden geçirilmiştir. Bu veri analizi sürecinde, mülakat yapılan bankaların isimleri rastgele kodlanmıştır ve yapılan bu kodlamanın bankaların toplam varlık büyüklüğü ile herhangi bir ilgisi yoktur. Araştırmanın temel bulguları aşağıda anlatılmaktadır:

Görüşme sonuçlarına bakıldığında, katılımcılar finansal inovasyonu tanımlarken onun belli özelliklerini ya da genel özelliklerini söylemişlerdir ve katılımcılara göre finansal yeniliğin temel unsuru çoğunlukla bankacılık sisteminde yeniden tasarlamak ya da mevcut sistemde ürün ve süreç açısından kısmi değişiklikler yapmak olarak tanımlanmaktadır. Yapılan bu tanımların literatürde yer alan tanımlardan çok farklı olmadığını gözlemledik.

Literatürde finansal sektör yenilikleri ile reel sektör yenilikleri arasındaki farkları net bir şekilde açıklayan çalışmaların eksikliği, bu iki kavram arasında ayrım yapmanın zor olduğunu göstermektedir. Başka bir deyişle, hem katılımcıların hem de teorisyenlerin bu iki tür inovasyonu ayırt etmekte zorlandıklarını gözlemliyoruz. Katılımcılara göre, özel veya genel bir kavram olmak ve farklı odak ve amaçlara sahip olmak bu iki kavram arasındaki en önemli farklılıklardır. Mülakat sonuçlarına göre, katılımcıların bu iki tanım arasında kişisel deneyim ve bilgiye dayanarak daha iyi bir ayrım yaptığını düşünüyoruz.

Yapılan analizler sonucunda, finansal yeniliklerin ortaya çıkmasını tetikleyen ve gelişimini etkileyen en önemli faktörler şunlardır: Teknolojik gelişmeler, değişen müşteri talepleri ve market koşullarıdır. Bunların dışında, karlılığı arttırmak, uygulanan hükümet düzenlemeleri ve nitelikli bir işgücüne sahip olmak finansal yeniliklerin bu süreçlerini etkileyen diğer faktörlerdir. Mülakat bulguları değerlendirildiğinde, teknolojik gelişmelerin müşteri deneyimini ve beklentilerini büyük ölçüde değiştirdiğini iddia ediyoruz. Müşteri taleplerindeki değişimin piyasa koşulları üzerinde de önemli bir etkisi olduğunu düşünüyoruz. Ayrıca, mülakat sonuçlarına göre, finansal yeniliklerin gelişmiş ve gelişmekte olan ülkeler arasında farklılık gösterme nedenleri şunlardır: finansal piyasaların yapısındaki ve ekonomik şartlardaki farklılıklar, ilgili düzenlemeler arasındaki farklılıklar, müşterilerin ihtiyaçlarındaki farklılıklar, toplumdaki kültürel farklılıklardır.

Bu çalışmanın Türkiye'deki finansal inovasyonlar ile ilgili elde ettiği veriler kısaca şöyledir:

Türkiye, finansal yeniliklere adaptasyon ve orijinal yani Türkiye'de finansal yeniliklerin gelişiminde diğer gelişmekte olan ülkelere göre daha yüksek bir orana sahiptir. Ayrıca, Türkiye'de bir finansal ürünün geliştirilmesinde veya uyarlanmasında, bankalar müşterilerin taleplerinin karşılanmasına ve kar maksimizasyonu yaklaşımına uygun olmasına dikkat etmektedir. Piyasaların talepleri ve piyasa koşullarına uygun olması, ürünün güvenilir olması ve uygulanan düzenlemelere uygun olması bu husustaki diğer dikkat edilen faktörlerdir.

Günümüzde, Türk bankacılık sisteminde geliştirilen finansal inovasyonların çoğu dijital bankacılık sistemleriyle ilgilidir. Spesifik olarak, katılımcıların neredeyse tamamı, dijital cüzdan, kişisel asistan ve QR kod ödeme yöntemi gibi mobil ve internet bankacılığı uygulamalarının geliştirilmesinin ve iyileştirilmesinin hedeflendiğini belirttiler. Ayrıca, katılımcıların çoğu, Türkiye'deki birçok bankaların, şubelerini dijital banka şubelerine dönüştürülmesi konusunda bir stratejileri olduğunu açıkladılar.

Türk kültürü, finansal yeniliklerin gelişimini ve yaygınlaşmasını etkileyen en önemli faktörlerden biri olarak kabul edilmektedir. Kültürün etkisi, 3. bölümde bahsettiğimiz Asya ülkeleri gibi gelişmekte olan diğer ülkelerde de benzerdir. Bu nedenle, kültürün finansal yeniliklerin gelişmesinde ve yayılmasında, özellikle de köklü bir geçmişe sahip gelişmekte olan ülkelerde önemli bir faktör olduğunu söyleyebiliriz. Ayrıca, Türk hükümetinin katı rolü ve Türk hükümet düzenlemelerindeki eksiklikler, üçüncü bölümde ele aldığımız gibi, gelişmekte olan ülkelerde finansal yeniliklerin yaratılması ve yaygınlaştırılmasının önündeki engellerden bir örnekti. Diğer gelişmiş ve gelişmekte olan ülkelerde olduğu gibi, teknolojik gelişmeler, müşteri beklentileri ve piyasa koşulları da Türkiye'de finansal yeniliğin ortaya çıkmasını etkileyen diğer faktörlerdendir.

