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TÜRK BANKACILIK SEKTÖRÜNDE FİNANSAL İNOVASYONLAR VE LİTERATÜR İNCELEMESİ

FINANCIAL INNOVATIONS IN TURKISH BANKING SECTOR AND LITERATURE REVIEW

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ABSTRACT

Recent innovations in the banking sector, which constitute the basis of the financial markets of the country's economy in the present day, have been theoretically examined in the study. Innovation mainly refers to innovations made in the related sector. Financial innovations play an essential role in ensuring financial stability and continuity of economic growth. New instruments are continuously being developed in the financial sector especially for consumers and their recycling is being followed. Innovation is a double-edged sword: the right kind of innovation and favorable conditions that may spur banks to invest in new technologies would help the financial system fulfil its functions and, as a consequence, deliver growth; but too much innovation or innovation that is not properly used, can have serious consequences for the overall economy. This study aims to present a perspective on financial innovations by examining related literature and statistical, financial innovation data of Turkish Banks to illuminate the way of academicians who are willing to do next studies on this topic.

Keywords: Innovation, Banking, and Finance, Financial Innovation

Jel Codes: G21, G29

ÖZET

Çalışmada günümüzde ülke ekonomilerinin finansal piyasalarının temellerini oluşturan bankacılık sektöründe son dönemlerde ortaya çıkan inovasyonlar teorik olarak irdelenmiştir. İnovasyon temel olarak sektör ile ilgili olarak yapılan yenilikleri ifade etmektedir. Finansal istikrarın sağlanması ve ekonomik büyümenin süreklilik arz etmesi için finansal inovasyonlar temel rol oynamaktadır. Bankacılık sektöründe özellikle tüketicilere yönelik olarak sürekli yeni enstrümanlar geliştirilmekte ve bunların geri dönüşümleri takip edilmektedir. İnovasyon iki ucu keskin bir kılıç olarak görülmektedir; doğru yapılan inovasyonlar ve faydalı girişimler bankaların yeni teknolojilere yatırım yapmasını sağlayarak finansal sistemin işlevlerini tamamıyla yerine getirmesini sağlar ve sonuç olarak büyümeye neden olur. Aksi halde çok fazla inovasyon ya da düzgün yapılmayan inovasyonlar ekonomi genelinde çok ciddi sorunlara sebep olabilir. Bu çalışma, ilgili literatür ve Türk Bankalarının finansal inovasyon verilerini inceleyerek finansal inovasyon konusunda bir bakış açısı sunmayı amaçlayarak bu konuda gelecekte çalışmalar yapacak akademisyenlerin görüş açısını genişletmek istemektedir.

Anahtar Kelimeler: İnovasyon, Bankacılık ve Finans, Finansal İnovasyon

Jel Kodları: G21, G29

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1. INTRODUCTION

Today, the financial sector is very important for the economies of all countries. Increasing innovation and innovative movements together with developing technology have some effects on the financial sector. Therefore financial innovations start to reveal and emerge. Miller (1986) mentioned that in the 80's, the most suitable word to use for changes in the financial sector is the "revolution". Today, these revolutions are called innovation when it is over thirty years past.

Innovation is based on the work of Schumpeter (1934), especially in the academic sense, as well as being a word we hear almost every day. The Mortensen, P. S., & Bloch, C. W. (2005) in Oslo Manuel's definition of innovation based on Schumpeter's definition is as follows:

"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."

The competitive advantage of innovators has been the subject of many academic workshops (Oura et al., 2016: 921). This has drawn attention from politicians, and governments and even international organizations (e.g., the European Union). With this progress, institutions have begun to develop and implement innovation policies. Out of this information, it would be a mistake to think that innovation that takes place in every field of our lives will not come to the fore in the financial arena. While there is still a lot of debate on the concept of financial innovation, there is no common definition that can fully explain financial innovation (Cömert & Epstein, 2016: 3). Frame & White (2002: 1) have given a summary to definition issue by saying everyone is talking about financial innovation and hardly anyone does empirical work.

In this study, it is aimed to have an idea about the determination of financial innovation types and to provide basic information about the measurement of financial innovation by reviewing previous studies about financial innovation. In this respect, the first part of our work the introduction will be followed by the second part which explains a new perspective and includes a literature review on financial innovation. In the fourth chapter, a statistical analysis will be carried out by explaining some statistical information about the interaction of banks in Turkey with financial innovations. In the fourth and last section, results and recommendations will be given. In this way, it is aimed to prepare a theoretical and practical basis for future studies.

