

THE MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

AZERBAIJAN STATE UNIVERSITY OF ECONOMICS

INTERNATIONAL GRADUATE AND DOCTORATE CENTER

MASTER DISSERTATION

On the topic

**“HOW DOES TECHNOLOGICAL INNOVATION IN THE BANKING
SECTOR HELP IN STRATEGIC MANAGEMENT?”**

Gaffarli Seljan Mansur

BAKU – 2020

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Elm andı

Mən, Qaffarlı Selcan Mənsur qızı and içirəm ki, “How does technological innovation in the banking sector help in strategic management?” mövzusunda magistr dissertasiyasını elmi əxlaq normalarına və istinad qaydalarına tam riayət etməklə və istifadə etdiyim bütün mənbələri ədəbiyyat siyahısında əks etdirməklə yazmışam.

BANK SEKTORUNDA TEXNOLOJİ İNNOVASIYALAR STRATEJİ MENEJMENTƏ NECƏ KÖMƏK EDİR?

XÜLASƏ

Tədqiqatın aktuallığı: İnkişaf etməkdə olan dünyada artan rəqabət, davamlılıq və qazanlı inkişaf yeni texnologiyalardan istifadə etməyi məcbur edir. Bu yeni texnologiyalar bütün sektorlarda olduğu kimi bank sektorunda da dəyişikliklərə səbəb olmaqdadır. Bazarda artan rəqiblər arasında rəqabət üstünlüyü əldə etmək üçün təşkilatlar innovasiya strategiyasından istifadə etməlidirlər. Buna görə texnoloji yeniliklər bankların iqtisadiyyatın digər sahələri kimi rəqabət şəraitində yaşaması üçün vacibdir.

Tədqiqatın məqsədi: Bu tədqiqatın əsas məqsədləri bank sektorunda texnoloji yeniliklərin əhəmiyyətini, texnoloji yeniliklər və strateji menecment arasındakı əlaqələri dərk etmək, bu sahədəki problemləri və onların həlli yollarını tapmaqdır.

İstifadə edilmiş tədqiqat metodları: Tədqiqatda toplanılmış kəmiyyət göstəricilərinin təhlili üçün təsviri analiz metodu və keyfiyyət göstəricilərinin təhlili üçün isə əsaslandırılmış nəzəriyyə metodundan istifadə edilmişdir.

Tədqiqatın informasiya bazası: Tədqiqat zamanı Deloitte, EY, KPMG və s. kimi təşkilatların, Mərkəzi Bankın və digər Azərbaycan banklarının məlumatlarından istifadə edilmişdir.

Tədqiqatın məhdudiyyətləri: Azərbaycan praktikasına bağlı statistik məlumatlarda olan çatışmazlıqlar tədqiqat üçün məhdudiyyət yaradır.

Tədqiqatın elmi yeniliyi və praktiki nəticələri: Tədqiqatın nəticələri göstərir ki, banklar texnoloji yenilikləri strateji planlarına tətbiq etməli və onu bütün əməliyyat proseslərində nəzərə almalıdırlar. Texnoloji yeniliklərin tətbiqi baxımından öndə olan banklar yeni texnologiyaların tətbiqindən müəyyən mənfəət əldə edirlər. Bankçılıq kimi maliyyə xidmətlərinin gələcəyi yeni texnologiyalardan istifadə və faydalanmaqdan asılıdır. Texnoloji yeniliklərin tətbiqi problemlərini aradan qaldırmaq və bunlardan istifadə etmək bankların, dövlətin və maraqlı şirkətlərin birgə səylərini tələb edir.

Nəticələrin istifadə oluna biləcəyi sahələr: Nəticələr banklar üçün elmi və praktik əhəmiyyətə malikdir. Çünki banklar əhəmiyyətli maliyyə vasitəçisidir və texnoloji yeniliklərin qəbul edilməsi maliyyə sisteminin sabitliyini və iqtisadi böyüməni də artırmağa bilər.

Açar sözlər: Bank sektoru, strateji menecment, innovasiya, texnologiya

HOW DOES TECHNOLOGICAL INNOVATION IN THE BANKING SECTOR HELP IN STRATEGIC MANAGEMENT?

SUMMARY

The actuality of the subject: Increasing competition, sustainability and profitable development in the developing world are forcing the use of new technologies. These new technologies are changing the banking sector, as well as all sectors.

Purpose and tasks of the research: The main objectives of this study are to understand the importance of technological innovations in the banking sector, the relationship between technological innovation and strategic management, to find problems in this area and their solutions.

Used research methods: The method of descriptive analysis was used to analyze the quantitative indicators collected in the study, and the method of substantiated theory was used to analyze the qualitative indicators.

The information base of the research: During the study, Deloitte, EY, KPMG, etc. Data from organizations such as the Central Bank and other Azerbaijani banks were used.

Restrictions of research: Shortcomings in the statistics on Azerbaijani practice limit research.

The novelty and practical results of investigation: The results of the research show that banks should apply technological innovations to their strategic plans and take them into account in all operational processes. Leading banks in terms of the application of technological innovations benefit from the application of new technologies.

Scientific-practical significance of results: The results are of scientific and practical importance for banks. Because banks are important financial intermediaries and the adoption of technological innovations can also increase the stability of the financial system and economic growth.

Keywords: Banking sector, strategic management, innovation, technology

ABBREVIATIONS

AI	Artificial Intelligence
ATM	Automated Teller Machine
E-banking	Electronic banking
E-commerce	Electronic commerce
EFT	Electronic Fond Transfer
Etc.	Et cetera
IT	Information Technology
NIM	Net interest margin
ROA	Return on assets
ROE	Return on equity

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INTRODUCTION

Relevance of the research topic: Today's age is called as age of communication and information and new phenomena related to technology are emerging. Invention, which has become one of the basic elements of the economy, is very important for companies. In terms of the production structure of enterprise-based informatics, it has a more flexible and positive effect on full-time production than traditional methods. It is achieved through information technologies and information systems that enable companies to act strategically, gain competitive advantage, and increase their performance and efficiency.

Until the end of the 19th century, only the paper, pencil, calculator and typewriter were used as technology products in the banking sector. As in all other sectors, banking sector has also been affected by rapidly developing technologies. In the traditional sense, the first thing that comes to mind when it comes to bank service is that the customers leave their job to go to the nearest branch of the bank and demand the service they want. The time and labor cost of this service to the customer is very high. In the light of these details, the use of technology tools in banking has become a necessity in today's conditions and a new era called electronic banking has begun.

Statement of the problem and learning level: Most researchers and reporters have been referring this issue. For example, Karanja David Kiiyuru (2014) has found that, technological innovations in banking sector increase profitability and growth in short and long term. Xavier Vives (2017) study has shown that, “fintech” decreases costs and improves services. Report of Celent, Dan Latimore “Artificial Intelligence in Banking” (2018) has researched impacts of “artificial intelligence” in banks. Kevin Tweddle (2018) has researched building of innovation strategy in banks. In additional Deloitte, EY, Accenture and so on. has reports on this issue.

Purposes and objectives of the research: Main goals of this research are the followings:

- Understanding importance of technological innovations in banking sector;
- Searching relationship between technological innovations and strategic

management;

- Finding problems in this area;
- Searching solving ways of these problems

Objectives, which are the specific parts of the goals above, are the followings:

- Learning historical evolution of technological innovations in banking sector;
- Analyzing current trends in application of technologies in banks;
- Overview of the near future of the bank technologies, which are expected to be used widely in the banks;
- Impacts of technological innovations on banks' ROA, ROI, net profit and customer experience;
- Searching challenges of application of technological innovations in the world and Azerbaijan;
- Giving suggestions on these challenges

Object and subject of the research: Object of research is banking sector that is applying innovative technologies and banking sector of our country. Subject of research is evaluation of adoption of innovation technologies by banks and impacts of them on strategic management.

Research methods:

- Research design: In this research exploratory design will be used to define recent and expected technological innovations in banking sector. Then to explain relationship between technological innovations and strategic management explanatory design will be used.

- Research approach: In this research, qualitative and quantitative data will be collected.

- Research tools: Data will be collected from secondary sources mainly. These sources will be reports, scientific journals, dissertation works, official websites, magazine and so on.

- Method of analysis: To summarize quantitative data descriptive analysis has been used. This method helps to find patterns. Among descriptive analysis tools mainly mean, percentage and range has been utilized. For analyzing qualitative data,

grounded theory has been employed. This method analyzes why a certain case has happened.

Research database: In writing of dissertation information of reports of famous consulting firms such as Deloitte, EY, KPMG and so on. and data of Azerbaijan banks has been used.

Research limitations: This can be difficulty of finding information related to Azerbaijan practice.

Scientific novelty of the research: This research searches gaps of applying technological innovations in banks. This is an actual issue of the modern day. This research has revealed that, to survive in competitive environment in the modern world, applying of technological innovations to the all processes of strategic management is affordable for banks.

Scientific and practical significance of the results: It is expected to find out positive relationship application of technological innovations and quality of results of strategic management in banks. Results have scientific and practical importance for banks:

- To bring new product and service to the sector and opportunities for marketing products and services;
- Development transaction volume through increasing of potential amount of customers and Keeping existing customers;
- To strengthen brand image further;
- Improving customer services through managing more effective and productive customer relations;
- Fulfilling demands in short time, which are eventuated due to changes in the market;
- Reducing amount of departments and personnel, while considering cost elements.

CHAPTER I. EVOLUTION OF TECHNOLOGICAL INNOVATIONS USED IN BANKING SECTOR, WORLD PRACTICE

1.1. Theoretical aspects of relationship between banking sector and innovation

Technology is a complex of things that help people to control physical environment or can be defined a complex of organizational information. Nowadays, technology changes fast. This requests banks and financial organizations to follow up them. Like other sectors of economy, bank and financial industry also are affected by technological innovations.

Innovation is related to disruption, industrialization and digitization (Kobler D., Schlotmann J. and Grampp M., 2017). However, innovation is a larger conception. Innovation is a new, feasible business value.

Disruption is a successful business operation of new small companies for getting a market share.

Industrialization is a changing of process through reducing costs, time and resources and so on. Industrialization and disruption is opposite. While industrialization is seen at mature level of business, but disruption is for new players to get a market share.

Digitization is a conversion of business operations through information technologies.

Banking sector is the second industry, which is affected by innovations and digital disruptions (Kobler D., Schlotmann J. and Grampp M., 2017).

Commercial banks are encountering with competition created by rivals and new banks. On the other hand, government regulations also affect to operations of banks. To cope with these difficulties and pressures innovation is a main key. The banks, which improve new technological products, can survive in difficult, competitive environment.

Except this reason, there are other factors to force banks to get, use and improve new technologies. These are as follows (Yıldız Ç., 2017):

- To reduce department, personnel, rent and operational cost which are main

financial factors in banking;

- To offer products and service with low cost and most appropriate;
- To increase market share and profitability by taking ahead competitors

Innovation strategies, which are used by firms, also by commercial banks, can be four types (Kiiyuru K., 2014):

- Product innovation;
- Process innovation;
- Market innovation;
- Stimulus innovation

Product development can be two types: Improving existing product or creating a new product, which is innovational challenge. Product innovation itself can be primary and secondary innovation. Primary innovations cause creating of new markets. These innovations are mainly original technologies. Such radical innovations are important for long-term growth. However, secondary innovations cause improving of existing markets. Product innovation helps to increase revenue, improve quality and also save costs. To keep impressive market position, products must be updated periodically.

Process innovation covers doing same operations in a different way for saving costs or time. Process innovation needs a long-term plan, structural and cultural modification and support of management.

Market innovation is about market segmentation. Purpose is to find new markets in which organization can serve better. In this process, first step is dividing complete potential market into small parts and find which of them to operate manage productively. Sometimes market segmentation covers geographical identifications. However, it is a simple way of segmentation. Defining of segmentation has a wide range of criteria, for example, demographic features or buying behavior and so on.

Stimulus innovation can be described as introducing invention by only one firm or a small number of firms. These firms can be named as first movers. First movers have some advantages. For example, if the invention is a technology, then the first mover gets the patent for using this technology, so gains the competitive advantage

against the late movers. Customer switching costs also give an advantage to first movers. However, sometimes new technology becomes very expensive and despite this customer sense of this technology becomes very little. Thereby first movers also consider about customer perception (Kiiyuru K., 2014).

Bank innovation life cycle has seven stages (Nəsibova F., 2015):

1. Developing a new bank product;
2. Entering the market;
3. Development at market;
4. Stabilization of market;
5. Decrease in market;
6. Recovery of market;
7. Fall of market.

First stage includes creation of new idea, plan, tasks and product and so on.

Entering the market stage cover the introduction of the new product through advertising. This stage can be short or long depending on impacts of advertising, competitors, sale points and so on.

At development stage sales increase and innovation spreads fast.

At market stabilization stage, volume of sale stays at same amount, any growth does not happen.

Decline stage covers decline of sales of this bank product, but there is still a demand. Therefore, bank begins to search ways to increase sales volume again.

At recovery stage, seller does some changes like price policies or promotion and so on.

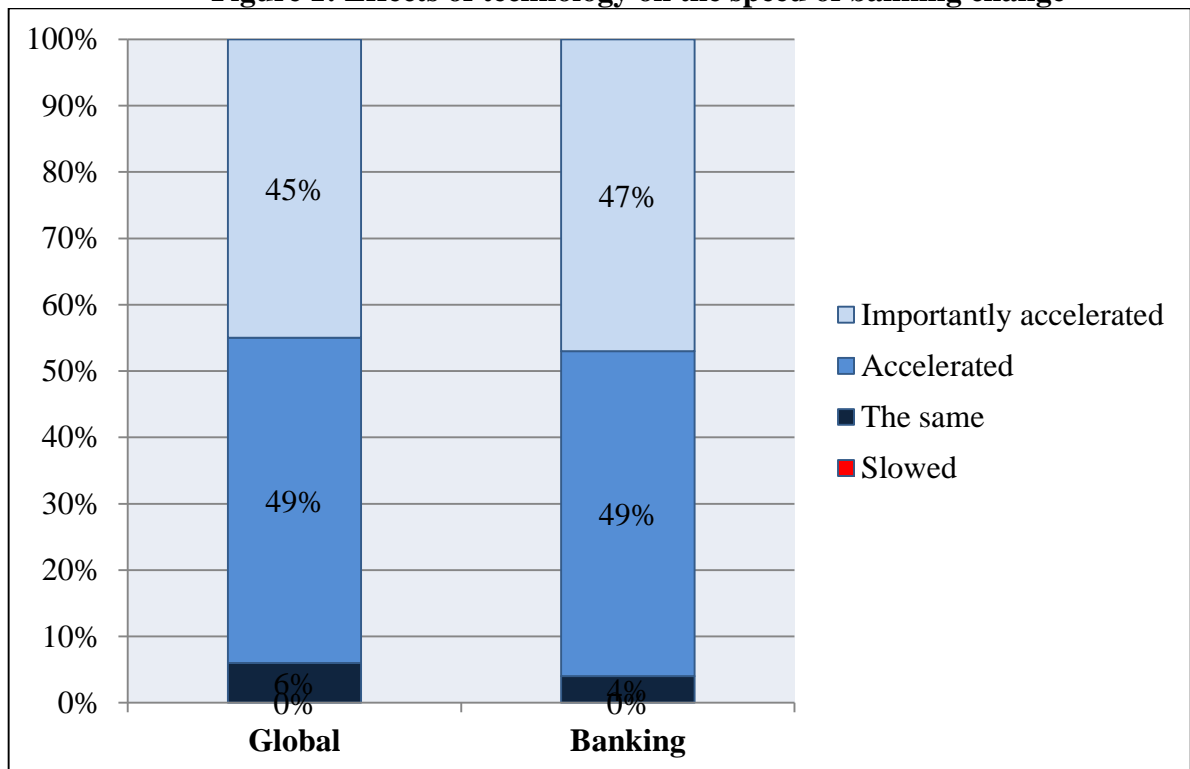
Last stage is a fall of market. This is a sharp decline. At this stage, there is no demand for this bank product and sales volume is zero.

Technological products in banking sector have been begun to use after 1960s (Yıldız Ç., 2017). Using of technological tools in banking sector became necessity and new age named, “electronic banking” has begun. Together with this age each kind of work related with money has been offering to customers every time and everywhere.

Today in banking sector being one of the sectors, which use technology in the best way, to provide demands of commercial organizations and individuals, to ensure market share in the intense competition, to offer price and financial advantages, which competitors have not is only possible with new products and service. Therefore, banks increase investment to new technologies.

According to survey of Global Technology Vision 2019, that has been inquired among 784 banks from all over the world, 96 percent of the banks answered that, using new technologies accelerated their innovation pace over past three years (Mcintyre A. and others, 2019).

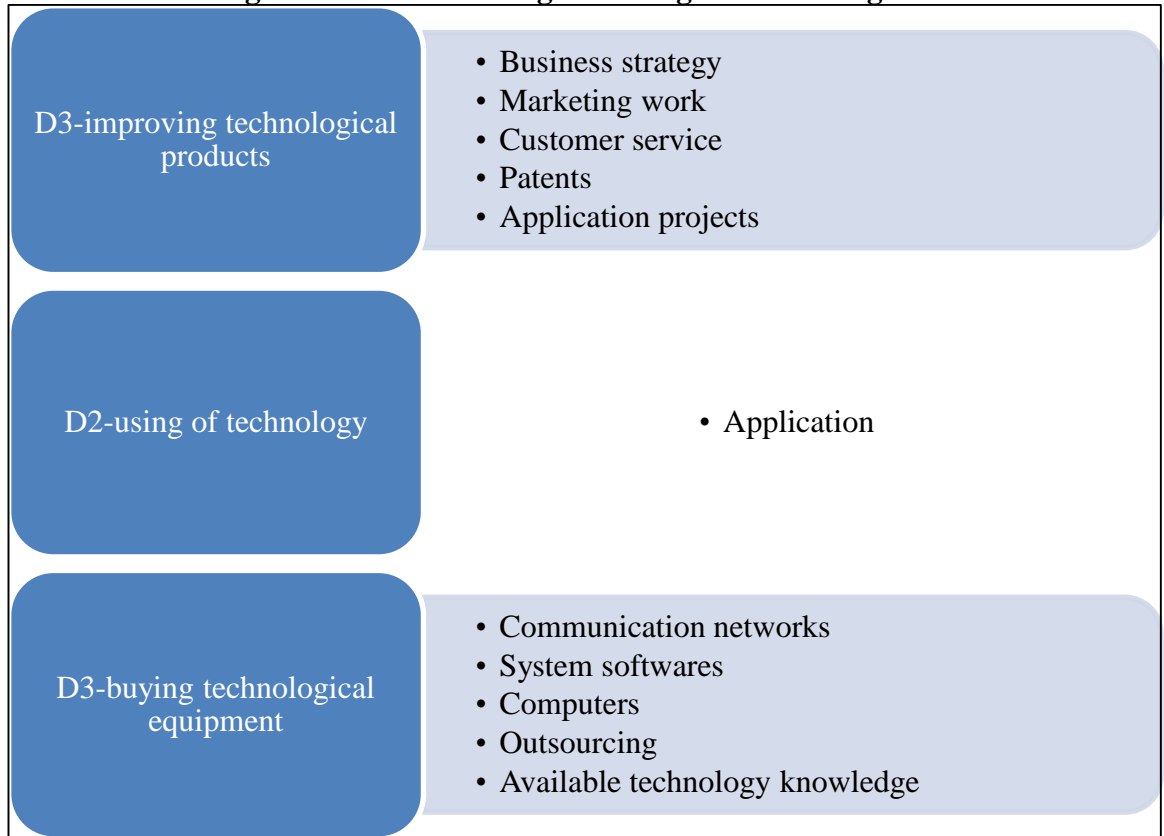
Figure 1: Effects of technology on the speed of banking change



Source: McIntyre A. and others, (2019), “The Dawn of Banking in the Post Digital Era”, Report of Accenture, p.3

Levels of using technologies in banking can be summarized in three levels (Yıldız Ç., 2017). Each of these levels, named as D1, D2 and D3 is built upon prior level.