Mülakat sonuçlarına ve 4. bölümdeki sayısal veriler düşünüldüğünde, Türkiye'de dijital bankacılığa karşı önceden önyargıların var olduğunu, ancak bu önyargılar bugünlerde büyük ölçüde ortadan kalktığı anlaşılmıştır. Mülakat bulgularına göre, sadece 60 yaşlarında ve 60ın yaşlarının üstünde olan bir grup insanın bu hususta önyargıları vardır. Bu önyargının temelinde, sahtekarlık işlemlerinin artması ve kültürel olarak biri ile konuşarak bankacılık işlemini yapmayı, dijital uygulama kullanarak yapmak yerine tercih etmesi yatmaktadır. Bu önyargıların azalmasında, Türk bankacılık sisteminde, dijital bankacılık uygulamasına olan talebi arttırmak için yeni güvenlik yöntemleri ve yeni ürünlerin kullanılmasının payının büyük olduğu elde edilmiştir.

Mülakat sonuçları ışığında, tüm katılımcıların, finansal inovasyonların sadece kâr maksimizasyonu ve müşteri odaklı tarafından düşünmeleri nedeniyle, finansal inovasyonun sadece yararlı ve faydalı taraflarını düşündüklerini anlıyoruz. Dolayısıyla, onların finansal yeniliklerin literatürde bahsedildiği gibi olumsuz yan etkileri hakkında düşünmelerini bekleyemeyiz. Eğer teorisyenler finansal inovasyon uygulayıcılarına literatürde belirtilen bu olumsuz etkiler konusunda bilgi verirse, uygulayıcılar bu konuda gerekli önlemleri almaya çalışabilirler.

Sonuç olarak, yukarıda da tartıştığımız gibi, toplumunun kültürel özellikleri, uygulanan hükümet politikalarının yapısı ve politikalardaki bazı eksiklikler ve finansal marketlerin yapısı ve koşulları, finansal yeniliklerin hem Türkiye örneğinde hem de diğer gelişmekte olan ülkelerde ortaya çıkış ve gelişim sürecini etkileyen en önemli faktörlerdir. Ayrıca, Türkiye örneğini göz önünde bulunduracak olursak, finansal yeniliklerin gelişim ve yayılım süreçlerinin diğer gelişmekte olan ülkelere göre daha hızlı ve çabuk olduğu görülmektedir. Son olarak, bu araştırmanın sonuç kısmında, Türkiye'de finansal yeniliklerin ortaya çıkış ve gelişime süreçlerinde uygulanabilecek bazı politikalar önermekteyiz (bkz: tablo 7). Bunlardan bazıları şöyledir:

- Tüm bankaların sahte işlemler için bir güvenlik sistemi vardır. Ancak, bu sistemdeki bazı sıkıntılar nedeniyle, dolandırıcılık işlemlerinin oranı Türkiye'de oldukça yüksektir. Bu nedenle BDDK, finans sektörü için bir güvenlik operasyon merkezi oluşturmak gibi gerekli önlemleri almalıdır. Bu merkezde finansal yenilikler konusunda sızıntı testleri yapılmalı ve dolandırıcılık işlemlerine karşı güvenlik önlemleri ve BT altyapıları geliştirilmelidir.
- Finansal yenilikler, 2008 krizinde olduğu gibi ekonomide bazı aksaklıklara yol açmaktadır. Bu nedenle, öngörülemeyen riskleri ve yan etki risklerini azaltmak için finansal yenilikler kontrol edilmelidir. Bu amaç doğrultusunda, TCMB'de finansal yeniliklerin süreçlerini ve finansal sektör risklerini izlemek, analiz etmek ve sınırlandırmaktan sorumlu özel bir birim kurulmalıdır. Bu birimde, önce finansal yeniliklerle ilgili ulusal öncelikleri belirlenmelidir. Daha sonra, analiz sonuçlarına göre gerekli önlemler alınmalıdır.
- Finans sektöründeki fintech'ler ve girişimler gibi küçük oyuncular, özellikle erken kuluçka dönemlerinde, gelişim süreçlerini zedeleyen bazı sıkıntılarla karşılaşmaktadır. Bu nedenle, hükümet bu küçük oyuncuları korumak ve teşvik etmek için bazı destekleyici düzenlemeler uygulamalıdır. Örnek olarak, fintech'ler ve yeni başlayanlar için teşvik fonları ve bazı vergi indirimleri uygulanmalıdır.

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TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English) : The Characteristics of Financial Innovation in Developing Countries: The Case of TURKEY
TEZİN TÜRÜ / DEGREE: **Yüksek Lisans** / Master **Doktora** / PhD

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