2. A NEW PERSPECTIVE ON FINANCIAL INNOVATIONS: BITCOIN

Bitcoin is a peer to peer virtual currency, with a distributed ledger system (Nakamoto, 2009). As an explanation; bitcoin is a decentralized monetary system and currency that cannot be controlled by any government, company or authority that provides online payment to any person anywhere in the world. Bitcoin as a designed single electronics cash system with an open source software that is not obvious to understand transactions carried by whom. The main characteristic of bitcoin is that there is no center of production (Atik et al. 2015: 249). Bitcoin is producing by participating people who called "miner" by their computers' processor power. Today many special computer systems are improved to mine bitcoin, especially for this purpose.

Produced bitcoins can be transferred through the P2P network. Any user or owner of bitcoin must sign their transactions by the electronic sign to approve the transfer. By doing that every participant in the system could know that transaction was done and confirmation of correctness would be monitored. But as it has its' very own character; bitcoin is kind of untraceable. So that it is sometimes known as a tool for financing illegal transactions (Cheung, A., Roca,E. Su.J.J., 2015). Eventually, even with its' characteristic features, bitcoin can be counted as a financial innovation according to definitions on literature which is examined in next chapter.

3. LITERATURE REVIEW

Van Horne (1985: 621) saw financial innovation as one of the cornerstones of the financial system and spoke of its role as a vital tool for the efficient functioning of capital markets. It has been reported that financial innovation may be a new product (like new bond types), a new process or a new transfer, but it is not possible to uncover completely new things with the concept of financial innovation (Van Horne, 1985: 621).

Merton (1992: 12) explained the main task of the financial system as the facilitation of the allocation of economic resources under uncertain conditions over time. In addition, he added that the financial system includes simple payment systems and virtual transactions as well as capital markets. Frame and White (2002: 3) stated that the risks emerge in the uncertain conditions of the financial system and that there is always the possibility that new financial products, services, and instruments could emerge that would make the parties of the financial system more satisfied in this environment. In light of this information, the place of financial innovation mentioned by Van Horne (1985: 621) in Merton's (1992: 12) financial system is better understood.

It has been reported that financial innovation can be represented as improved products, services or tools that reduce costs or risk and help better meeting the need of the parties of the financial system (Frame & White, 2002: 3). In addition, Van Horne (1985: 622) argued that financial innovations may emerge in the face of opportunities to increase profits and may serve to neutralize inefficient intermediary relationships. Tufano, (2003: 310) explained the reason for categorizing financial innovations is related to the existence of many financial products, different financial institutions and a wide range of financial processes within financial systems. Accordingly, financial innovation can be explained as the creation and popularization of new financial instruments, technologies, institutions, and markets.

Innovation types have been classified as a product, process, marketing and organizational in most of the academic studies (Damanpour et. Al., 2009: 650; Damanpour et al., 1989: 590). Moreover, according to the way of appearance, innovations are divided into radical and incremental (Propris, 2002: 342). In this case, it is clear that financial innovations are questionable against innovation types. But in the direction of the implications that can be made from previous approaches, financial innovations may occur in a financial product, financial process, financial marketing or financial institution structure. It is also possible to say that it can cause radical innovations that may suddenly develop in the rush of the financial system, and it is possible to make planned (incremental) financial innovations due to the lessons that can be deducted from post-financial experiences. When financial innovations are considered in this way, it is generally seen as a usage of innovation within the financial system. Carter (1991: 169) confirms this by drawing attention to the fact that restrictive laws in financial systems and fluctuations in the markets cause financial innovations to emerge. Frame & White (2002: 4) also point out that the focal point in financial innovations needs to go through a new conclusion and that innovation should be integrated with the system to be efficient in the financial system. Shiller (2004: 2) has confirmed our implications for financial innovation by arguing that radical financial innovations may occur in the face of new risk varieties where classical risk management methods have lost their validity and needed to overcome their limits. Also, radical financial innovations are considered as an update to risk management to include new risks (Shiller, 2004: 2). From this point of view, radical financial innovations seem to be impossible to take advantage of financial opportunities, but this idea might be very restrictive.