Figure 2: Levels of using technologies in banking sector



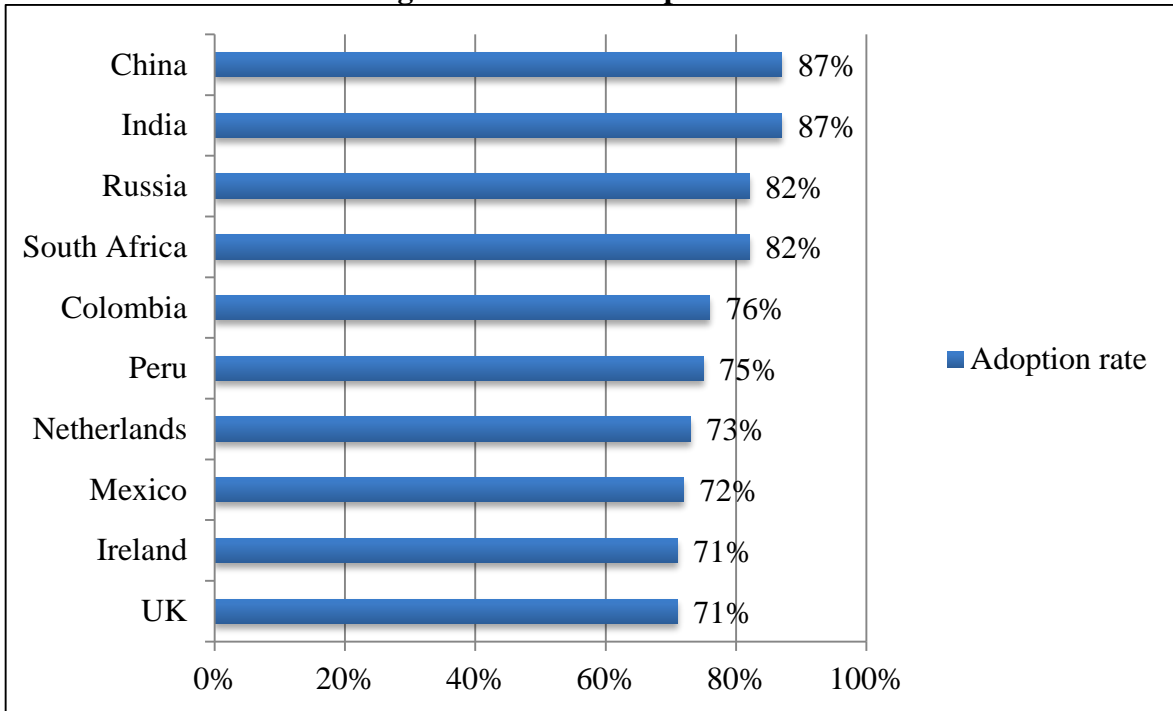
Source: Çiğdem Ç. Y., (2017), “Yeni Teknolojilerin Bankacılık Sektörüne Olan Sosyoekonomik Etkileri: Türkiye Örneği”, p.7

D1 level begins with buying technology. D2 level is a level in which competition among banks begins. In this level, main purpose is effective using of technologies, which have been bought in D1 level (Yıldız Ç., 2017). Finally, D3 level is using technologies in favor of customer utility through improving these technologies. In this phase, main subject is utility-finance analysis. Competition among banks shows itself mainly in this level (Yıldız Ç., 2017).

With using technological innovations in financial services such as banks, “fintech” conception has been begun to use. Impacts of fintech have been felt in banking sector firstly. Fintech is using of technological innovations and information in financial services (Vives X., 2017).

Today using of fintech by financial services, also banking sector is spreading widely all over the world. According to EY’s “Global Fintech Adoption Index 2019”, global adoption rate of fintech was 16% in 2015, 33% in 2017. This rate has moved upward to 64% in 2019 (Bull T., Chen S. and Chiselita D., 2019).

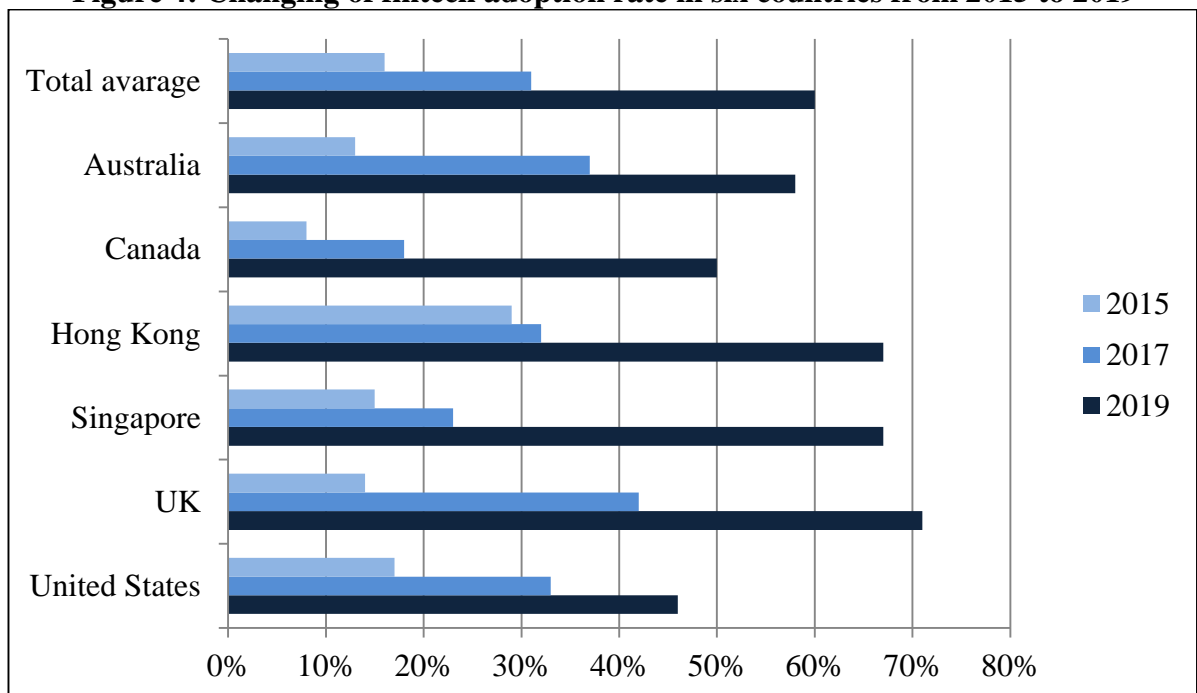
Figure 3: Fintech adoption rates



Source: Bull T., Chen S. and Chiselita D. (2019), “Global Fintech Adoption Index 2019”, EY report, p.7

Emerging markets like China and India are leader at adoption rate of fintech (87%) (Bull T., Chen S. and Chiselita D., 2019).

Figure 4: Changing of fintech adoption rate in six countries from 2015 to 2019



Source: Bull T., Chen S. and Chiselita D. (2019), “Global Fintech Adoption Index 2019”, EY report, p.8

1.2. Technologies used in banking sector

Since the past, banking industry in the front of the technological innovations. History shows us that innovation has high impact on performance of banks.

First bank was created in 1472, Italy, named “Bank Monte dei Paschi di Siena” (Cohen M., 2018). Since that time innovations in banking sector have impulse on economic growth.

For the first time, in 1564, bill lading-documentary evidence given to trade partners of transfer of goods was created (Cohen M., 2018). Using of these bills helped international trade. Essence of bill lading is same since that time until nowadays.

In 1623, November 7, Dutch East India Company issued first bond. Another revolutionary innovation in 17th century were checks (Cohen M., 2018). This way made transaction of coins and payments safer. Checks keep their importance over the world today too.

Now we are going to discuss main technology based products used in banking industry.

Electronic fund transfer (EFT). EFT can be defined non-cash payments, cash withdrawals from one account to another (Kebede S., 2013). In EFT process sender has Identification Number alone or with physical device-for example card. By using this Identification Number and confirmation, transaction process of funds can begin electronically between two accounts (Kebede S., 2013).

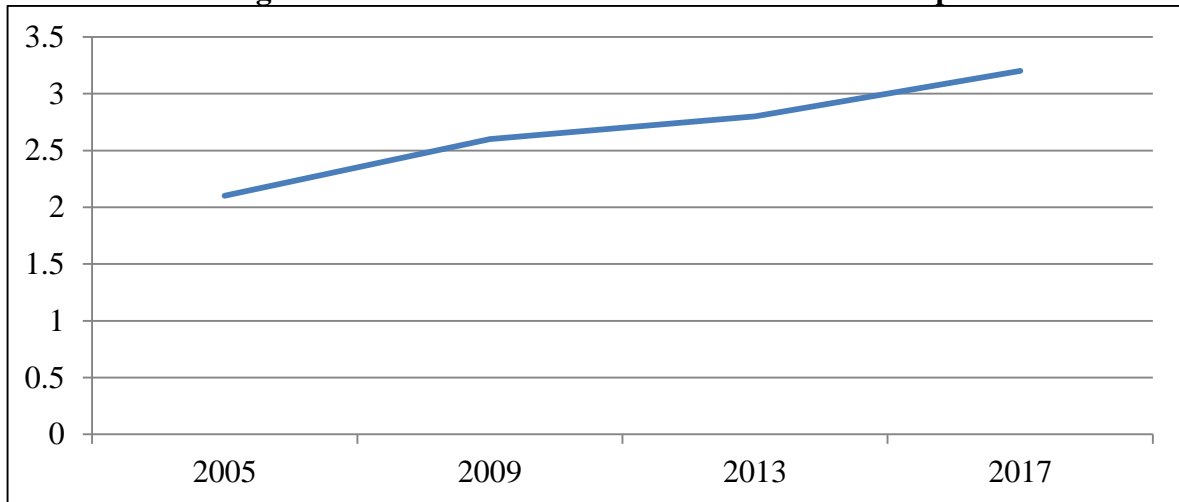
Examples of electronic relationship among banks and fund transfer systems can be seen “CHIPS”, “FEDWIRE” and “ACH” in USA, “CHAPS”, “IDX” and BACS in England, TARGET in European Union (Yıldız Ç., 2017).

Automated teller machine (ATM.) ATM is electronic device that services to customers on their banking operations for 24 hours. The first ATM was invented by Luther George Simjian in 1939, but this was simple version. The first modern and successful ATM was improved by Don Wetzel in 1968, that was used by New York Chemical Bank in 1969 for the first time (Yıldız Ç., 2017).

ATM was used in France, 1984, firstly, then in England, 1988. First ATM was launched in Turkey, 1987 (Arslan G., Yavuzaslan K., 2019). Progress in technologies and

fast globalization caused using ATMs widely.

Figure 5: The ratio of ATM to bank branch in Europe



Source: Kaya O. (2019), “Artificial Intelligence in Banking”, Deutsche Bank Research, p.4

ATMs provide ease of operation and customer satisfaction. In banking sector application of ATMs, uncover advantages in many ways. These are as follows (Arslan G., Yavuzaslan K., 2019):

- It is able to serve customers in a wide geographic area;
- It has an effect on the decrease in the density of the bank branches;
- Shifting of non-branch ATMs to other locations is possible;
- ATMs have been shown to reduce the volume of money in emissions. Because customer’s ability to withdraw money increased, he preferred to have less money in his pocket and more money in his bank;
- Banks, which have wide service network, can get additional commission income;
- Places, in which banks do not have their own departments, they can market their cards and other products by using ATMs of other banks.

Credit cards. Invention of credit cards was parallel with invention of ATM. Since the beginning of 1970s, local banks began to use credit cards. Credit cards were used in France 1984, in England 1988 for the first time (Yıldız Ç., 2017). These cards give a chance to customers to buy products and service without paying cash.

The first credit card, unlimited with certain location, was used by Diners Club,

located in the center of New York in 1950. Story behind that invention is as follows (Yıldız Ç., 2017).

The lawyer, named Frank Mc Namara invited his important customer to the restaurant, but after having dinner realized that, he had no enough cash on him. Therefore, he signed behind of his visiting card and gave to restaurant as guarantee of that he will pay bill. After this event Mc Namara founded basis of the first modern credit card with Rolpa E. Schneider and Alfred S. Bloomingdale.

However, credit card in its real meaning was launched by Franklin National Bank in New York, 1951 (Yıldız Ç., 2017).

The banks, which launched credit cards to the market have began to use interest rate for outstanding balance since 1959 (Yıldız Ç., 2017).

Internet banking. Internet banking can be defined bank operations that are done through internet from physical departments. Internet banking appeared in 1980s together with telephone banking. Those days using internet at home also spread out widely. The first internet banking application in USA is “Net Bank”. Rooted banks such as “Citybank” and “Wells Fargo” only began to use this service in 2001. In Singapore, the first bank that provided financial services through internet was DBS bank in 1997 (Yıldız Ç., 2017).

Internet banking provide basic benefits such as cost saving, doing operations without place and time limit to the customers in banking sector. Except of these, internet banking has other advantages too (Arslan G. and Yavuzaslan K., 2019):

- To bring new product and service to the sector;
- Development transaction volume through increasing of potential amount of customers;
- Keeping existing customers;
- To strengthen brand image further;
- Opportunities for marketing products and services;
- Going outside traditional banking operations;
- Improving customer services through managing more effective and productive customer relations;

- Fulfilling demands in short time, which are eventuated due to changes in the market;

- Reducing density of operations in departments;

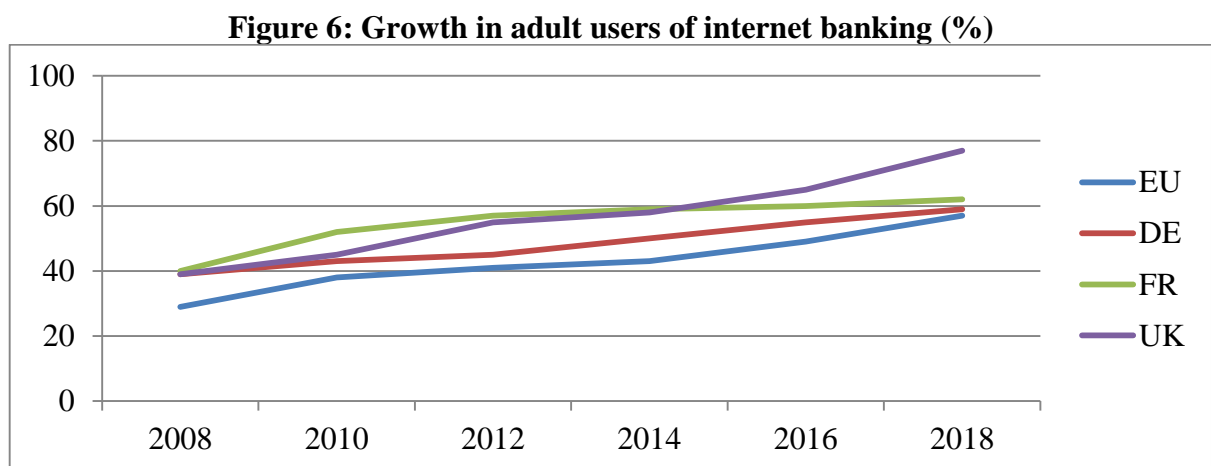
- Reducing amount of departments and personnel, while considering cost elements.

Over entering of internet into daily life together with technological innovations, shopping habits of people have also changed and been transferred to electronic environment. Thus, trade changing with technology has eventuated, buying and selling process of products and services over internet shared increasingly.

For competing with competitors, banks take advantage of technologies. Not being of time and place limits and low costs bring internet banking on the agenda (Arslan G. and Yavuzaslan K., 2019).

Most of Swiss population are using internet banking, easy payment options and e-banking solutions today (Kobler D. and others, 2015).

Internet banking using by adult population shows growth.



Source: Kaya O. 2019, “Artificial Intelligence in Banking”, Deutsche Bank Research, p.4

Operations doing through internet banking (Nəsibova F., 2015):

Controlling balance on accounts;

- Getting information on the date of funds movements (statements), exact dates of incomes and withdrawals;

- Exchanging currency through bank accounts;

- Doing payment orders (it means you can transfer money to any account through your account.);

- Ordering salary and corporative card for workers.

Telephone banking. Telephone banking is getting information by customer about his or her account and doing operations through telephone with voice signals. Using telephone banking began in 1980 in the world. The first bank using telephone banking was “Girobank” (Yıldız Ç., 2017).

Operations doing through telephone banking (Nəsibova F., 2015):

- Doing payments through your accounts in all banks;

- Getting information about your accounts, bank products and services;

- Controlling account operations and money transferts;

- Urgent transfers (for example, western union);

- Doing communal payments;

- Currency exchange between bank accounts;

- Doing credit payments;

- Getting information about deposit accounts;

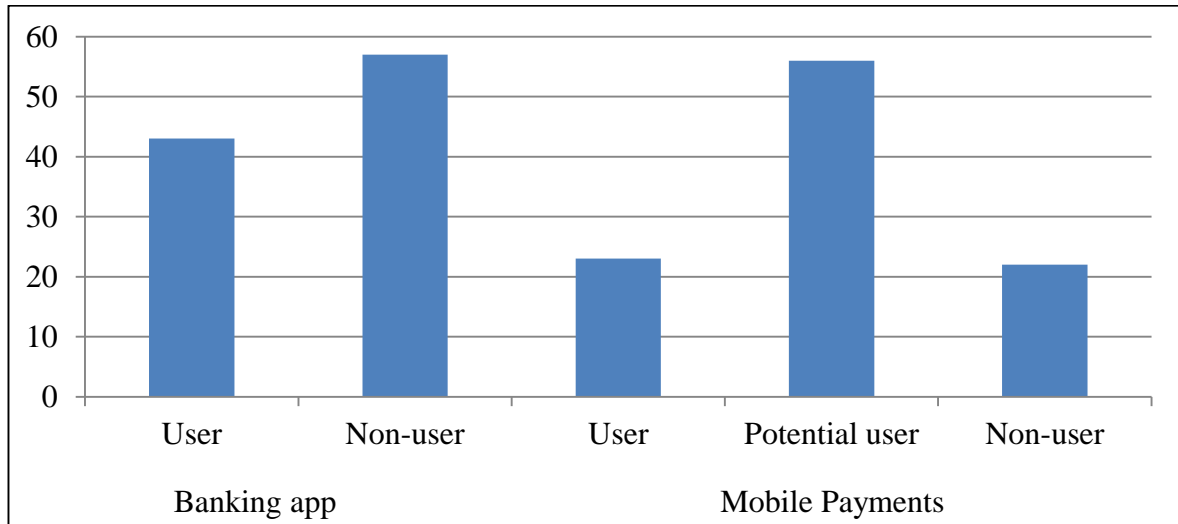
- Getting information about limit on plastic cards, increasing limit or solving exiting problems;

- When plastic card is lost, blocking it, urgent delivery of the balance on your account and open PIN code.

Mobile banking. Mobile banking is a system that gives a chance to customers for doing their banking operations through their mobile phones and tablets.

The oldest mobile banking was SMS banking. In 1999 with support of WAP, that allows using mobile web, smartphones were launched to the market and European banks began to provide mobile banking service to their customers (Yıldız Ç., 2017).

Figure 7: Mobile banking in Germany



Source: Kaya O. (2019), “Artificial Intelligence in Banking”, Deutsche Bank Research, p.5

Operations doing through SMS and mobile banking (Nəsibova F., 2015):

- SMS notification;
- Operations on account of plastic card;
- Inquiry to bank in order to get information about new bank products and services and currency rate;
- Learning about balance on bank account, in case of expiry of the card ordering new one, blocking or unblocking card;
- Payments (for example, communal, incomes into card account, payment to other card account and so on.).

1.3. Vision: Artificial intelligence (AI) in banking sector

Artificial intelligence (AI) has created new age all over the world. AI imitates the human intelligence. This spreads out all industries, also financial services like banking. Artificial intelligence increases productivity, replaces monotonous tasks, create intelligent interactions with customers and new skills. Artificial Intelligence can be described technology that can analyze environment, create patterns, interacts with environment and do complicated tasks like human intelligence (Jubraj R., Graham T. and Ryan E., 2018). AI is differed with its cognitive technologies. Cognitive technologies can be explained to do information processes like human brain. This means it can draw conclusions through big data, systematize experiences and make

practical decisions and so on.

New and non-traditional bank models and fintech components make banks customer-centric. Therefore, banks will focus on more new technological standards in near future. Banks will reshape their operations by using AI, drive the efficiency and decrease the pressure of workforce.

Banking applications of AI can be categorized in four groups (Kaya O., 2019):

1. Front office applications cover credit scoring, knowing customer, chatbots and insurance policies;
2. Back office applications include risk management, detecting frauds, capital optimization and testing stress;
3. Portfolio and trade management covers portfolio management and trade execution;
4. Regulatory compliance includes data quality certainty, regulatory technology, controlling technology and macro prudential control.

Nowadays banks use AI tools in front-customer focused and back-operational office processes mainly. Effects of artificial intelligence show itself firstly in back-office through automation. But at the same time, this can be effective in middle and front office through harmony between human and AI. Some areas, in which AI tools are used more intensive than others (Kaya O., 2019):

- Firstly, AI is mainly used for preventing fraud. In recent years, credit card fraud spreads widely because of growth in cybercrimes through online payments. To identify this type fraud activities, AI algorithms control the probability of customer's card transactions in time interval and also compare amount and location with previous ones. If any danger seems, AI technology will block this transaction.

- The second widely spread thing, for which AI is used, is Know Your Customer process (KYC). For this AI technology scan documents and control their validity through comparing with information in internet. If it sees any discrepancy, alarm it and bank employees begin to control in more detailed ways.

- Another field, in which banks use AI, is chatbot. Chatbot is a digital technology, which interacts with customers through voice or text without any need

for bank employee.

- Banks also use AI tools for exploring reports and documents and taking important points. Then AI tools create models and test them for removing mistakes and improving exactness.

- Some financial tools also evolve as AI tools. For example, robo-advisors can automate asset management and make financial plans to help customers make saving decisions. This type financial technology can find patterns from data.

To be more effective, banks mainly use AI tools to replace monotonous, labor-intensive and costly activities. The main attention is directed to risk management through KYC and fraud detection and cost reduction through robo-advisors and chatbots.

Main tools of artificial intelligence using in banking includes the followings (Latimore D., 2018):

- The core technology of AI is machine learning. Machine learning is a process, when a computer refreshes its program by using new data without human intervention. Machine learning can create insights and patterns through big data, which can be difficult for human. Although machine learning has good sides, it has some difficulties. Banks must consider these 3 things about machine learning:

1. It is not known why machine learning algorithm makes certain decision. For example, if the machine learning algorithm refuses the loan contract, human cannot define how it got this decision, what is cause for this decision. This problem has not been solved yet.

2. Machine learning algorithms need more data for making accurate decisions. Therefore, amount of data is important and lack of data can weaken accuracy of algorithm. Thus, machine learning is more fit to big banks that work with a wide range of data.

3. Human control is important on the results of algorithms, because nudges and feedbacks speed up learning and increase accuracy.

- Another main tool of artificial intelligence is “Natural Language Processing” (NLP). This is a way to communicate with customer. Customer says his/her issues

or asks queries and program converts these human words to machine understandable format, creates answers.

- Natural Language Generation (NLG) is a process producing answers to customers' queries by technology. This can be written or spoken. If it is form of speech, it must be in quality of human voice. This responses can also been a form of understandable graphics and summary of financial results.

Opportunities, which artificial intelligence provides, have four types (Kalpesh J., Abhijit B. and Monish S., 2016):

- Engagement;
- Automation;
- Insights;
- Shaping and sensing strategies.

Engagement covers personalization and understanding of customer. This system focuses on demands of each customer and creates hence links between bank and its customers. Artificial intelligence collects information about each customer, create systematic models and communicate with customers in personalized way.

For example, Royal Bank of Scotland has tested “Luvo” AI for serving customers. Another example is Swedbank in Sweden, which is using Nina web-assistant. It can answer 350 different questions and do 30000 conversations per month. UK and other international banks also use or test engagement systems (Kalpesh J., Abhijit B. and Monish S., 2016).

Cognitive automation automates decision-making, knowledge and rich language and so on. This provides faster actions, cost savings and better using of staff. Artificial automation is important in both back and middle office.

For example, “Banco Bilbao Vizcaya Argentaria” (BBVA) uses cognitive automation system “Fonetic”. This provides text management solutions in trading process and prevents mistakes. Another example is “Narrative Science”, seller in natural language AI technologies field. They automate financial reports through turning data into narrative. Credit Suisse, USAA use services of “Narrative Science” platform (Kalpesh J., Abhijit B. and Monish S., 2016).

Cognitive insights define relationship among many data then create patterns and insights. There are many apps using in personal financial management. These apps make intelligent decisions on cost savings. For example, UBS uses artificial intelligence for making automatic decisions and recommendation for important customers. Another example is DBS bank, which uses Watson for serving customers. This technology can analyze big data define relationship and create patterns (Kalpesh J., Abhijit B. and Monish S., 2016).

Sensing and shaping technologies use trends at market, information about company and create strategies. These technologies help bank to define its client through personalized information created on customer's demand and behavior. These technologies can also make insights about loans, investments or finances. For example, Goldman Sachs uses "Kensho", software. This software can answer about 65 million questions, scan reports, policies, effects of economic and political events on all over the world (Kalpesh J., Abhijit B. and Monish S., 2016).

85% of managers think that artificial intelligence will give new chances to banks through defining customer needs. They also think that these technologies will create new ways of production and service (Mcintyre A. and others, 2019).

According to "Fintech Trends India Report by PWC in 2017", expenses for artificial intelligence have reached to 5.1 billion dollar globally. "Artificial Intelligence in Banking Report by The IHS Markit" shows that, these expenses has reached to 41.1 billion dollar in 2018 and these expenses has been awaited to reach to 300 billion dollar till 2030 (<https://www.fintechnews.org/ai-in-banks-risks-and-opportunities/>, 02.11.2019).

At using AI and cognitive technologies, one of the active entrants is Indian banks. They use "Accelerators / Hackathons". For example, ICICI bank has "Technology and Digital Group", that help to improve digital banking (Kalpesh J., Abhijit B. and Monish S., 2016). ICICI bank uses chatbot named iPal, that is artificial intelligence and for interact with customers. This technology can communicate with more than 3 million customers in 6 months (<https://www.icicibank.com/Personal-Banking/insta-banking/20-years-digital-banking/index.html>, 02.11.2019).

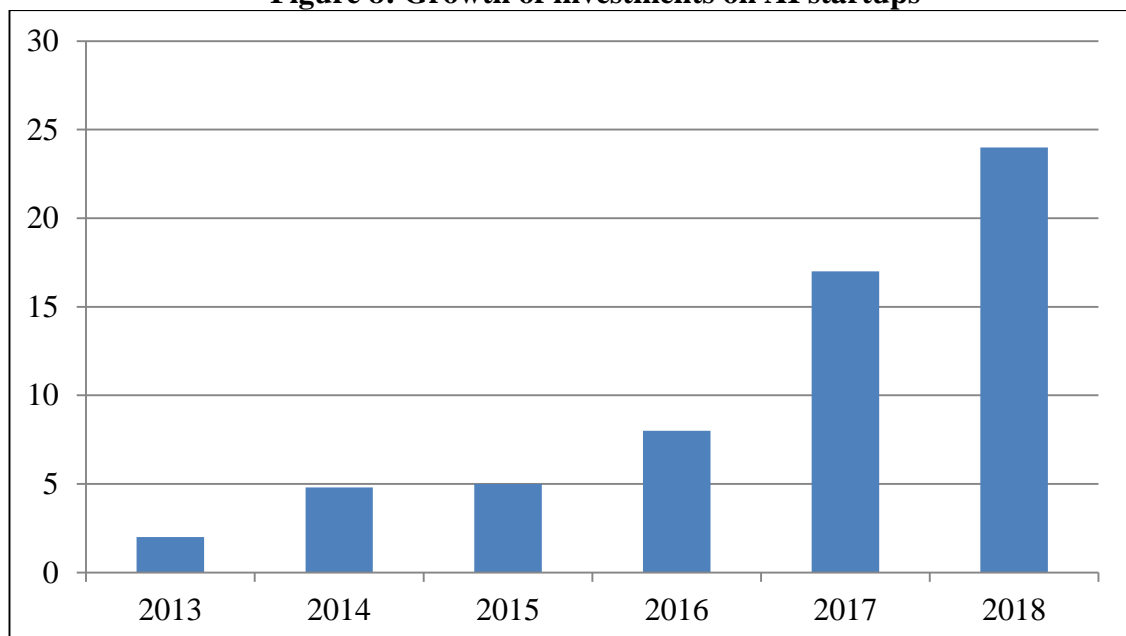
Another example is Axis bank in India using artificial intelligence, cloud technology, blockchain technology for different functions like credits, deposits, payments and safety.

HDFC bank also uses artificial intelligence for answering customers' questions and solving issues.

DBS bank of Singapore has opened Digibank using Kasisto in India. This bank is a "mobile-only" bank. Kasisto uses technology, which includes "KAI". KAI can expect and answer customer questions (Kalpesh J., Abhijit B. and Monish S., 2016).

Investments on artificial intelligence in banking sector have shown growth last years.

Figure 8: Growth of investments on AI startups



Source: Kaya O. (2019), "Artificial Intelligence in Banking", Deutsche Bank Research, p.3

While implementing AI, creating framework is important. This framework has four parts (Jubraj R., Graham T. and Ryan E., 2018):

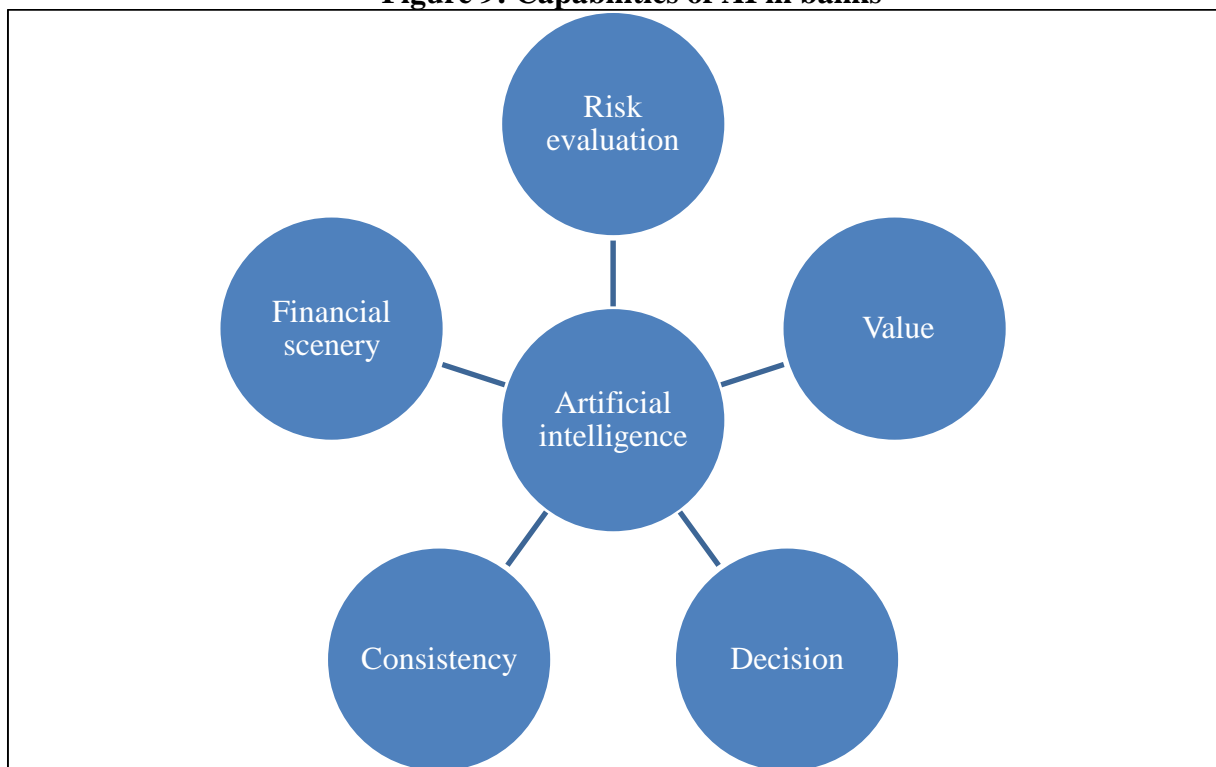
- Responsibility;
- Ethics;
- Adjustment and harmony;
- Principles

Responsibility is related to trust of staff for using of AI. Using ways of AI must

service for transparency. This is ethical use of AI. Another part is adjustment and harmony. Using AI does not mean that refusal of human workforce. This must increase effectiveness of workforce through harmony between AI and employees. AI solutions must also be auditable. Last part is principles that are guidelines for using AI.

Applying AI can prevent many unpleasant issues in banks (Vedapradha R. and Hariharan R., 2018):

Figure 9: Capabilities of AI in banks



Source: Vedapradha R., Hariharan R. “Application Of Artificial Intelligence In Investment Banks”, Review of Economic and Business Studies, Vol. 11, 2018 p. 134

- Risk evaluation: AI technologies analyze a wide range of complicated data, monitor and evaluate risks, which make loan practices easy.

- Financial scenerly: Banks using AI can adapt easily to changes in financial environment.

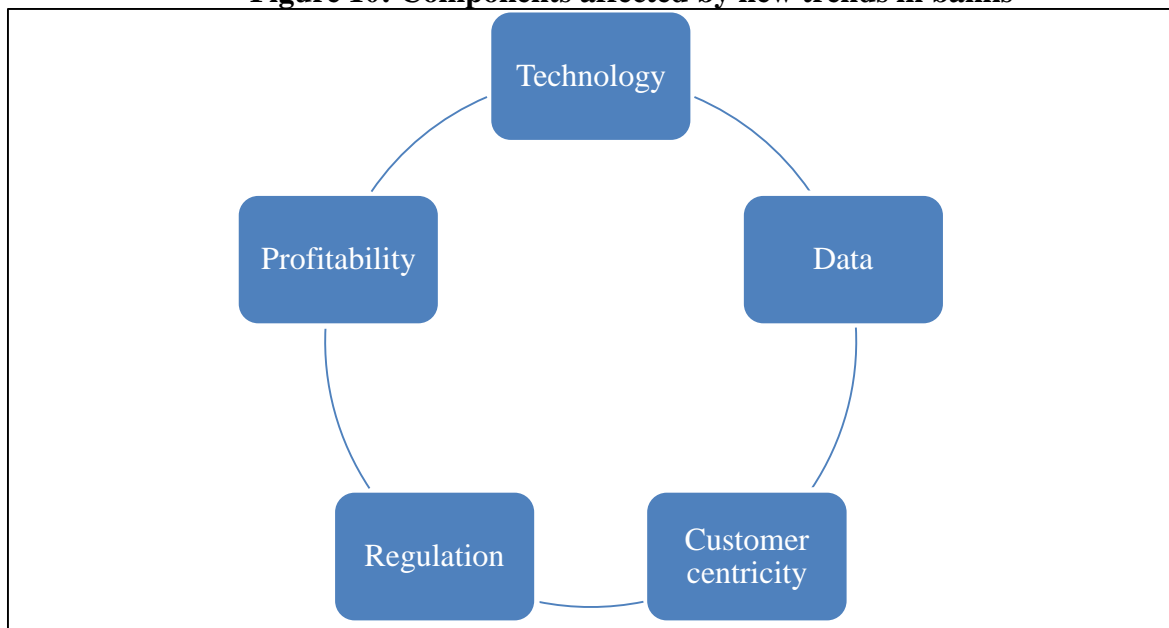
- Adding value: When repeated and monotonous tasks are done by technologies, then this reduces mistakes, increases accuracy and adds value to service.