Cömert & Epstein (2016: 4) referred that financial products and methods are constantly emerging and that it would not be efficient to examine them one by one. Within this context, they have argued that it is not possible to reach consensus on the classification of financial innovations. As a matter of fact, it seems that financial innovations aim to provide social and economic benefits irrespective of the way of formation or type. Therefore, it is believed that the factors that cause financial innovations to occur and obstacles to occurrence must be well understood (Ramsay, 1993: 169). According to Ramsay (1993: 170), the following factors can be given as reasons for the development of financial innovations:

- Tax problems
- Transaction costs
- Brokerage Fees
- Opportunities to reduce risks
- Opportunities to increase liquidity
- Amendments to laws
- Fluctuations in interest rates
- Fluctuations in prices
- Academic theories are leading to the development of financial theories.
- Benefits of accounting
- Technological developments

Moreover, Ramsay (1993), shows that market share may lead to financial innovations by accepting new financial products developed by banks to increase their market share as financial innovation. Regardless of the innovation that is the result of financial innovation, in a sense, it will contribute to the measurement of financial innovations. For example; in some of the studies on different areas of innovation, R&D expenditures are used to measure innovation (Sterlacchini, 1999: 830). Frame & White (2002: 25) have told that R&D expenditures of financial industry can be used in the measurement of financial innovation as a tradition. In this case, bank-based innovations such as internet banking systems, ATMs and security methods may be considered as financial innovation. It is possible to use such innovations as numbers in academic studies, as well as the expenditures of the financial institutions on R&D, which can be obtained from the balance of the financial institutions, can be used to measure financial innovations. As a matter of fact, Rossignoli & Arnaboldi (2009: 291) stated that R&D expenditures might be an assumption for financial innovation. Also, they have provided financial innovation measures by counting

innovations in the reports of financial institutions. Cömert & Epstein (2016) also pointed out that the expenditure on R&D may not be a good indicator to measure innovation in the financial sector. Some studies have measured financial innovation over the values of securities while some studies have tried to measure by indexing current news of financial institutions (Tufano, 1998; Lerner, 2006 cite; Cömert & Epstein 2016).

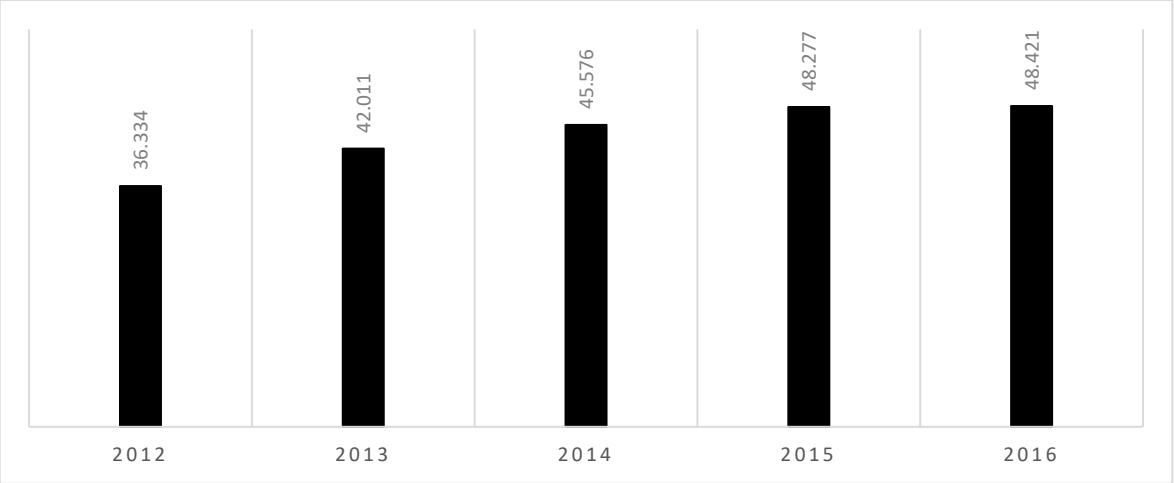
Unlike all these measurement methods, some studies have take M1 and M2 data which are money supply data as a "proxy" value for measuring financial innovations. The studies which find financial innovation by dividing the M2 value into to M1 value has shown the reason for taking this measurement for lack of a direct measure of financial innovation. Also M2 and M1 values taken because according to these studies ATMs, credit cards, debit cards and online banking effects money demand (Siklos, 1993; Klovland, 1983; Akhtar, 1983 cite; Malik & Aslam, 2010:6).