- Consistency: This is related to be specific, systematic in activities, which causes savings and answering customer questions effectively.

- Make decisions: At all levels of management mistakes decrease and quality of forecasting increases.

Components that are affected by new trends in banking include (Vedapradha R. and Hariharan R., 2018):

Figure 10: Components affected by new trends in banks



Source: Vedapradha R., Hariharan R. “Application Of Artificial Intelligence In Investment Banks”, Review of Economic and Business Studies, Vol. 11, 2018 p. 135

- Increasing profitability through cost effectiveness, improving service functions;

- Regulations also affect to banks to adopt new technologies for adapting to new regulations related to disincentives on portfolio, decrease in liquidity and so on;

- Customer centricity: From back office to front office operations are integrated through e-platforms for ensuring effectiveness and measuring performance;

- Analyzing a wide range of data makes easy handling bank issues, getting more revenue and creating personalized customer approach;

- Last component is technology. Investment in technology, like cloud, Artificial Intelligence, Fintech and so on is important for competitiveness in financial market.

Adoption of AI has challenges too. Main challenge is adoption of AI from banks. AI seems complicated, but applying this in planned manner can make it simple. For example, create strategy, try it and put in use. In opinion of 23% of UK and Ireland banks, success of adoption of AI depends on IT expertise (Jubraj R., Graham T. and Ryan E., 2018).

Data centralization is also challenge. Banks have a wide range of data including customers' information, credit risks and operational information and so on. This data is collected in different storages. For internal control, this data must be interconnected, because, AI tool needs centralized data for evaluation. Therefore, firstly banks need understand all bank process and migrate them for controlling financial risks internally through AI audit software (Mallari B., 2019).

Another challenge is about data quality. When the data is transformed to digital format by AI through communication systems like telephone or e-mails, how can this be monitored against risks:

- Firstly, to ensure data security is important for preventing runaway of concealed information to the external party, like provider;

- Other danger is opaque algorithms. Banks must explain their AI process to regulators that their operations do not break any financial rules.

- The next danger is reputation risk. If the concealed data is used wrongly, artificial error can cause losing reputation.

- Finally, the bank using AI structure needs to follow ethical values for protecting reputation of the bank and customers.

Some external factors also can make challenges for applying of AI (Kaya O., 2019):

- For example, “the EU’s General Data Protection Regulation (GDPR)”, which has been applying since 2018, includes preventive articles related with AI decision making. Article 22 states that, decision-making must not be based on only automated process. For solving this problem, banks can use human for the final decision, at the end of process chain. Article 13 is related to disclosure problem. For example, if the AI application reject certain loan contract, customer has right to know reason. So

human intervention is important for efficiency and privacy rules.

- Another risk is bad using of data by external factors, for example hackers. Consequently, AI tools can discriminate against certain customers or hackers can take control these systems.

- For some observes, AI algorithms are more complicated to understand and visualize AI decisions.

Despite these challenges and risks, artificial intelligence keeps its importance in banks' vision.

CHAPTER II. RELATIONSHIP BETWEEN TECHNOLOGICAL INNOVATIONS AND STRATEGIC MANAGEMENT IN BANKING SECTOR

2.1. Essence and stages of strategic management

When starting strategic planning, each individual has a beautiful future plan. To reach this beautiful future, you need to take action, make decisions and use your resources for this beautiful future.

When we look at it conceptually, we say that the concept called strategy is to decide where an organization is asked to go and how (Ilseven A., 2016). Deciding that means strategic thinking. Strategy is to make a difference. Strategic management, on the other hand, is not about future decisions, but about the future outcome of a decision you make today (Ilseven A., 2016).

When an organization is left to itself, it is destined to disappear. In order to progress continuously, it should know today, the place it wants to reach in the future and the ways to reach it and direct all its resources, especially human resources.

Strategy that does not shape or target the future is not enough strategy.

In strategic management, all resources should be kept under control and decisions should be taken in order to ensure that these resources are used in the most effective and efficient manner in the face of changes in the environment.

Planning is a function of management and is important for making predictions and making decisions about the future. Planning is a tool used to achieve the desired result. It is the process of identifying the tasks to be done in order to achieve the predetermined goals and objectives and selecting the paths to be followed. Planning is a dynamic process for determining future activities from today.

Strategic planning be defined as setting goals, developing alternative strategies, and identifying strategies that will enable the organization to achieve its objectives (Karagöz H., 2016). From this perspective, it is possible to define strategic planning as a long-term assessment of alternative activities in order to help managers make better decisions.

Strategic planning refers to the path between the current position of the institution and the place where it wants to be. Strategic planning has a long-term and future-oriented perspective and it is also a discipline that shows what the organization is. Strategic planning is the main part of strategic management and guides the implementation of strategic management processes. Strategic planning covers the entire organization and it is binding. With this feature, strategic plans form the basis for the lower level plans of the enterprise.

Strategic planning has gained importance due to technological changes, the growing complexity of managerial tasks and the external environment, and the need for more time between valid decisions and results.

The main functions of strategic planning are (İsmayilov B.V., 2018):

- Reflects the main problems of the enterprise;
- Provides a framework for more detailed planning and current decision-making;
- Longer than other types of planning;
- Provides opportunities for coordination and internal resources mobilization in the enterprise at different times

The steps to be taken in the strategic planning answer the following questions (Ilseven A., 2016):

- Where are we?
- Where do we want to reach?
- How can we get to where we want to go?
- And how do we monitor and evaluate our success?

The situation analysis answers the business ‘where are we? It is based on which resources the organization currently has or which aspects are missing, that is to evaluate all aspects of the current situation in order to develop goals, targets and strategies for the future.

In the situation analysis, the following evaluations are made (Karagöz H., 2016):

- Periodical development of the enterprise;
- Legal obligations of the organization;

- Determination of the activity fields, products and services of the enterprise;
- Stakeholder analysis;
- Institutional analysis (organizational structure, human resources, financial resources, institutional culture, technological level and so on. analysis);
- Environmental analysis (the environment in which the business operates and external conditions analysis).

Vision, mission, principles, goals and objectives are parts of the answer to our second question, “where do we want to reach?”.

Vision for businesses is the place, or point, that it wants to exist in the future and thinks it will be realized. Simply, vision is a future plan.

Mission is a more concrete form of vision actually. Mission clarifies the objectives of an enterprise and provides an explanation of why it does its job.

Mission helps to find answers to the following questions (İsmayilov B.V., 2018):

1. What are we doing, and how do we differ from others?
2. What benefit does the consumer receive from our product or service?
3. What does our business life support and what does it serve?
4. Who is our consumer? What does he expect of us?

Principles are an expression of the core values of the business. Core values are essential for business decisions, choices and strategies. The principles set limits on objectives and tools. These limits help the manager to make decisions about the situations and facilitate his/her work. Principles are important for strategic management. Principles prevent making decisions each time in similar cases, ensure consistency and impartiality and contribute to institutionalization.

Goals are the results and outcomes that the company aims to achieve in the long term in order to be successful. Goals give the organization a strategic direction.

Targets are specific, detailed and measurable outcomes for achieving long-term goals.

Answer of third question, “How can we get to where we want to go?” is strategy and project. Strategy, in its simplest form, is the way to achieve goals and targets. The determination of the path to be followed in line with the goals and targets brings

along choices among the alternative options and the determination of priorities.

By analyzing the current situation of the enterprise, mission, vision, goals and targets are determined and strategies are determined and implemented in order to achieve these objectives.

It is called a project or a detailed plan in which the activities to be carried out in order to achieve the defined targets and the resources to be allocated, the place and the time are determined and who will be carried out and the priorities are determined.

In the establishment and implementation of activities and projects, the following issues should be considered (Karagöz H., 2016):

- The activities and projects that interact with each other in the process should be implemented in the correct order and the timing should be done correctly,

- The implementation of each objective should be made specific to that objective, that is, each implementation should be aimed at a specific objective and not overlap with other projects and objectives,

- The units that will carry out the projects and activities should be determined in advance when formulating the implementation strategy,

- In the implementation of activities and projects, it is important to establish cooperation and coordination between other institutions and organizations and related parties.

And finally, turn is the answer of last question, “And how do we monitor and evaluate our success?”The process of systematically monitoring and regularly reporting on the achievement of the targets set in the strategic plan is called monitoring process. Monitoring of the paths to achieve the objectives is an element that will both improve quality and prevent negligence and mistakes, and it is an indispensable stage of the strategic management cycle.

The purpose of the managers is to coordinate the necessary resources by using effective management techniques in the banks, to make the institution in which it operates a competitive position in the current environment, to provide profit return, and to continue its success and continuity in this way. Strategic management is a

process that needs to be handled in businesses over a long period.

Stages of applying strategic management in banks are as follows (Karagöz H., 2016):

- Creating strategic awareness;
- Selecting and assigning strategists;
- Strategic analysis (External and Internal);
- Strategic direction;
- Strategy creation;
- Strategy implementation;
- Strategic control.

The first stage of applying of strategic management in banks is strategic awareness. This is not a recent notion. Strategic awareness can be defined as realizing importance of long-term plans, analyzing environment and coordinating these analytic knowledge with strategies (Al-Khatib M. M., 2018). Strategic awareness is important for the following things (Al-Khatib M. M., 2018):

- Strategic awareness effects strategic decision making process in bank;
- Strategic awareness creates link between vision and decisions of bank;
- Strategic awareness finds gaps in planning process and creates consistency;
- Strategic awareness helps to realize bank's strategic goals;
- Strategic awareness has an impact on performance of banks.

The second stage is selecting and assigning strategists. Strategists are the officials responsible for strategic activities that initiate and manage the strategic management process are involved in each stage of this process. At this stage, strategists are selected and assignments and task distributions are made among them (Karagöz H., 2016).

The third stage of this process is strategic analysis. At this stage, strategists collect information about institutional environment, main actors that cover a bank at the market. These institutions can be categorized to two groups (Larionova N. and others, 2018):

- External institutions;

- Internal institutions

External institutions include legislative systems and informal institutions such as mentality, level of trust and so on.

Internal institutions include financial institutions that provide this sector with investments, resources and so on.

Some popular types of strategic analysis are PESTLE, SWOT and Porter's five forces analysis (Sanjeevan N., 2017):

PESTLE analyzes the macro environment in terms of political, economic, socio-cultural, technological, legal and ecological factors.

SWOT analysis analyzes both internal factors (strengths and weaknesses) and external factors (opportunities and threats).

Porter's five forces analysis analyze environment in terms of new entrants, bargaining power of suppliers and buyers, substitution and competitive rivalry. Michael E. Porter created this analysis type in 1979. It analyzes attractiveness of the industry.

At strategic analysis stage, benchmarking technique can also be used. It is a bank's determination of the best practice in itself or other banks and adapting it to its own organization to increase the level of performance. Types of benchmarking are the followings (Ilseven A., 2016):

- Internal Benchmarking: In this benchmarking type, the best practices are tried to be determined by making comparisons between processes within the bank;

- Competitive Benchmarking: In this method, comparisons are made with competitors and "best practices" are determined and adapted to the bank.

- Generic Benchmarking: In this method, it is tried to get general information about the structure, system and processes of banks that have been successful worldwide and they are tried to be adapted to the bank.

The fourth stage of application process of strategic management in banking is strategic direction. This is the stage of determining the vision, mission, goals and target. These components are the same with in strategic planning process.

The fifth stage is strategy creation stage. It can be considered as the most

important phase of strategic management. This phase is the stage of selecting appropriate strategies for the situation after the analysis is made and the goals are determined. It is the stage of researching of strategies after the objectives are determined (Karagöz H., 2016).

In modern age, banks try to choose the following strategies for long-term growth (Srinivas V. and others, 2017):

- Customer engagement- transferring from sales and product engaged strategies to customer centricity strategies, focusing on creating good customer experience;

- Technology management and fintech- bank CIOs must focus on technology portfolio and innovative solutions that differentiates bank from its competitors and causes cost efficiencies too;

- Reducing cyber risks - the potential risks of cybercrime increases with adoption of electron processes, so this is important issue against banks;

- Reinterpretation of workforce - in the case of increasing diversity of workforce and automation

The sixth stage is strategy implementation stage. This phase is very important in strategy, which is a working process. The implementation process actually requires much more attention than the planning process. Because the application takes more time than planning, many unpredictable problems may arise during implementation, the effects of uncontrollable factors become more evident, managers may be inadequate in determining directions to employees, may not be able to lead enough or may be noticed during implementation even if the management and organizational system are late (Karagöz H., 2016). In modern age before banks implement their strategy, they must give the following questions again to themselves (Bellens J., Meekings K. and Kennedy S. , 2018):

- Does this strategy consider about changing revenue trends?

- What is the role of this strategy in ecosystem?

- Does this strategy fit to changing digital environment?

- Does this strategy provide cyber security?

Implementation of innovation strategies in banks must be at five levels (Tweddle

K., 2018):

- Culture - this is related to welcome changes, tolerate faults, support teamwork, innovation and etc.;
- Structure - must be fast, consist of small units, support collaboration;
- Processes - must be unbureaucratic, support new ideas and make decisions in a decentralized way;
- System - must be able create new knowledge, customer relationship, reward good actions;
- People - education related to skills needed and diversity.

Main characteristics of a powerful innovation culture are the followings (Tweddle K., 2018):

- Education;
- Collaboration;
- Using cases;
- Accept mistakes with tolerance;
- Encouraging;
- Diversity.

Approaches to fintech strategies can be in three ways (Tweddle K., 2018):

- Building own way, this is technology ownership;
- Buying others' way, this is saving time;
- Partnership, this is sharing awards and risks.

The last stage of strategic management process is strategic control. Although strategic control is at the last stage of the strategic management process, it actually consists of the activities that must be done in every stage of the process. Performing these activities at every stage of the process actually reduces the error rate. Because if control is done at every stage, minor errors in that stage are eliminated before time and the system continues to function properly; however, if the control is not made at every stage, but left to the end, the slightest mistake can lead to huge time and cost losses.

The control function is carried out in three ways (Cəfərli O., 2017):

- Feedback control;
- Feedforward control;
- Concurrent control.

Feedback control is carried out after the activities in the enterprise are completed.

In the feedforward control, the inputs are checked before the work and activities take place, and errors and wrong practices that may occur while the activities are continuing are tried to be minimized. In this way, a preventive control system is created in the enterprise and efficiency increases.

In the con-current control technique, while the activities with long-lasting and repetitive activities, activities with successive and interdependence relations continue, control is carried out at certain points in the process.

As businesses operate in very rapidly changing environments, goals, objectives and job descriptions can change frequently. Therefore, the strategic control phase should be considered as a continuous effort in which work and activities are evaluated. Despite all these efforts, the strategic management process sometimes fails because of the following reasons (Cəfərli O., 2017):

- Strategic leader or manager not believing in the strategic management process, not being interested, and having opposite attitude and behavior;
- The managers in the middle and lower level management levels to stay out of this process and to deal with daily tasks;
- Inadequate analysis and decisions due to weak and inadequate team of strategists;
- Complicated and confusing strategic plans and implementations;
- Keeping strategic plans above all else and giving excessive authority to strategists and waiting for all decisions from them.

In next paragraph, this stage of strategic management in banks is analyzed in a detailed way.

2.2. Evaluation ways of innovation strategies in banking sector

In modern conditions, the implementation of innovation should be based on the forms and methods of strategic management. The formation of an effective innovation strategy involves a clear assessment of the existing forms of innovation activity, which are reflected in all fields of innovations (İsmayilov B.V., 2018). In recent years; more and more banks are internalizing innovation and forming their innovation strategy. Having an innovation strategy helps banks to use their resources effectively and focus on the most useful among the various types of innovation. However, how can we evaluate results of these strategies in banks? For this, we can try find the ways of measuring performance of bank.

Performance is the outputs obtained because of work done to achieve certain goals. In other words, performance is the process of evaluating all efforts to achieve corporate goals (Karagöz H., 2016). Organizational performance is not much different from overall performance. The performance of an enterprise is the result of its organizational activities at the end of a certain period. This result is in fact the degree to reach the goals set by the organization. It will be possible to define organizational performance, the strategy of an organization, in the competitive environment within the sector, as the sum of the decision-making processes regarding the selection, implementation and evaluation of the means, it will use to achieve its competitive advantage and make it sustainable. Organizational performance is seen as a success in the overall strategic objectives of the business, in addition to growth, sales and profitability in market shares regarding the achievement of organizational goals.

However, organizational performance is difficult to measure because it is a multidimensional and complex structure. Therefore, both objective criteria and perception-based subjective criteria must be used in performance measurements made at the organizational level. In other words, both objective and subjective criteria are used in measuring and interpreting organizational performance. The main dimensions, which create organizational performance, are the followings (Jawad A. and Bashir H., 2015):

- Effectiveness;

- Efficiency;
- Quality;
- Productivity;
- Quality of work life;
- Innovation;
- Financial performance.

Effectiveness is a concept that expresses the degree of attaining goals. The closer the planned results to the real results of the period, the more effective they are considered.

In general, the efficiency of an activity appears as the relationship between gains and resources used. The cost of the activity is determined after measuring the amount of resources to be used. The efficiency of the activity results from the quantitative comparison of input and output information.

There are many definitions about quality. These definitions examine the concept of quality from different aspects. Quality “efficiency, cost reduction, strategic thinking, non-crisis, flexibility, compliance with a program, investment in people, continuous development, future, life philosophy, respect for employees and customers, management style, increasing competitiveness, prevention of waste, usage, expectation and requirement fitness ”can be defined in different ways (Jawad A. and Bashir H., 2015).

Productivity is a situation that can be expressed in the form of getting the most output (profit) with the least resources (cost). In other words; is to obtain the most output with minimum input without deviating from the objectives and standards determined at the beginning of the period in the production process in a business. Traditionally, it can be defined as the ratio of outputs to inputs (Jawad A. and Bashir H., 2015).

There are psychological, sociological, cultural, physical and economic conditions that affect working life. The main objectives of the programs to increase the impact of the quality of working life are developing suitable conditions for the working environment from the perspective of the employee and increasing the

organizational effectiveness from the perspective of the employer.

Innovation is a long-term performance indicator. Innovation is a performance indicator integrated with the concepts of creativity, development and risk taking.

Financial performance, including profitability is the main goal for any organization. Profit is the surplus value remaining after subtracting all expenses made in the same period from the income of a business in a certain working period (Jawad A. and Bashir H., 2015).

2.3. The impacts of technological innovations on strategic management in banks

Technological banking applications provide many benefits to both banks and customers. These benefits are having a customer-oriented system, introducing new products and services, enabling new customers to join the bank customer network, and thus increasing the sales process steps, retaining existing customers, strengthening brand images, offering the advantage of reaching more customers (Zeybek H., 2018). At the same time, it can be listed as increasing customer loyalty, marketing new products more easily, facilitating customer relations, keeping up with the changes faced in the market much more quickly, reducing the intensity of the branches and the number of employees.

We have talked about four types of innovation in the first chapter. Each of these types effect to strategic management in banks inherently. For example, product innovation provides main tools to increase income. Process innovation provides tools to keep and improve quality and save costs. Improved and new products are very important for long-term growth. Market innovation helps to create new markets and increase competitive advantage. We are going to analyze impacts of each type on bank's strategic management.

Firstly, about effects of product innovation; product innovations can be as following types (Kiiyuru K., 2014):

- Creating new product;
- Improving existing product;

- Increasing product range;
- Replacing product.

Among of these types, radical and original innovative products, which leave behind the rivals, attract customers mostly, increase sales and revenues. For example, Bank of America uses chatbot, named Erica, services to customers, interacts with them and gives financial advices. This eases customers' issues, causes good customer experience and increases customer engagement (<https://www.forbes.com/sites/blakemorgan/2018/10/11/10-examples-of-customer-experience-innovation-in-banking/#33a62144729d>, 26.12.2019).

Secondly, process innovation; this can include saving costs and orientation with laws. This type of innovation can remove redundant processes, appoint workforce effectively, reduce mistakes and save costs.

Thirdly, market innovation strategies analyze environment, competitors and customers' needs and define new target segments.

Fourthly and finally, stimulus innovation gives an opportunity to the bank for getting best part of market and leaves behind its rivals.

We can analyze advantages of innovation strategies in terms of different indicators of strategic management too:

- Efficiency;
- Profitability;
- Competition;
- Customer engagement;
- Different innovation types.

Advantages on efficiency. Two important criteria for analyzing opportunities are being market-oriented and making innovation a core capability (Zeybek H., 2018). Being market-oriented reveals how a company touches the customer. To put it more simply, it is about achieving customer satisfaction and meeting customer needs. Customer-oriented innovation requires knowledge of competitors' services as well as consumer behavior.

Another means of seeing opportunities in digital banking is to analyze future

trends in the markets well. The fact that non-bank financial institutions also offer digital banking services poses a threat to the sector. Especially, the fact that e-commerce companies offer financing alternatives has a decreasing effect on the banking sector profitability. The variety of services has an impact on reducing customer loyalty.

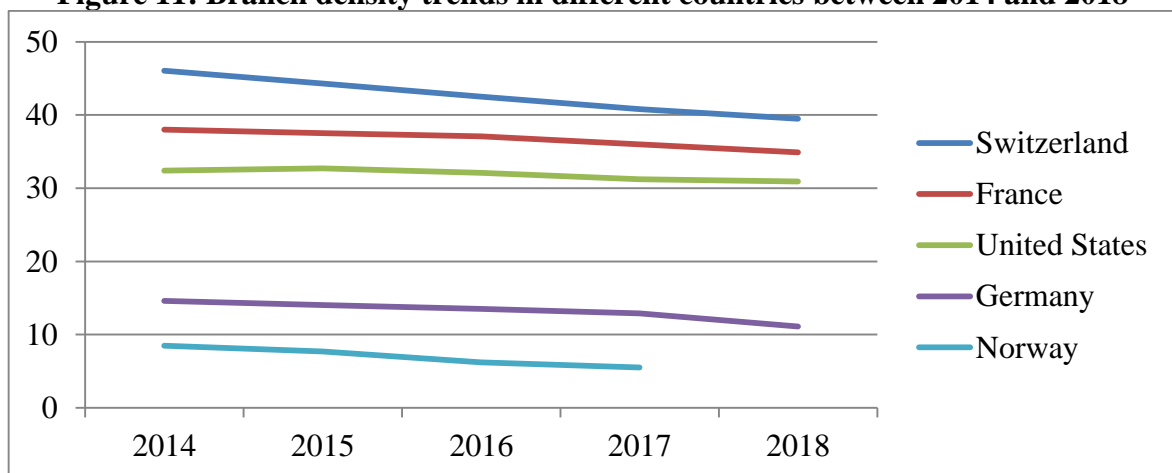
When it comes to efficiency, concepts, such as efficiency, performance, innovation and profitability come to mind. Efficiency refers to the ratio of output to input and to what extent resources are used effectively.

When it comes to banking, efficiency can be evaluated through product diversity, market structure, economic conditions, competition, technological developments, asset quality, capital adequacy, renewal of business processes and centralization of operations, alternative distribution channels, income / expense balance, mergers and branch closures (Yıldız Ç., 2017). Success and profitability are the most important indicators of efficiency, in the banking sector too. Banks primarily try to automate their manual processes and increase their efficiency. With the use of new technologies, operational work of bank personnel is reduced. Banks have the opportunity to evaluate these employees in other fields. Today, with the use of new technologies, digital banking has improved and customer satisfaction has increased with operational efficiency. This has reduced the effects of the branches. Nowadays technology causes to become online of all aspects of bank operations and decrease cash operations. This reduces importance of traditional branches. Traditional branches have highly fixed costs, so they must be very productively. Many banks have already use new concepts and refused traditional branches. It is expected that, this will change customers' behaviors. Branches will change their forms. They will be like smart kiosks, which give financial advices, offer services and so on. Bank leaders will reduce branch costs and transfer from traditional channels to digital channels (Sullivan B. and others, 2014). In many countries, bank branches have been reducing. In the United States of America 3000 bank branches have been closed since 2010. In the United Kingdom one quarter of bank branches have been shut down in 2012-2017 time period

(<https://www2.deloitte.com/us/en/insights/industry/financial-services/bank-branch-transformation-digital-banking.html>, 12.01.2020).

Bank branch density also decreases over these years. Bank branch density is average count of branches per 100000 adult people. In Switzerland, branch density was 54 in 2008, but in 2016, this indicator was 42.5. In Norway, digitalization has spread widely than most other countries. Branch density decreased in this country between 2008 and 2016 too. In Norway bank branch density was 11.7 branches in 2008. But in 2016, this indicator dropped to 6.2 bank branches. Global average bank branch density also dropped from 27.4 bank branches in 2008 to 22.9 in 2016. However, banks do not give up branches absolutely; they integrate to branches and digitalization (<https://www2.deloitte.com/us/en/insights/industry/financial-services/bank-branch-transformation-digital-banking.html>, 12.01.2020).

Figure 11: Branch density trends in different countries between 2014 and 2018



Source:https://data.worldbank.org/indicator/FB.CBK.BRCH.P5?end=2018&locations=NO-CH-US-DE-FR&name_desc=false&start=2004&view=chart, (15.01.2020)

Most of the technology investments, also AI applications made in banks are made to support efficiency, reduce costs, error and be fast.

Table 1: Expected impact of AI on cost saving in banks by 2023

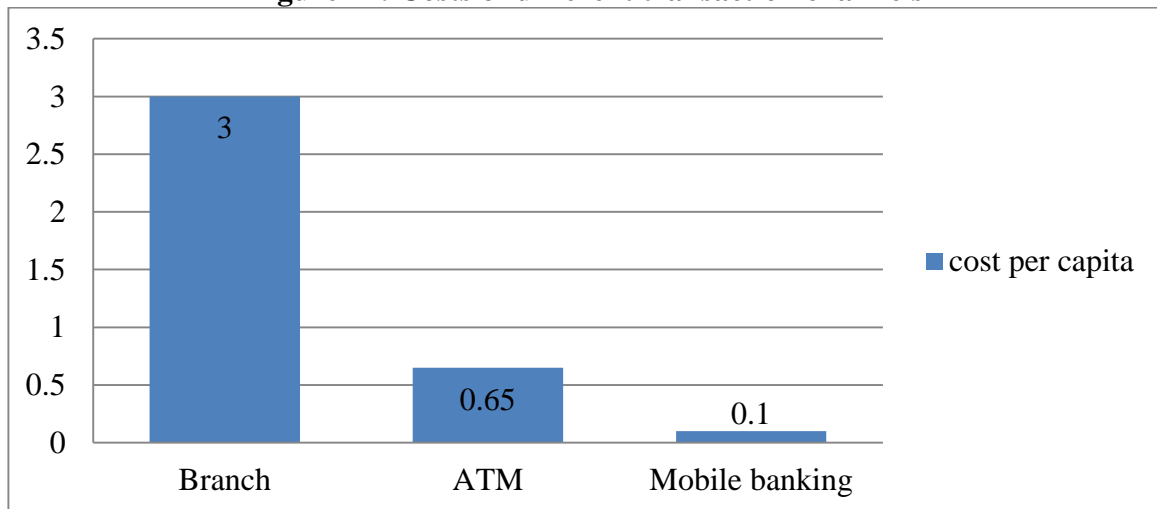
Application area	Front office	Middle office	Back office
Opportunity of cost savings	\$ 199 billion	\$ 217 billion	\$ 31 billion
Using cases	Conversational operations	Preventing risks and fraud	Credit operations

Source: <https://www.businessinsider.com/ai-in-banking-report>, (20.01.2020)

This increases the power of banks against their competitors. In addition, banks use new technological products as a tool to increase productivity.

On the other hand, digital transaction channels also reduce costs and provide ease for customers than traditional, physical transaction channels.

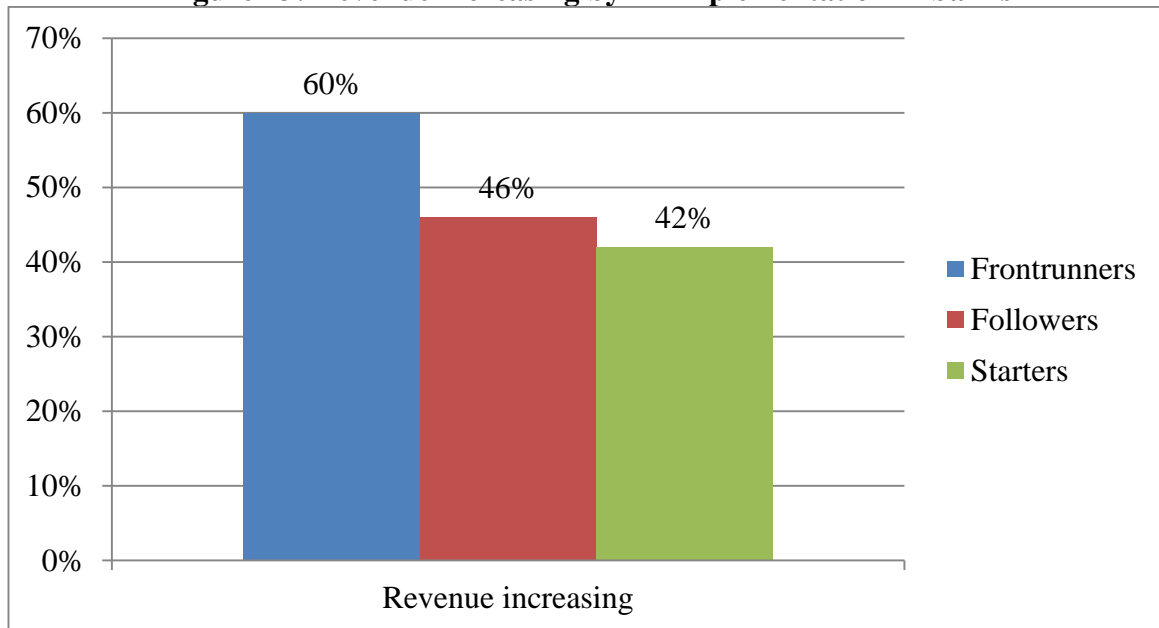
Figure 12: Costs of different transaction channels



Source: Schlich B. and others, 2017, “Innovation in financial inclusion”, Report of EY, p.11

Banks are separated to three groups in terms of implementation AI technologies: frontrunners, followers and starters. Frontrunners apply new technologies to all process of their operations from HR to service. According to Deloitte’ analysis in 2018, frontrunners have gained more better results (<https://www2.deloitte.com/us/en/insights/industry/financial-services/artificial-intelligence-ai-financial-services-frontrunners.html>, 21.01.2020).

Figure 13: Revenue increasing by AI implementation in banks



Source:<https://www2.deloitte.com/us/en/insights/industry/financial-services/artificial-intelligence-ai-financial-services-frontrunners.html>, (21.01.2020)

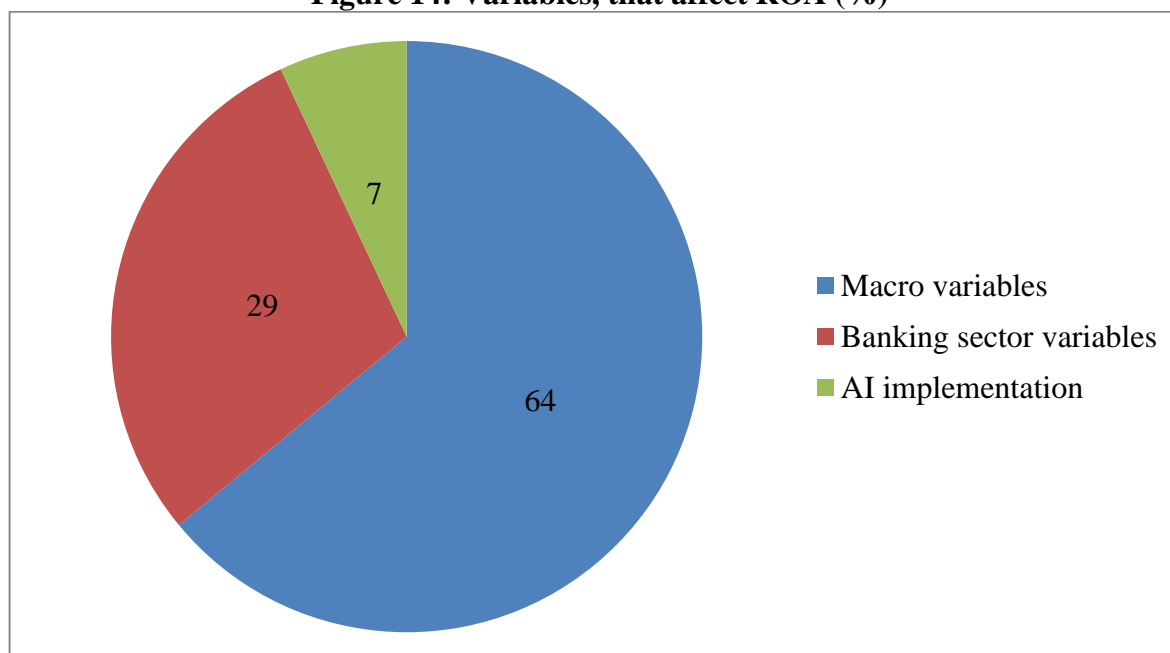
According to “Open Text” survey 80 % of banks are aware of importance and advantages of AI. Seventy five percent of respondent banks, which have over 100 billion dollars assets and forty six percent of banks, which have less than this amount of assets say that, they are using AI strategies (<https://www.fintechnews.org/ai-in-banks-risks-and-opportunities/>, 02.11.2019).

Advantages on terms of profitability. Profitability shows the potential of businesses to succeed financially. Profitability is the main reason for the existence of a business. Businesses live as long as they make a profit, and go bankrupt, when they are unable to make a profit. Profitability is extremely important for banks. The bigger the profit is the greater the power of the bank in the sector. At the same time, the greater the profit of a bank is the greater the success of the bank management. It would be correct to define bank profitability as the difference between the profit from assets and the total of liabilities and legal liabilities (Yıldız Ç., 2017).

Asset profitability and return on equity determine how strong a bank is in the sector (Kohlscheen E., Pabon A. M. and Contreras J., 2018). Return on asset (ROA) is obtained by proportioning net profit to asset total. Although asset profitability has an important place in the bank's profitability indicators, the bank's partners are more concerned with equity profitability (ROE). Equity profitability, which is obtained by

the ratio of net profit to equity, is a basic performance criterion since it shows the profitability of the capital put into the bank.

Figure 14: Variables, that affect ROA (%)



Source: Kaya O. (2019), “Artificial Intelligence in Banking”, Deutsche Bank Research, p.7

This figure shows variables, which affect ROA in banks. Data in this figure covers average data of Europe banks such as Germany, Austria, France, Belgium, Italy, the Netherlands, Sweden, Denmark, the UK and Spain between 2012-2017 time period. In this figure, three group elements are considered. The first group includes macro variables. These are GDP and inflation rate, that impact bank profitability mainly, 64%. The second group includes bank indicators like equity to assets ratio, non-performing loans and cost to income ratio. Impact variation of these indicators is 30%. Third group is AI patents. This group also positively affects bank profitability significantly, 7% (Kaya O., 2019). However, we must consider that, quality of IT solutions also is important beside AI implementations. On the other hand, this relationship can be vice versa. It means that, profitable banks can apply AI tools more widely than others can.

Another performance criterion used to measure the profitability of banks is NIM (net interest margin) obtained by proportioning net interest income (interest income-interest expenses) to assets with average interest yield (Kohlscheen E., Pabon

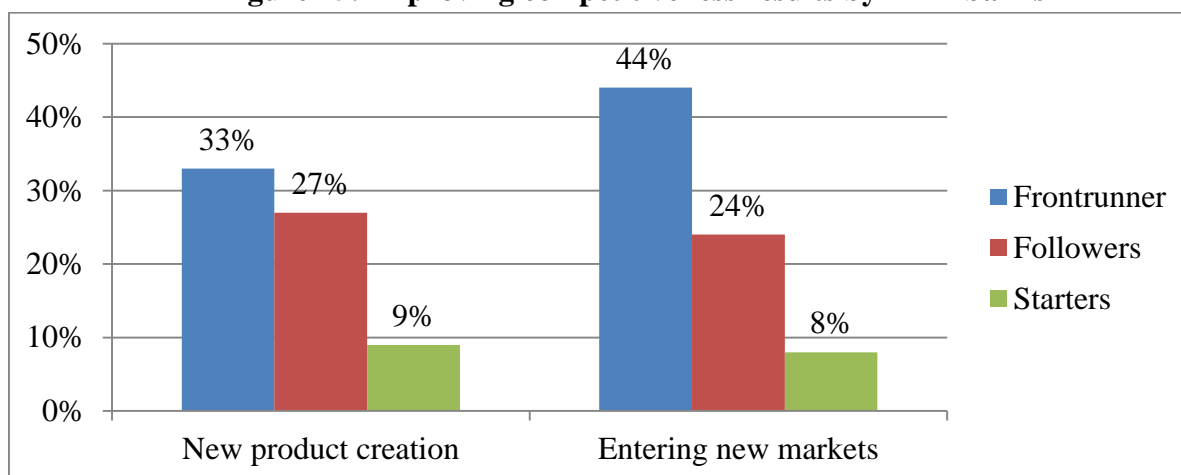
A. M. and Contreras J., 2018). Net interest margin represents the interest income earned for a unit asset. Since the high net interest margin to be calculated will affect the profitability of the bank positively, it also shows the success of the bank management in applying the principles of asset and liability management. Therefore, the net interest margin can be considered as a measure of both profitability and management effectiveness.