4. FINANCIAL INNOVATIONS IN TURKISH BANKS

In this part of our study, we will look at the statistics that can be counted as the financial innovation of the banks in Turkey. Rather than handling the banks one by one, evaluations will be made on the overall data of 29 banks in Turkey.

First of all, it was thought that it would be right to handle the number of ATMs in Turkey. As known, nearly every banking transaction can now be made over ATMs. In this way, individual relationships are reduced, and transactions can be done more quickly, as well as allowing the personnel to use their time more efficiently. The numbers of the last five years of ATMs in Turkey are shown in the following graphic.

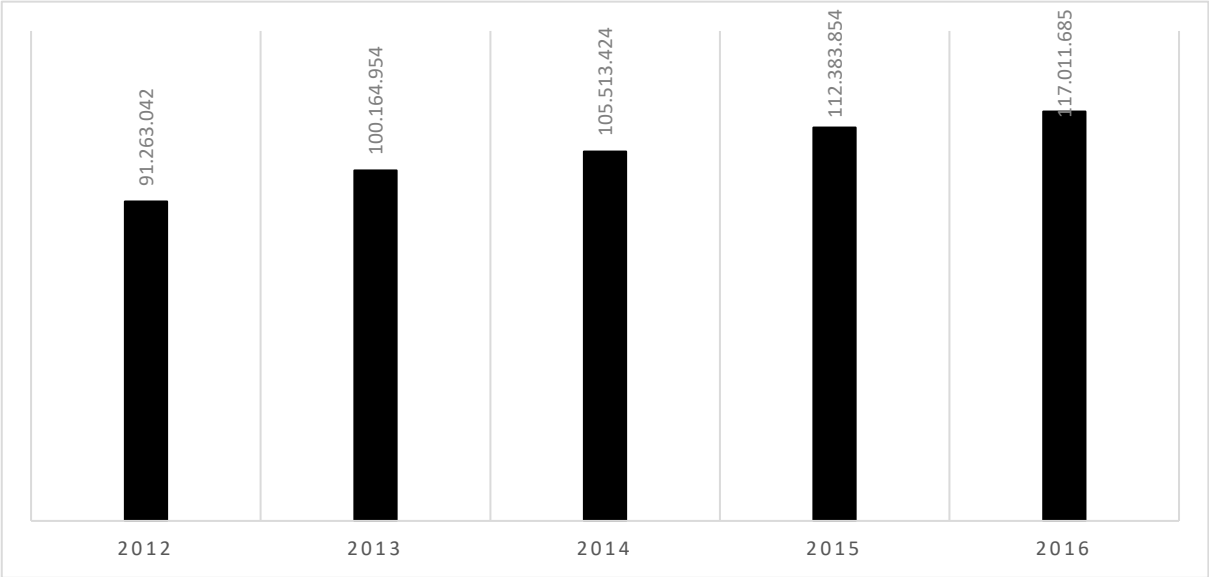
Figure 1: ATM Statistics (Turkey)



Source: www.bkm.com.tr (30.01.2017)

Attanasio, Guiso & Jappeli (2002: 323) noted that the use of debit cards along with the use of ATMs, is the biggest financial innovations in recent years and that they should be considered as technological innovations for transactions. From 2012 to 2016, the number of ATMs in Turkey increased by 12.087 indicating an increase of approximately 33%. When it is necessary to use the debit card usage, it is beneficial to see the following graphic.

Figure 2: Debit Card Statistics (Turkey)