New technologies and the diversity of products and services, especially AI positively affects these indicators. These technologies play a major role in increasing value of these indicators in banking industry. But defining relationship between bank profitability and new technologies such as AI is difficult because of lack of micro data.

Advantages on competition. Banking is one of the sectors where competition is felt most intensely. Banks operating in a market where competition is so intense cannot determine their loan and deposit interest rates themselves. The interest rates demanded by banks from loans are determined by the market.

Technological innovations and competitiveness are interrelated and create complex system together (Kiiyuru, 2014). In modern world, banks face many competitive challenges by increasing number of rivals. To get competitive advantage they try to differentiate their products through technological innovations. This help banks to attract customers with their new products, which ease customers' operations, meet their demands and create high quality. In this case, to apply technological innovation to all stages of bank's strategic management is important.

Figure 15: Improving competitiveness results by AI in banks



Source:<https://www2.deloitte.com/us/en/insights/industry/financial-services/artificial-intelligence-ai-financial-services-frontrunners.html>, (21.01.2020)

In the banking sector where competition is intense, if a bank tries to collect deposits with an interest lower than the deposit rate set by the market, and if it tries to sell loans with an interest above the credit interest set by the market, it loses its customers, its profitability decreases and it has to leave the market. For this reason, the banks use the new technologies to reduce their costs in order to survive in the market where competition is so intense and to maintain its continuity profitably. It has to stay ahead of its competitors and develop new products with technologies. In this way, the quality and diversity of the services offered by banks will increase.

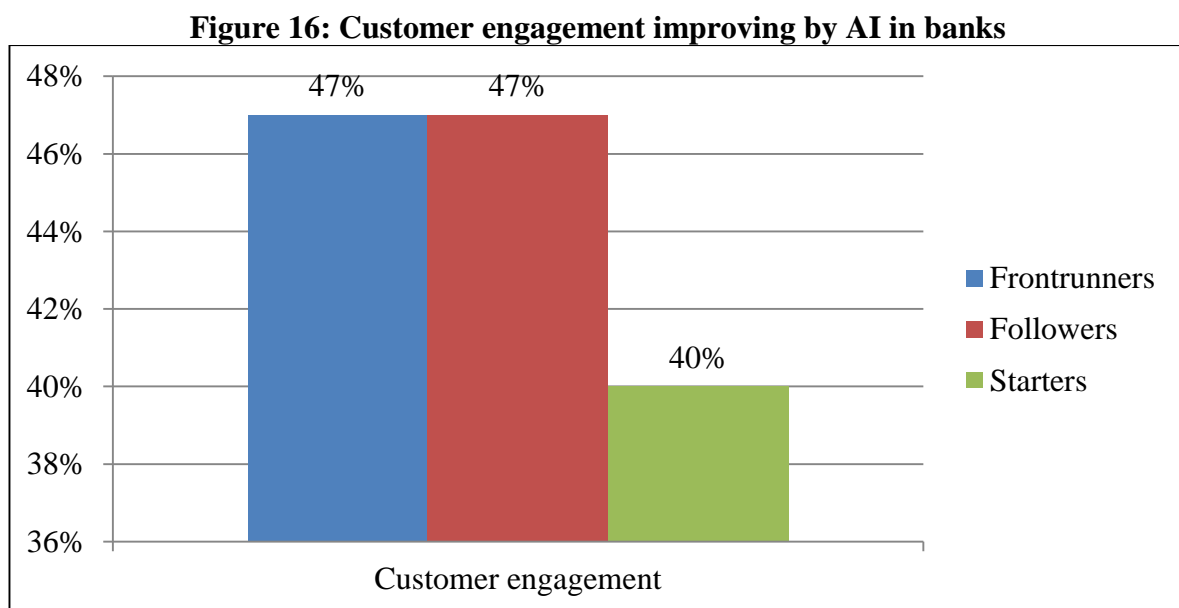
Bank branches do not define competitive advantage of banks. It is defined by banking technologies and marketing strategies in nowadays. New entrants are growing rapidly. Non-banks players also join this competition, so technologies and marketing are more important than last years. Even the banks, which have larger customer segments, must restructure their costs (Sullivan B. and others, 2014).

Advantages on customer experience. To get long-term sustainability, banks must transfer from product-centricity to customer-centricity. They must create strategies, which choose right market segments and customers. At last decades, banks improve themselves in terms of several things, but some of them have not transferred their strategies to customer-oriented strategies yet (Srinivas V. and others, 2017).

Although it seems that, most banks have realized that, using technological

innovations can help them to achieve good customer experience and increase customer engagement.

Technological innovations, especially AI technologies create strong relationship between bank and customer. For example, State Bank of India is trying to create “Automated Real Time Customer Emotion Feedback (ARTCEF)”. This technology is for analyzing customers’ expressions and behaving to customers in a personalized manner (<https://www.fintechnews.org/ai-in-banks-risks-and-opportunities/>, 02.11.2019).



Source:<https://www2.deloitte.com/us/en/insights/industry/financial-services/artificial-intelligence-ai-financial-services-frontrunners.html>, (21.01.2020)

However, technology is not enough itself to get customer-centricity. Technological innovations must be applied overall organization strategies. New solutions must be created, workforce must be managed differently and partners must be pursued to these solutions. Meeting wide and fast changing customers’ demands sustainable innovation strategies.

CHAPTER III. AZERBAIJAN PRACTICE

3.1. Historical evolution and current state of Azerbaijan banks

Banking system is one of the main institutions of the financial system of the Republic of Azerbaijan and it is a self-regulated system. According to Article II of the “Law of the Republic of Azerbaijan On Banks”, the banking system of the Republic of Azerbaijan consists of control body of the financial markets, the Central Bank of the Republic of Azerbaijan and credit institutions ("Banklar haqqında" Qanun, 2004).

Banking in the AR does not have a long history and rich experience, but it has unique features. Generally, the formation and development of banking in the AR can be conventionally divided into the following stages, taking into account social and historical events: Ancient and Medieval Stage; 1860-1918: Formation of the first banking institutions; 1918-1923: at the center of influence of political processes; 1923-1991: activities of the Azerbaijan branch of the USSR State Bank; From 1991 to the present: the period of independence (Əzimov İ., 2018).

Researches show that the credit-banking system in Azerbaijan was formed in the late 19th and early 20th centuries. At the beginning of the twentieth century, the convergence of banking capital with industrial capital demonstrated the intensity of capitalist development. The rapid development of trade and industry has led to an increase in the number of shareholders - commercial banks and their role in the economy to a new level. Banking operations have changed significantly.

It should be noted that Russian stock market capital was actively involved in the creation of Azerbaijan's credit system. In 1916, there were 12 Baku branches of Russia's largest banks. An important event in such circumstances was the launch of the Baku Commercial Bank on April 15, 1914 (Haqverdizadə N., 2018).

The monetary policy and banking in the Republic of Azerbaijan began in 1918 with the formation of the first government of the republic, which declared its independence. The Government of the Democratic Republic of Azerbaijan worked to establish an independent Azerbaijan State Bank since its establishment. Although

works were made in this area, this work was delayed for objective and subjective reasons. The establishment of the State Bank of Azerbaijan was discussed at the meetings of the Parliamentary Committee on Economy. On May 26, 1919, at a meeting of the Government of Azerbaijan, it discussed a bill to establish a bank. Because of parliamentary discussions, the Charter of the State Bank of Azerbaijan was approved on 19 September 1919. On September 30, 1919, the solemn opening of the State Bank of Azerbaijan was held in Baku. The establishment of the state bank played a big role in the formation of the monetary system of Azerbaijan. Its total turnover for May 1, 1920 was more than 1.354 billion manat. The first head of the State Bank of Azerbaijan was Mark Abezgaуз (Haqverdizadə N., 2018).

Since 1922, the State Bank was operating as a single emission center and currency regulator for the country. As soon as the Bank's emission unit is established, money circulation regulation is improving.

With the beginning of the World War 2, additional measures were needed to mobilize financial resources. The State Bank has had exceptional duties since the beginning of the war: to seek resources for lending to the military industry, to ensure regularity and accuracy of settlements between farms, to provide financial assistance to rear enterprises, to limit monetary emissions, to provide the financial needs of the army.

As one of the large-scale post-war activities, money reform is particularly important. The implementation of monetary reform began in December 1947, and the process was completed in a very short time.

Economic reforms in the former Soviet Union from 1965 to 1967 were related to the transition to a new system of planning and economic stimulation. Of course, the activities of banks also had to be restructured in order to increase production efficiency. Bank resources were primarily aimed at the development of advanced production, increasing the output of products required for the national economy, and the expansion of paid services (Haqverdizadə N., 2018).

The establishment of cooperative banks in the country since 1988, and the transfer of sector banks to commercial banks from 1989, had little effect on the

situation. The last reform of the credit union system was adopted in December 1990 with the adoption of two laws, Banking and Banking Activities in the USSR ”and“ On the State Bank of the USSR ” (Haqverdizadə N., 2018).

Like all new independent states that emerged in the post-Soviet space after the collapse of the USSR, Azerbaijan also defined the transition to a market economy. However, in the early years of these reforms, the changes in the economic system were not consistent and were largely unsystematic. Serious mistakes in the management of the economy in the early 1990s, the disruption of traditional trade, finance, supplies and communications systems created a complete chaos in the economy. Since the end of 1994, the first steps of systemic reforms have been taken (Səlimzadə N., 2016). The first ATMs in Azerbaijan also appeared in 1991-1995 with the establishment of private banks.

The development of the banking system in Azerbaijan can be divided into 3 parts (Haqverdizadə N., 2018):

1. Taking the first steps for the establishment of the Central Bank (the National Bank for the said period) during the period 1990-1992;

2. Hyper inflation and the development of the banking system in a changing environment, 1992-1994;

3. The period of macroeconomic stability after 1994, in which, developed banking system has been attempted to get. As a result, the bipartisan banking system, based on market rules, has been established (Haqverdizadə N., 2018):

- Phase I - Central Bank of AR (formerly known as the National Bank);

- Phase II - Commercial banks and other non-bank credit institutions.

To determine the strategic development path of Azerbaijan, to establish working mechanisms in this direction, to establish national solidarity and to create a new innovative approach based on experience belonged to The National Leader of Azerbaijan, Heydar Aliyev.

The oil strategy and concept, that the President of the Republic of Azerbaijan Heydar Aliyev founded in 1994 and successfully implemented in recent years, has laid the foundations for modern Azerbaijan's foreign economic growth. These

foundations have attracted sufficient financial and other resources to the Republic. The most important achievement is that in the period of independent construction in Azerbaijan a new model of economic reform and development, the Azerbaijani model was created. President Ilham Aliyev, who was elected President of the Republic of Azerbaijan in 2003, has continued the policy of the National Leader to attract investments in the non-oil sector. In order to eliminate artificial barriers to the activities of investors and businesspersons, the single window system has been introduced in many areas of the economy (Əzimov İ., 2018).

Since the beginning of 2000, the activities of the Central Bank have been focused on the development of macroeconomic environment in the country, the quality of banking management and the implementation of measures to establish the banking sector in line with international standards. In 2000-2003, efforts were made to synthesize and expand banks to improve the quality and reliability of the banking sector, and to impede the work of weak banks. Thanks to these operations, the number of banks operating in the banking sector fell to 46 (Haqverdizadə N., 2018).

The practice of developed countries, as well as countries with a transition to a market economy, shows that in recent years banks have been able to use electronic machines, replacing manual labor, and using more modern and efficient automation systems, despite their current spending increases. As a result of these actions, banks will be able to connect customers with deposit accounts, shopping centers throughout the business day, exchange their money and securities, expand their cash registry services, and deploy a secure, easy-to-use computer system, access to all kinds of information. As a result, the bank's working capital increased and its labor capacity reduced. This direction of development will lead to the fact that the bank and the client will not meet soon. The service between them will be fully automated and will be implemented through computer terminals and telecommunications systems. It is true that the application of these systems will increase the capital capacity and lead to the closing of more than one job site. Large cycle of banking activity requires urgent application of automation, computerization and technical equipment innovations. In order to fulfill this task and increase the volume of

services, banks will have to create more sustainable banking services in search of new locations, new markets (Nəcəfov R., 2016).

Innovation in the banking sector becomes the most important condition for achieving the competitive advantage of commercial banks in the global financial market, where credit institutions of the countries of the former USSR are in most cases inferior in competitiveness to western ones. With regard to the banking sector, the final result of innovation is a completely new or improved banking product that is marketed and a process that is put into practice. We are talking about creating a banking product (banking technology) with more attractive consumer properties compared to previously proposed. The use of banking innovations is aimed at increasing the ability of a business to open up new areas of development. Their main purpose - taking into account the growing competition in the banking services markets - is to attract new and retain existing customers, which is expressed mainly in expanding the range of services and improving the technologies for their provision (Муршудли Ф., 2018).

One of the main tendencies of the Central Bank's work was the establishment and launch of the National Card Processing Center, which promoted retail banking in the country, the growth of plastic card production, and many of them with plastic card services. With these developments, the acceleration of non-cash settlements in the economy and the attraction of independent equipments to banking turnover was accelerated. With the advancement of the use of electronic equipment in the Republic of Azerbaijan, banks began to develop new types of services for the state market, such as Internet banking, SMS banking, Internet trading, in accordance with the demand of the time. Other key areas of the banking sector's progress in the country during this period are: "Centralized Credit Registry" to reduce credit risk in banks by getting information about customers' credit repayment, "Deposit Insurance Institution" to facilitate the circulation of cash in the hands of the population and, finally, the "Mortgage Institution", which was selected for its significant impact on the development of the country's economy (Haqverdizadə N., 2018).

As noted in, the economic growth of Azerbaijan, observed in 2004-2014, as a

result of successful reforms in the non-oil sector against the background of an increase in oil revenues, had a positive effect on its banking system, and contributed to the strengthening of positive trends in this area. In terms of the main quantitative and qualitative parameters of its development, undoubted progress has been achieved here: the capital base and total assets of credit organizations have been increased, their structure has improved, the total amount of corporate deposits of the population has increased, there has been a roll towards longer terms, increased availability of credit resources, etc. These processes were accompanied by improvement of the legislative and institutional framework of this sector of the country's economy.

In general, thanks to the effective measures implemented over the above period, the banking system of Azerbaijan has demonstrated in these years resistance to economic shocks in world markets. However, the fall in oil prices that began in the second half of 2014, which accounted for more than 90% of the country's exports, had a negative impact on its banking sector. The resulting sharp reduction in the existing channels for financing the economy and a corresponding reduction in aggregate demand, as well as an almost twofold devaluation of the national currency and dollarization, significantly limited the profitable business environment of banks and led to their low liquidity. Under the current conditions, the need for innovative development of the banking sector of Azerbaijan has significantly increased.

Customs-cards are a modern, fundamentally new tool for the MBB in the Azerbaijan Republic, as in some other post-Soviet countries (for example, Russia). Their introduction allows exporters and importers to make all types of customs payments by bank transfer directly at customs posts and terminals at the time of customs clearance, provides complete reliability of transactions, helps simplify procedures and increase transparency in the field of customs (Муршудли Ф., 2018). Participants using this tool have the opportunity in real time to pay customs payments from their bank account, to control the movement of funds and the execution of payments. In order to make customs payments through bank cards in all customs authorities of Azerbaijan, work is underway to install POS terminals.

Over 10 Azerbaijani banks are connected to this system, headed by the International Bank of Azerbaijan, which initiated the introduction of this service for foreign economic activity participants. Currently, the volume of payments made using customs cards is about 40% of all customs payments received by the State Customs Committee of the Republic of Azerbaijan (Муршудли Ф., 2018). At the same time, it must be noted that customs cards, despite their undoubted advantages (simplification and acceleration of settlements on customs payments at the time of filing the declaration, elimination of delays with cargo disengagement, etc.), have not yet received due popularity among the people and the dynamics of the development of this banking technology is still insufficient. One of the main reasons for this situation is, first of all, the high tariffs for servicing customs cards, and therefore they are used mainly by companies that regularly receive from large exporters. In addition, it should be noted the inertia of entrepreneurial structures that do not seek to change traditional relationships with customs authorities, the inability to use the card as a universal means of payment. The other negative aspect in the process of active implementation of the customs card is also weak advertising of this service by banks. Another element of inhibition is the elementary shortage of professional personnel trained in this technology. The long-term (before the appearance of the customs card) system of accounts for one person is more preferable and practically not required for additional financial investments - in addition to a wide range of advantages. There are also subjective reasons for the lack of demand for customs cards from importers: mistrust of new technology, concerns about possible failures when using the card to pay customs payments and untimely receipt of money at the customs account. The elimination of the above problems will contribute to increasing the efficiency of banking services for foreign economic activity, creating favorable conditions for entrepreneurs to work and will ensure the efficiency and transparency of the process (Муршудли Ф., 2018).

One of the priorities in Azerbaijan today is to increase the volume of non-cash payments. Plastic cards have more features. The use of a cashless payment system frees consumers from the responsibility of carrying large amounts of cash,

eliminating the loss of additional time during trading. Since non-cash payments are made by card, accurate accounting of all transactions is carried out, ensuring accurate determination of taxable income. Cashless payments are, above all, a fight against corruption. The introduction of a cashless payment system also means that our money is stored on cards, which is a more reliable means. We are more likely to lose or steal cash. When the card is lost, the owner applies to the relevant bank and returns the money by buying a new one. But when cash is lost or stolen, we have to get rid of it forever. Although the turnover of non-cash payments in Azerbaijan is not large, experts believe that cashless payments are a time-consuming reform. For this, businesses need to be ready, and citizens need to get used to plastic cards. Recently, the number of credit card users for the campaigns of a number of banks has increased, which is possible due to the limited credit cards provided by banks (Həsənli G., 2016).

In the “Strategic Roadmap for the Development of Telecommunications and Information Technologies in the Republic of Azerbaijan” approved by the Decree of the President of the Republic of Azerbaijan dated December 6, 2016, the Central Bank of Azerbaijan together with relevant government agencies studied international experience and prepared relevant proposals. According to the decision of the Board of the Central Bank dated 28.12.2016, in order to comprehensively diagnose the fundamental factors contributing to high cash flow in the country's economy, to measure the volume of cash economy in leading sectors of the non-oil sector, to reduce cash turnover in the economy and develop non-cash payments cooperation has been started with “MasterCard Worldwide” international card organization (<https://www.cbar.az/page-142/nagdsiz-azrbaycan-layihisi>, 17.02.2020).

Within the framework of the project, the staff and experts of the Central Bank and MasterCard Worldwide studied the national strategy and current payment ecosystem for digital payments, identified macro and micro factors that stimulate cash payments, and assessed general methods of migration from cash to digital payments. In order to implement this work, the Central Bank held meetings with government agencies, commercial banks, organized surveys and interviews with 560

organizations and 700 consumers in Baku and 9 regions. Also, the work on defining the strategy in the main areas, studying the experience of developed countries in this field, clarifying the recommendations, analyzing their impact, as well as assessing and prioritizing the ease of implementation were considered. Discussions were organized with the participation of 6 Ministries, more than 25 financial institutions, 10 private sector participants and 7 other government agencies, and the experience of more than 30 different countries was studied (<https://www.cbar.az/page-142/nagdsiz-azrbaycan-layihsi>, 17.02.2020).

“State Program on Expansion of Digital Payments in the Republic of Azerbaijan in 2018-2020” (here in after - the State Program) approved by “the Decree of the President of the Republic of Azerbaijan No. 1138 dated December 6, 2016 Map” was prepared in order to implement the measures envisaged to expand digital payments. For this purpose, strengthening the institutional and legal framework of digital payment services in the country, expanding the range, quality and scope of these services by increasing infrastructure capacity, as well as popularizing their use are the main strategic priorities. Although a number of steps have been taken in recent years to develop digital banking in Azerbaijan, some banks still do not provide e-banking services, and in some banks, the services provided do not allow to conduct transactions, only for information purposes. There is no single identification standard for remote verification of a customer in a virtual space. Customers can conduct banking transactions only using an enhanced electronic signature. The development of digital banking in Azerbaijan will directly help reduce banking costs, "compensate" for the weakness of the network of branches and divisions, increase the range and quality of services, and expand non-cash transactions. The following measures will be taken in this direction within the State Program: expanding the use of certification service centers and promoting the expansion of remote banking services (<https://uploads.cbar.az/assets/58f7cec17e47590f0ab76c8fd.pdf>, 01.03.2020).

Increasing the transparency of transactions and settlements, ensuring the protection of consumer rights The Law on Non-Cash Settlements was approved in

this area in order to stimulate the replacement of cash settlements with non-cash settlements, to regulate the circulation of money, and to develop the banking system. At the same time, relevant amendments were made to the Tax Code. Before the law was approved, if a taxpayer was able to make payments in cash in any amount during the month without any restrictions, according to the new law, depending on the status of taxpayers, restrictions cash payments were determined to hold (<https://www.taxes.gov.az/uploads/2017/PV/nagdsiz.pdf>, 10.03.2020):

- Registered and taxable transactions for value-added tax (VAT) purposes amounting to more than 200 thousand AZN in any month (months) of a consecutive 12-month period taxpayers engaged in trade and catering activities - 30,000 AZN;
- Other taxpayers- 15,000 AZN

In addition, the law sets requirements for the some settlements to be made only in a non-cash manner. These requirements belong to the following settlements (<https://www.taxes.gov.az/uploads/2017/PV/nagdsiz.pdf>, 10.03.2020):

- Administrative fines, financial sanctions, taxes, customs duties and fees, interest;
- Repayment of debts and lending on leasing operations, insurance payments;
- Service fees and other charges paid to state bodies, state-owned and state-controlled legal entities, budget organizations and public legal entities;
- Landline telephone services and utilities;
- Payment and return of interest-free cash and other deductions to taxpayers;
- Use (expenditure) of funds received under the public procurement contract;
- Payment of tuition fees;
- Payments to tour agents

Table 2: Dynamic of cash and non-cash operations

	Cash operations (mln.AZN)	Non-cash operations (mln.AZN)
2015	9819	734
2016	10631	856
2017	11994	1119
2018	13761	1343
2019	17285	1543

Source: <https://esasodi.cbar.az:9804/obiee/ESAHS.jsp>, (11.03.2020)

As can be seen from the table above, there has been an increase in non-cash transactions in recent years. However, cash transactions continue to dominate.

To increasing non-cash transactions, expansion of electronic-banking services is important. Although people in many countries around the world have access to most banking services via the Internet, such services are not widely used in Azerbaijan. There are many reasons for this (<https://banker.az/azərbaycanda-rəqəmsal-bankciligin-inkisafında-yaranan-baryerlər-və-perspektivlər/>, 11.03.2020):

- One of the reasons for the underdevelopment of this sector in Azerbaijan is the ignorance of the population. Customers are not aware that the banks they serve provide services online. Not only middle-aged people, but even young people are unaware of this service sector.

- Psychological barrier - people are not used to getting banking services online. A person avoids what he does not know.

- Insecurity in banks - recently, there has been a huge problem of trust in banks among the population. This was due to the devaluation in 2015 and the closure of many banks in 2012 due to changes in the legislation to increase the authorized capital of banks to 50 million. And it has shaken confidence in the country's banking system.

- Unintelligible interface - one of the most important factors to consider when banks set up an online platform is to create an easy-to-understand interface. So, when people get this service, the question should not arise as much as possible, customers

should be able to comfortably perform all operations alone.

- Digital banking in our country is used more by large companies than by individuals. However, there is a problem that it is not convenient for medium and small entrepreneurs to use this system. Thus, small and medium-sized businesses are forced to withdraw this money eventually, because they do not carry out all transactions virtually. Each time they withdraw money, they have to pay an additional commission.

The quality of Internet banking services and the availability of transactions can vary depending on which processing center the bank works with:

Table 3: Processing centers, banks work with

Processing center		
Azericard	MilliKart	Private services
International Bank of Azerbaijan	Access Bank	Kapital Bank
AG Bank	Unibank	Yapı Kredi Bank
Yelo Bank	Express Bank	
Rabitə Bank	Bank of Baku	
Premium Bank		
NBC Bank		
AFB Bank		
Muğan Bank		
Bank BTB		

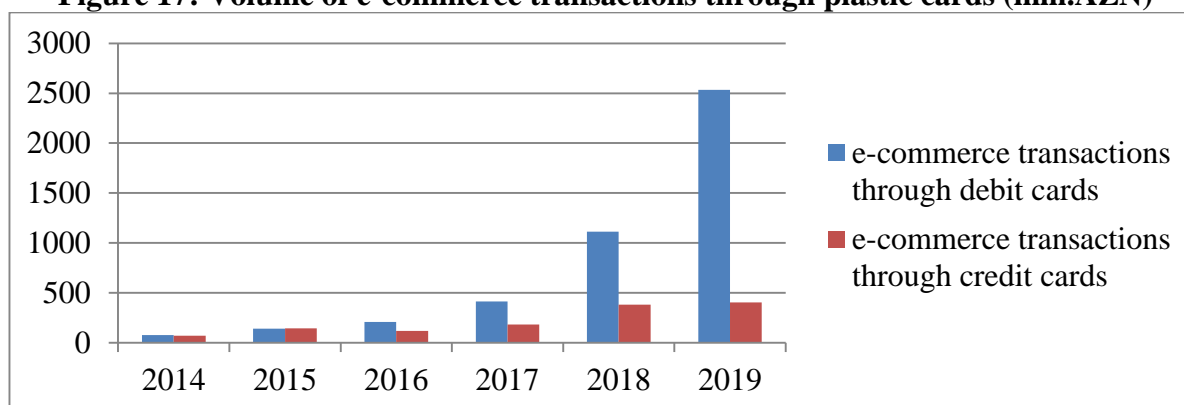
Source: <https://banco.az/az/news/internet-onlayn-banking-nedir>, (16.03.2020)

Large-scale work is being done in our country in the field of e-banking. The projects implemented by the Central Bank with the banking sector to expand digital payments, and the ongoing reforms are also confirmed in the statistics. Thus, in 2018, the volume of transactions through e-banking services increased by 18.7 times compared to 2017 and amounted to 36.4 billion. manat, and the number of transactions increased 7 times to 10.4 mln. units.

The increase in the number and volume of electron-commerce (e-commerce) transactions in recent years is also reflected in the Central Bank's statistics. This increase is reflected in the number and volume of e-commerce transactions with both debit and credit cards in the country. The Central Bank's statistical bulletin for December 2019 shows the dynamics of e-commerce transactions with debit and

credit cards between 2014 and 2019.

Figure 17: Volume of e-commerce transactions through plastic cards (mln.AZN)



Source: Azərbaycan Respublikasının Mərkəzi Bank Statistik Bülleten № 12 (237) <https://uploads.cbar.az/assets/02292fd79fea83216532da166.pdf>, (20.03.2020)

On February 28, 2019, the Central Bank together with the Association of Banks of Azerbaijan announced the results of the competition in various nominations for the development of cashless payments, the introduction of innovative payments, the expansion of e-banking and e-commerce and awarded the winning banks. At the end of the event, the following winning banks were awarded in five nominations announced by the Central Bank in 2018:

Table 4: Leaders banks in five nominations, determined by Central Bank

Places	Nominations				
	Cashless payments at POS-terminals	Electronic banking services	The development of e-commerce	Contactless payment cards	Contactless POS-terminal infrastructure
I	“Premium Bank” ASC	“Azərbaycan Beynəlxalq Bankı” ASC	“AGBank” ASC	“Expressbank” ASC	“Paşa Bank” ASC
II	“Paşa Bank” ASC	“UNİBANK KB” ASC	“UNİBANK KB” ASC	“Naxçıvanbank” ASC	“Expressbank” ASC
III	“ACCESSBANK” QSC	“Kapital Bank” ASC	“Expressbank” ASC	“Paşa Bank” ASC	“AtaBank” ASC

Source: <https://www.cbar.az/press-release-2151/central-bank-awards-winners-of-its-contest-on-development-of-cashless-payments?language=az>, (22.03.2020)

The International Bank of Azerbaijan has won the first place in the nomination

"Leading Bank for Electronic Banking Services". The International Bank of Azerbaijan is constantly developing e-banking services. Continuously supports the development of cashless payment infrastructure in the country. The number of active plastic cards of the bank is more than 1.3 million. With 762 ATMs, the International Bank of Azerbaijan is the bank with the largest ATM network in the country. At present, the bank has 12,250 POS-terminals in various trade and service centers. The International Bank of Azerbaijan is also the largest bank in Azerbaijan, cooperating with the largest number of international payment systems. Thanks to joint projects with international payment systems such as VISA, MasterCard, American Express, Union Pay, Diners Club, JCB, the bank provides a wide range of e-banking services to its customers around the world. One of the special services provided by the International Bank of Azerbaijan to corporate clients for the first time in the country is B2CS (Bank to customer system) service, which is a communication line between the Bank and the Customer system. Through this service, the bank allows its customers to make transactions on their bank accounts through their accounting systems (1C, SAP, etc.). Thus, payment orders sent through the banking service are considered official documents in accordance with the legislation, and the bank is not required to submit them on paper.

The leading bank in mobile banking is Kapital Bank. BirBank is a mobile banking service of Kapital Bank. The application is the most downloaded mobile application in the financial category in our country with more than 1,000,000 users. BirBank is listed as "# 1 Top Free Finance" in the ratings of the App Store, Play Store and SimilarWeb. In 2018, BirBank won the "National Internet Award" in the nomination "E-government and financial-banking mobile applications". In 2018, at the same time, International Finance magazine selected the "Most innovative mobile bank" application in our country (<https://kapitalbank.az/birbank?hl=az>, 24.03.2020). Anyone with a bankcard can register with BirBank in just a few minutes and use banking services, online payments and orders from their phone.

When using NFC (Near Field Communication), the customer has the opportunity to pay without a card through the BirBank mobile application. NFC

assigns any Kapital Bank card to him for payments, when making a payment, simply bring the phone to the POS terminal and make the payment. With NFC, there is no longer a need for a plastic card in this process. If the customer does not have a card, he or she can order a Digital Card through BirBank - the card is activated immediately, and as a result, without approaching the bank, the customer becomes a cardholder and can make non-cash purchases with NFC payments from that card. NFC payments are available only on VISA cards and only for transactions up to 50 AZN (<https://kapitalbank.az/birbank?hl=az>, 24.03.2020).

To increase customer loyalty Kapital Bank use “Hearts” loyalty program. Users of the BirBank mobile application can earn bonuses in the form of "hearts" by making payments through the POS terminal, the Internet and BirBank. Then you can collect those bonuses and exchange them for different gifts. It doesn't matter if you have money or a debit card in your pocket when shopping. Payments at service points can be made through BirBank. To do this, after shopping, you need to scan the QR code on a special poster at the checkout with a smartphone camera. You can use any card account in BirBank to pay - even a card that does not belong to Kapital Bank (<https://kapitalbank.az/birbank?hl=az>, 24.03.2020).

For the first time in Azerbaijan, PASHA Bank has created an opportunity for individual entrepreneurs to become an online customer and open an account. PASHA Bank, the country's leading corporate bank, offers a unique opportunity to become a customer of the Bank without visiting a branch and to obtain details on an online account.

This service is now available to individual entrepreneurs, giving new customers the opportunity to apply online in a few minutes to open an account in different currencies. Customer service meets the minimum requirements and this solution is constantly being improved. For the first time in the country, personal data is obtained from the e-Government Information System with the electronic consent of the individual entrepreneur, saving time and customers confirm the necessary documents using the service "Asan Imza" mobile electronic signature (https://www.pashabank.az/press_centre, 24.03.2020).

Within the framework of the Development Strategy for 2018-2020, PASHA Bank is working on modern technological solutions by studying the needs of its customers and will soon delight its customers with other digital solutions.

Entrepreneurs focus on strategic business management, so time saving and the use of online banking services come to the fore. This opportunity, developed and provided by PASHA Bank, will contribute to a new and improved level of relations between the bank and its customers, and thus to the development of digital solutions in the banking sector. Our initiatives in this area also aim to support the implementation of the "Strategic Roadmaps for the national economy and key sectors of the economy.

However, these are not enough. As we have seen in previous chapters, today banks try to apply AI tools for getting strategic advantage for a long time. Although this field is not developed enough in Azerbaijan, new projects continue to be developed. Some banks work on "chatbot" projects. For example, "Rabitə Bank" and "Paşa Bank" use "chatbot". These "chatbots" help to communication with customers in any time, in any place, money transfer, communal payments, online ordering of credit, cards and getting information about places of ATMs and branches. However, these BOTs do not have AI features. The reason for this is that there is no such library database in the Azerbaijani language, and its creation requires investment of time and human resources (<https://paralel.az/az/article/107190>, 25.03.2020).

One of the most sensitive issues in digital area is the security factor. The most secure system in the world today is actually a "blockchain". The advantage of "blockchain" is that not all data is recorded in one database, so it is impossible for third and fourth parties to gain access to this database and change it. Data is collected in the form of chains and blocks, so when you want to change information, you have to change the previous information. When one or the other performs any operation, the same information is transmitted to all members of the network (<https://paralel.az/az/article/107190>, 25.03.2020). Hence, it is considered a safer technology.

In order to improve the quality of services provided in the banking sector of

Azerbaijan, to increase customer satisfaction, the Central Bank for the first time in the country has launched work on the creation of a Digital Identification System through a pilot Blockchain platform. In order to ensure effective and efficient implementation of the project, timely and quality implementation of the project and interaction with the participating organizations involved in the project, a working group consisting of officials from government agencies and commercial banks selected as a pilot was established. A "prototype" of the system was developed and demonstrated in the working group.

In September 2018, the Central Bank signed the contract with IBM Eastern Europe / Asia Ltd to establish a Blockchain-based Digital Identification System. Within the framework of the project, a draft Digital Transformation Plan was developed by IBM, which reflects the strategy for the expansion of innovative financial technologies in the country. During the preparation of the document, modern innovation trends were analyzed, similar projects and similar experiences implemented by IBM globally were studied (<https://www.cbar.az/page-144/mrkzi-bankin-icracisi-oldugu-sas-tdbirlr>, 26.03.2020). Dozens of potential projects have been identified to bring this experience to the country and apply innovative financial technologies.

At the initial stage, it is planned to open accounts for legal entities and individuals remotely. After that, it is planned to automate the monitoring of other banking services and funds for money laundering and terrorist financing. The direct result of the integration of the digital identification system will be the transition of the Central Bank to "open banking".

The main factors, which cause to delay the introduction of blockchain technology, are the followings (<https://kriptoinvest.az/2020/02/07/maliyye-ve-bank-sektorunda-blokceyn-texnologiyasinin-tetbiqi-imkanlari/>, 26.03.2020):

- The use of blockchain technology has not yet been defined at the legislative level. In this regard, there is no legal basis for blockchain-based recognition of data in a database;

- Exploring blockchain requires considerable financial resources and time. It is often not possible for small and medium-sized businesses to attract financial

resources in this direction;

- For the successful transformation of technology into the financial sector, there is a lack of professionals with knowledge in both the financial-banking sector and in the field of blockchain;

- Difficulty in enforcing existing laws: In the European Union, citizens have the "right to forget." That is, they have the right to demand the disclosure of personal information about themselves. In the blockchain, the data remains unchanged and protected. The system does not allow you to extract and change any selected data.

There is a need for scientific and practical research in the field of blockchain in order to better understand technology and integrate new ideas and innovations into the real sector.

3.2. Development ways of technological innovations in Azerbaijan banks

The most important condition for the solution of the tasks ahead for the development of the bank's business activity is the implementation of complex technological modernization. This allows optimizing the management system, sales network, increasing labor productivity. Deepening the differentiation of customer needs and in the context of increasing competition in the financial market, the bank faces the need to optimize the organizational structure and management mechanisms, to develop the bank's human resources. The key to the successful solution of these tasks is the formation of a modern, effective and adequate management system, which allows to concentrate services to different customer groups, thus stimulating the innovative development of the bank (Həsənli G., 2016).