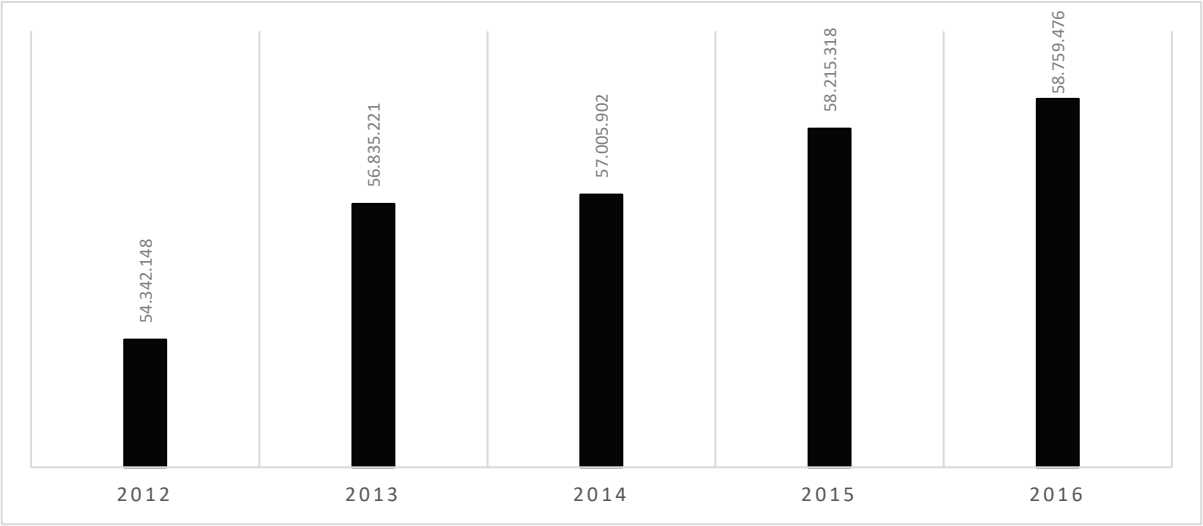


Source: www.bkm.com.tr (30.01.2017)

The use of debit cards in Turkey has increased by about 26 million in the last five years. This figure corresponds to 28% of the number of usage in 2012. The definition of diffusion between ATMs and debit cards by Attanasio et al. is valid for today's Turkey. As a matter of fact, the increase in the number of debit cards by 28% compared to the increase of 33% in the number of ATMs is seen as a reasonable reason to increase the number of ATM at first sight. Eventually, the need for ATMs to use debit cards is known by everyone.

Of course, it is not the only debit cards that provide innovations in payments and transactions in the financial system. According to Allan & Santomero (2001: 278), credit cards are successful financial instruments integrated into the financial systems, such as bank cards. The number of credit cards in Turkey is shown in the chart below.

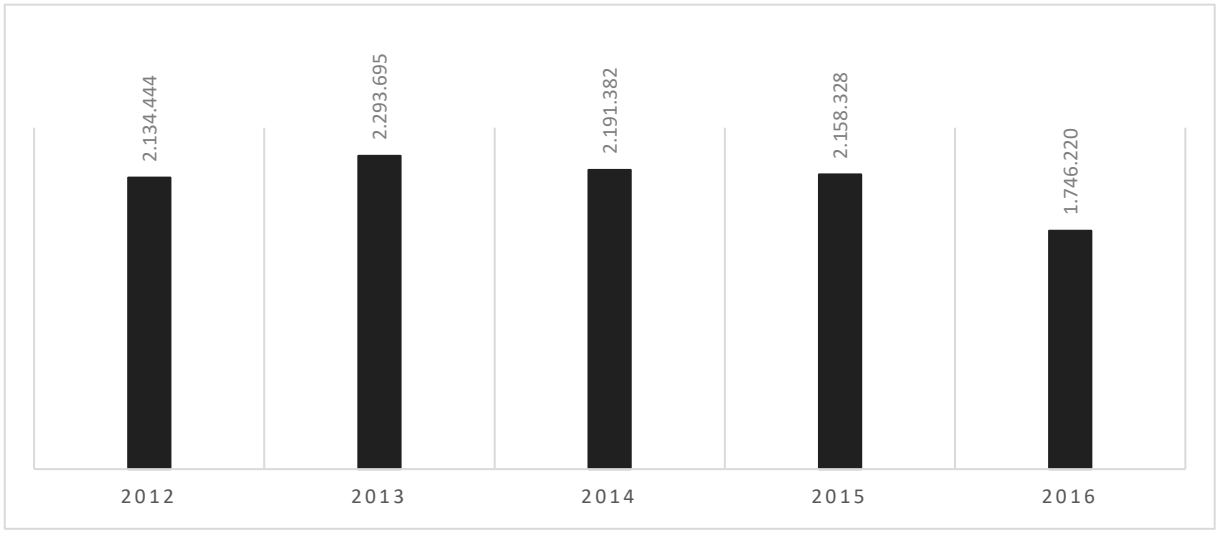
Figure 3: Credit Card Statistics (Turkey)



Source: www.bkm.com.tr (30.01.2017)

The number of credit cards in Turkey has increased by about 4.5 million in the last five years. This increase corresponds to about 8%. This increase is rather low compared to the previous debit card and ATM statistics. However, it should not be forgotten that credit cards are different from previous innovations with the debtor nature of credit cards. It has been observed in previous studies that this leads to a decrease in demand for direct money in payment systems (Allan & Santomero, 2001: 279). Another financial innovation that comes to mind when it comes to credit cards is, of course, POS devices that enable the use of credit cards. The number of POS devices in Turkey is shown in the graph below.

Figure 4: POS Devices Statistics (Turkey)

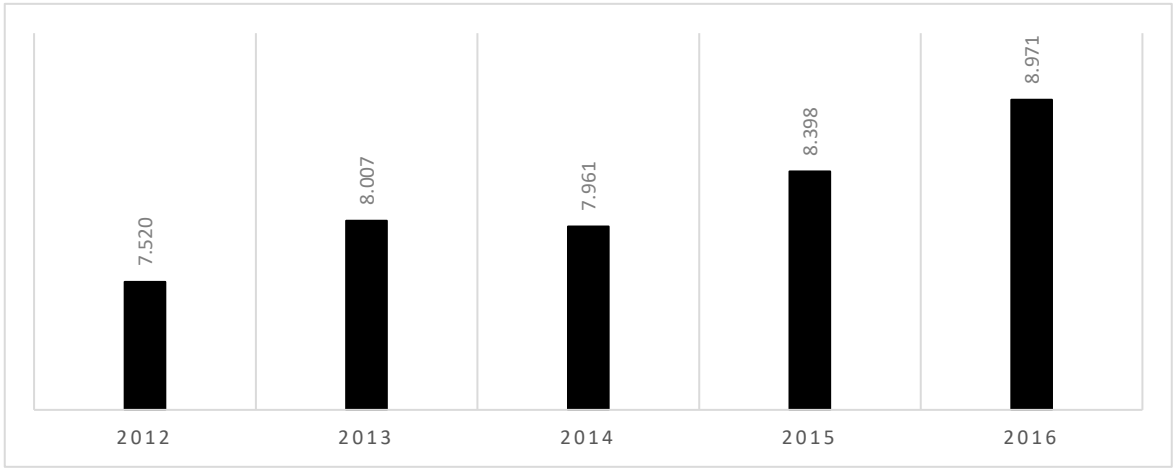


Source: www.bkm.com.tr (30.01.2017)

The number of point-of-sale devices is significantly different from previous financial innovations. The reduction in the number of 18% POS devices can be due to many things. We can say that low increase in the number of credit cards may have negative effects on a number of POS devices according to our data. However, more detailed studies to indicate that demand for POS devices may be related to annual pricing, e-commerce and market conditions (Fernandez & Valverde, 2008: 9). Of course, these variables are a matter of a different study.

The technological developments in the field of communication have caused the financial sector to develop different methods. Call centers can be counted on innovations that provide ease of consultation, execution, and follow-up of financial transaction via telephones (Frei, Harker & Hunter, 1998: 21). Within this context, it is possible to consider call centers as a financial innovation that changes the flow of work within the financial system. It is possible to think that almost every individual in Turkey has an idea about meaning and benefits of call centers. It is a fact that people in Turkey witness at least once call in a day from call centers. Thus when we want to address call centers and communications from these centers as a financial process innovation, we believe that we can use the number of call centers or the number of employees at call centers. However, the number of call centers belong to banks was not revealed, this study handles the number of employees in call centers. The figure below shows the number of staff working at call centers.

Figure 5: Call Center Employee Statistics (Turkey)



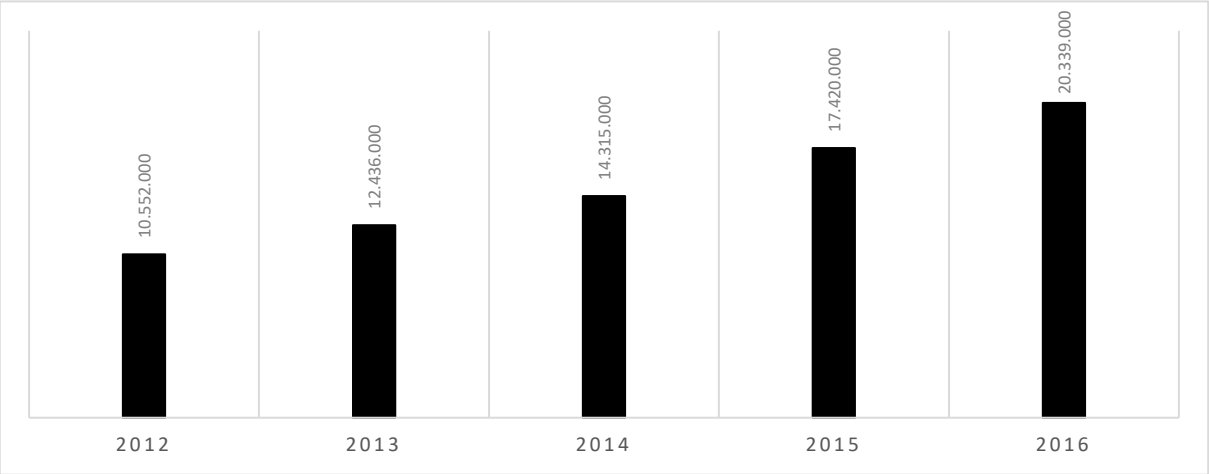
Source: www.tbb.org.tr (30.01.2017)

In the last five years, an increase of 1.451 persons in the number of call center workers has come to the fore. This increase represents approximately 19% compared to five years ago. When the subject is employment, the increase in the number of call center employees in five years can be considered quite good. As a result of this limited data,

it can be concluded that the transactions carried out by the banks' call centers are of great importance. Within this context, the innovation that banking and financial transactions carried out from call centers have brought to the market in terms of processes seem to be welcomed in the sector.

With the development of communication technologies, banking and finance transactions have not only been limited to call centers, but internet and mobile banking concepts have entered into our lives. It has not taken long for these concepts to emerge in the lives of individuals as a result of the technological innovations taking place in the financial system. Internet banking offers the possibility of providing branch facilities to customers without regard to time and place and allows more efficient use of the time allocated to customers in banks (Jayawardhena & Foley, 2000: 22). The statistics for the number of people actively using internet banking in Turkey are shown in the graph below.

Figure 6: Statistics of the Number of People Actively Using Internet Banking (Turkey)



Source: www.tbb.org.tr (30.01.2017)

The number of people actively using internet banking in the last five years has increased by about 10 million in Turkey, representing a rate of 92%. This increase seems to be too much to compare with the results of any of the previous statistics of our study. However, this increase may have been based on very different causes, just as in other issues. Folley and Sutton (1998) point out that the increase in the use of internet banking is related to the internet popularity in the community. Buhl and Will (1998) also argue that internet banking is cheaper and easier than banking transactions that require multiple communications. It can be said that the increase in population and improvements in education level with the awareness of people may influence the use of internet banking. As a result that increase in Turkey has been observed to be quite high.

5. CONCLUSION

Looking at the literature of financial innovation, there is no common definition (see Cömert & Epstein, 2016). But it would not be correct to say that the definitions and explanations made is completely independent of each other (see Van Horne, 1985; Frame & White, 2002; Tufano, 2003). As a result of the definitions and conclusions in the previous section, financial innovations can be summarized as follows; New or improved financial instruments, forms of payment, processes and methods that are cost-cutting, time-saving and risk-reducing to satisfy the parties of the financial system.

The lack of a single definition of financial innovation means that there will be no standard in the measurement of financial innovations. In the literature review of our study, we have already mentioned prior measures for the measurement of financial innovations. In this context of financial innovation concept, we have dealt with the technologies, methods, and processes developed and implemented by banks representing the Turkey's financial sector in large part, in our work as statistics representing financial innovations. Thus, the number of ATMs belonging to the banks, the number of debit cards, the number of credit cards, the number of POS machines, the number of call center employees and the number of active internet banking users are considered as statistics for representing the financial innovations in Turkey.

As a result, statistics show that financial innovations show an average increase of about 27%. Although the development of financial innovations in Turkey is seen as a fairly high-level ratio, it is not right to make a definite judgment because there is no compared analysis. It is also believed that it is possible to make various analyzes if more detailed versions of the statistical data are reached (e.g., time series analysis). If the statistical observations

in the third section are examined in more detail through empirical reviews, the factors affecting financial innovations can be learned in detail, as well as the variables influenced by financial innovations.

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