The financial sector can play a catalytic role in the future globalization and liberalization of the world economy by maintaining a leading role in the electronic information system. Significantly reducing the costs and increasing the efficiency of credit risk management with the help of the Internet can create a favorable environment for developing countries to access international financial markets. If the international community makes the Internet accessible to financial intermediaries from these countries, this factor will contribute to their rapid

economic development.

When analyzing the list of banking products, marketing staff should take the development strategy as their main goal. The first task in this direction is to optimize the structure of services offered by the bank. The process of creating a new product is important for the banking sector. The stages of this process are the followings (Həsənli G., 2016):

1. Search for ideas. Stages:

- Search and collection of ideas;
- Selection of useful ideas;
- Preparation and processing of the product;
- Formulation of marketing strategy

Banks must develop a whole plan for the selection of relevant ideas and proposals. Not only should each idea be tested to see if it meets the customer's needs, but it should also be considered whether the idea being applied would help the bank's strategy.

2. Analysis of marketing opportunities: Marketing opportunities should be analyzed in three main areas:

- Analysis of bank's purposes;
- Analysis of banking opportunities;
- Analysis of market opportunities

It is also important to assess the bank's capabilities for the service to be implemented. A great idea may not be realized due to lack of any resources.

3. Product preparation: The requirement for the development of a banking product is that the service provided in the idea corresponds to the initial characteristics.

4. Product testing in market relations: At this stage, it is especially important to check its quality in practice and whether it is needed.

5. Launch of a new product on the market (commercialization). The product launch phase begins with the first offer of banking services. The duration of the product-marketing phase varies widely and is determined by the quality of the

product, which meets the needs of consumers and the principles of a well-chosen marketing strategy.

World practice shows that modernized management and strategic planning are important in choosing the right goals and objectives and achieving them effectively. Making management decisions in an organization with any field of activity requires an accurate assessment of the situation, an in-depth analysis of internal and external factors and the preparation of their possible development processes. In order to stabilize monetary policy and make it more efficient for banking, modeling of forecasting and microeconomic processes must be linked to strategic directions. To this end, specific schemes of interaction between the various economic bodies and the Central Bank should be considered. Particular attention should be paid to establishing effective information exchange systems with economic authorities and agreeing in advance on measures to be taken if necessary to develop sound monetary, credit and monetary policy decisions (Nəcəfov R., 2016).

No matter how hard banks try to organize their work at all stages of the existing service, eventually the development of new products (services) will appear as an objective necessity. At the stage of development and introduction of new banking products, it is especially important to calculate the costs of their creation and presentation. Demands and desires of existing bank customers in Azerbaijan are gradually increasing. This is due to technological progress, increasing competition, changes in the income level of the population and the growing diversity of customer choices. Impressions of bank customers are formed under the influence of manageable factors. In practice, these factors can be divided into three parts: the quality of service provided by the bank, the price offered for services and the level of development of methods of delivery of services.

The followings are important factors in the banking development strategy (Həsənli G., 2016):

- Banking infrastructure and services in the regions of Azerbaijan expansion;
- Improving the competitiveness of commercial banks;
- Improving information security;

- Improving risk assessment and potential loss prevention

The development ways of Azerbaijan will focus on expanding the opportunities for the use of technological innovations and correspondence, the creation of information and correspondence advances, the creation of reliable security frameworks, the regulation of national criteria, the online banking system and to improve public circles and human capital.

From our point of view, the creation of a regional financial center (RFC) in Azerbaijan, which can successfully compete in the capital and financial services market in Central Eurasia, can give a powerful impetus to the development of innovative trends. There is an opinion that at the present stage, an important trend in the development of the world economy is the desire of states around the world to turn their capitals or large cities into competitive international financial centers. The creation of the RFC requires an in-depth analysis of the methodology and practical experience in the formation and development of existing financial centers, which quickly integrated into global financial markets. The study of these problems is of particular importance in connection with the long-term Strategic Roadmap for financial services developed in December 2016 in the Republic of Azerbaijan, which aims to ensure balanced growth of the main segments of the financial services market, stable and safe development of the banking system (Муршудли Ф., 2018).

The organization of the RFC with innovative priorities involves increasing the level and quality of financial and banking services, increasing the capitalization of the banking system, improving the securities market, establishing a clear mechanism for the concentration of national and attracting foreign capital for use in modernizing the Azerbaijani economy. The country's economic growth rate, competitiveness and sustainability of all its sectors will be largely determined by the successful solution of these tasks. The development of the RFC should be aimed at stimulating stable economic growth, expanding the innovative and investment potential of the financial and banking segments of the Azerbaijani economy, and overcoming the contradictions existing here. Its formation is an important factor in increasing the effectiveness of the country's participation in international monetary relations. This

will contribute to greater predictability of the national currency exchange rate, lower costs when conducting currency transactions, increase access to cheaper loans, use innovative banking tools to select optimal ways to achieve foreign economic goals, and further reduce the level of dollarization of the monetary system of Azerbaijan and optimize his external debt (Муршудли Ф., 2018).

Consideration of trends allows us to conclude that the introduction of innovative forms of organization of banking services, products, services and technologies is aimed at ensuring the competitiveness of post-Soviet countries in the international financial space, business profitability and meeting a wide range of market needs. In this case, we are talking about a set of innovative shifts (both endogenous and exogenous) that ensure the banks' business goals beyond the national economy and its further development based on the formation of their competitive position adequate to the external environment. An integrated approach to the process of introducing banking innovations in the international activities of banks is important, both theoretically and practically.

Obviously, further strengthening of the innovative trends of the IBE will contribute to increasing the competitiveness of national banks of post-Soviet countries in foreign markets, increasing the stability of their banking systems and economy in the context of global financial instability. In this case, an important role is given to both management decision-making in the banking sector and economists engaged in researching the urgent problems of its development in the context of global transformation processes (Муршудли Ф., 2018). It would not be right to develop an innovative bank technology such as artificial intelligence, where the state, executive bodies and interested companies should provide general support. At present, there are no separate normative-legal documents in the Republic of Azerbaijan to stabilize the sphere of e- banking, and only some of the banks issuing these documents have application rules. It should be noted that the important objectives of the reforms implemented by the Central Bank to increase the amount of non-cash turnover in the state economy and the development of the payment card market are to inform the social environment about the quality and capabilities of

modern electronic payments. Implement a high-level payment culture in the social environment, increase people's access to electronic payment services and non-cash means of payment, the advantages and opportunities of payment cards, as well as the rights and responsibilities of credit institutions, retailers, catering and other service organizations and cardholders, providing in-depth information are the important goals of periodic activities.

CONCLUSIONS AND RECOMMENDATIONS

With the development of technology, there are differences in the needs of economic units over the years. Demand differences of decision-making units in the economy force institutions to develop. Following the change in technology, the process of realization of economic activities has also changed. In this sense, banks have made the change to meet the demands of individuals by reviewing their management and operation processes. If needs and demands change, organizations need to change accordingly. It is a compulsory process for banks facing a dynamic society to renew themselves according to developing conditions. In order to increase the level of benefits of customers benefiting from the service and to remain loyal to the bank, it is necessary to take an axiom despite the differences in needs and conditions.

Competition has intensified in the banking sector. In order to survive in this competition, banks should pay attention to quality, which is one of the most important factors in the banking system. With the increasing of digital banking, quality research is carried out not only in traditional banking services, but also in this new banking channel. Since it is a relatively new banking channel, digital banking studies are limited compared to traditional banking channels.

At the end, results of research shows that banks need to embed technological innovations to their strategic plans and apply it across the all operational processes. Banks, that are frontrunners in terms of using of technological innovations, gain some benefits from application of new technologies:

- Going outside traditional banking operations;
- To bring new product and service to the sector;
- Development transaction volume through increasing of potential amount of customers;
- Keeping existing customers;
- Cost savings through replacement redundant workers by technology on doing monotonous operations;
- Reducing density of operations in departments;

- Reducing amount of departments and personnel;
- Reducing risks through preventing mistakes while doing operations with complex and big data;
- Increasing customer engagement through good customer service;
- Increasing reputation and strengthening brand image at the market;
- Getting competitive advantage against rivals by applying new technologies, increasing market share and getting customer loyalty;
- Increasing revenue through cost savings and big market share and so on.

Future of financial services, such as banking depends on using and getting benefits from new technologies. To overcome challenges of application of technological innovations and utilize from these, demands collaborative effort of banks, government and interested companies. As institutions that use technology very intensely, it is envisaged that banks are the companies that use the internet most effectively, thus, there will be serious reductions in transaction costs. Therefore, banks will have an advantage in terms of cost by choosing the way of reflecting this situation positively.

The dynamic development of our country also includes the implementation of systematic and rapid reforms in the banking sector, including the introduction of new banking technologies, the provision of new types of services, the wider involvement of economic participants in banking and financial circulation. For the successful fulfillment of these tasks, there is a need for a joint solution of common problems for commercial banks, deepening their cooperation with governmental and non-governmental organizations and establishing more businesslike relations with international financial institutions.

For Azerbaijan, there is much work to be done to develop technologies in banking sector. Some proposals are as follows:

- Together with short-term priorities, focusing on long-term implications and investment on new technologies;
- Using strategic collaborations for solving issues;
- Solving security issues through improving blockchain technology;

- Developing clear standards to ensure the security and reliability of blockchain-based services, conducting and applying scientific and practical research in this field;

- Concentrate on segments, in which technological innovations can create radically profitable differences.

The Central Bank has made significant progress in shaping the country's banking system, regulating it with market management tools and administrative methods. However, the new era poses new challenges. Today, the application of self-development mechanisms in the banking sector is more relevant than ever. If the work done in this area continues successfully, in the near future the positive impact of new technologies on strategic management in banks will show itself in our country.

REFERENCES

In Azerbaijani

1. “Banklar haqqında” Azərbaycan Respublikasının qanunu, 16 yanvar 2004-cü il (27 iyun 2019-cu il tarixli qanunla qəbul edilmiş dəyişikliklərlə)
2. Azərbaycan Respublikasının Mərkəzi Bank Statistik Bülleten № 12 (237), 2019
3. Aydəmirov V. (2017), Bank Fəaliyyətinin Səmərəliliyi: Meyarlar, Göstəricilər Və Qiymətləndirilməsi, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 81 səh.
4. Əzimov İ. (2018), Azərbaycan Respublikasında bankların müasir vəziyyəti və inkişaf istiqamətləri, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 67 səh.
5. Həsənlı G. (2016), “Azərbaycanda Bank sektorunun müasir inkişaf xüsusiyyətləri”, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 83 səh.
6. Haqverdzadə N. (2018), Azərbaycanca bank işinin yaranması və inkişafı tarixi: nəzəri və praktiki baxış, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 83 səh.
7. İsmayılov B. V. (2018), Strateji Menecment, Bakı, «Təhsil», 296 s.
8. Nəcəfov R. (2016), Azərbaycanca bank sektorunun müasir inkişaf xüsusiyyətləri, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 95 səh.
9. Nəsibova F. F. (2015), Müasir Dövrədə Bank İnnovasiyaları, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, pptx, 29 səh.
10. Səlimzadə N. (2016), Bank sektorunun sabitliyinin təmin edilməsində dövlət tənzimlənməsinin rolu, Azərbaycan Dövlət İqtisad Universiteti, Bakı, Azərbaycan, 81 səh.

In English

1. Akhisar İ., Tunay K. B. and Tunay N., “The Effects of Innovations on Bank Performance: The Case of Electronic Banking Services”, *Procedia - Social and Behavioral Sciences* Vol. 195, 2015, pp. 369 – 375

2. Al-Khatib M. M. (2018), Strategic Awareness and its Impact on Strategic Risks, Middle East University, Amman, 165 p.
3. Bellens J., Meekings K., and Kennedy S. (2018), “Global Banking Outlook 2018”, Report of EY, London, England, 25 p.
4. Bull T., Chen S., and Chiselita D. “Global FinTech Adoption Index 2019”, Report of EY, 2019, 44 p.
5. Cohen M. (2018), “Banking Innovation Strikes Back”, Report of The Floor, Tel-Aviv, Israel, 20 p.
6. Dr. Kobler D., Dr. Grampp M., Dr. Bucherer S., Hauber F., Shlotman J. and Baumgartner B. (2015), “Swiss Banking Business Models of Future”, Report of Deloitte, United Kingdom, 44 p.
7. Dr. Kobler D., Schlotmann J. and Dr. Grampp M. (2017), “Innovation in Private Banking & Wealth Management”, Report of Deloitte, United Kingdom, 41 p.
8. Jawad N. A. and Bashir H. “Hierarchical structuring of organizational performance using interpretive structural modeling”, International 9. Conference on Industrial Engineering and Operations Management, (2015), pp. 607-613
9. Jubraj R., Graham T. and Ryan E. , (2018), “Redifine Banking with Artificial Intelligence”, Report of Accenture 20 p.
10. Kalpesh J. M., Abhijit B. and Monish S. (2016), “Banking on the Future: Vision 2020”, Report of Deloitte, India, 41 p.
11. Kaya O. (2019), “Artificial Intelligence in Banking”, Deutsche Bank Research, 9 p.
12. Kebede S. Z. (2013), Electronic Funds Transfer And the Case for Consumer Protection in Ethiopia, University of Oslo, Norway, 50 p.
13. Kiiyuru K. D. (2014), Effects Of Innovation Strategies On Performance Of Commercial Banks In Kenya, University Of Nairobi, Kenya, 52 p.
14. Kohlscheen E., Pabon A. M. and Contreras J. “Determinants of bank profitability in emerging markets”, Bank for International Settlements, № 686, 2018, 24 p.

15. Larionova N., Varlamova J., Rakhmatullina D. and Zulfakarova L. “How the institutional environment affects the banking sector: evidence from BRICS”, IOP Conf. Series: Journal of Physics: Conf. Series 1141 (2018) 012021, 8 p.
16. Latimore D. (2018), “Artificial Intelligence in Banking”, Report of Celent, 27 p.
17. Mallari B., (2019), Artificial Intelligence - Impact on Job Security, Trinity Western University, Langley city, canada, 6 p.
18. Mcintyre A., Conway K., Lillis S., Mcelwaine-Johnn P., Sidebottom P. and Westland S. (2019), “The Dawn Ofbanking Inthe Postdigital Era”, Report of Accenture, Dublin, Ireland, 30 p.
19. Sanjeevan N. “Strategic Analysis and Strategic Planning for Commercial Banking (An Analysis based a Commercial Bank operating in Sri Lanka)”, International Journal of Economics & Management Sciences (2017), 6:3 DOI: 10.4182/2162-6359.1000418, 11p.
20. Srinivas V., Ph.D., Fromhart S., Goradia U. and Wadhvani R. (2017), “2018 Banking Outlook Accelerating The Transformation”, Report of Deloitte, United Kingdom, 22 p.
21. Sullivan B., Garvey J., Alcocer J., Eldridge A. (2014), “Retail Banking 2020 Evolution or Revolution?”, Report of PWC, 42 p.
22. Tweddle K. (2018), “How to Build an Innovation Strategy at Your Bank” Report of ICBA, United States of America, pptx, 24 p.
23. Vedapradha R., Hariharan R. “Application Of Artificial Intelligence In Investment Banks”, Review of Economic and Business Studies, Vol. 11, 2018, pp.131-136
24. Vives X. “The Impact Of Fintech On Banking”, European Economy, Vol. 2017.2, 2017 p.97-105

In Turkish

1. Arslan G. ve Yavuzaslan K. “Bankacılık Sektöründe İnovasyonun Yeri ve Önemi: Türkiye Örneği”, Business & Management Studies: An International Journal

2. Cəfərli O. (2017), İşletmelerde stratejik yönetimin organizasyon yapısı üzerinde etkisi, Azerbaycan Devlet İktisat Üniversitesi, Bakü, 75 s.

3. Doç. Dr. İlseven A. (2016), Stratejik Yönetim, İstanbul, Karemat Matbaacılık, 156 s.

4. Karagöz H. (2016), Stratejik Planlamanın Örgütsel Performans Üzerine Etkisi: Bir Uygulama, Karamanoğlu Mehmetbey Üniversitesi, Karaman, 115 s.

5. Yıldız Ç. Ç. (2017), Yeni Teknolojilerin Bankacılık Sektörüne Olan Sosyoekonomik Etkileri:Türkiye Örneği, T.C. Marmara Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul, 39 s.

6. Zeybek H. “Dijital Bankacılık”, Mali Çözüm Dergisi, sayı 150 (2018), s. 79-107

In Russian

1. Муршудли Ф. Ф. “Инновационные Тренды Международного Банковского Бизнеса (На Примере Азербайджана) ”, Вестник Мгимо-Университета, № 1(58), 2018, С. 186-212

Internet Resources

1. <https://banco.az/az/news/internet-onlayn-bankinq-nedir>, (16.03.2020)
2. <https://banker.az/azərbaycanda-rəqəmsal-bankciliğın-inkisafında-yaranan-baryerlər-və-perspektivlər/>, (11.03.2020)
3. https://data.worldbank.org/indicator/FB.CBK.BRCH.P5?end=2018&locations=NO-CH-US-DE-FR&name_desc=false&start=2004&view=chart, (15.01.2020)
4. <https://esasodi.cbar.az:9804/obiee/ESAHS.jsp>, (11.03.2020)
5. <https://kapitalbank.az/birbank?hl=en>, (24.03.2020)
6. <https://kriptoinvest.az/2020/02/07/maliyye-ve-bank-sektorunda-blokceyn-texnologiyasinin-tetbiqi-imkanlari/>, (26.03.2020)
7. <https://paralel.az/az/article/107190>, (25.03.2020)
8. <https://uploads.cbar.az/assets/58f7cec17e47590f0ab76c8fd.pdf>, (01.03.2020)

9. <https://www.businessinsider.com/ai-in-banking-report>, (20.01.2020)
10. <https://www.cbar.az/page-142/nagdsiz-azrbaycan-layihsi>, (17.02.2020)
11. <https://www.cbar.az/page-144/mrkzi-bankin-icracisi-oldugu-sas-tdbirlr>, (26.03.2020)
12. <https://www.cbar.az/press-release-2151/central-bank-awards-winners-of-its-contest-on-development-of-cashless-payments?language=az>, (22.03.2020)
13. <https://www.fintechnews.org/ai-in-banks-risks-and-opportunities/>, (02.11.2019)
14. <https://www.forbes.com/sites/blakemorgan/2018/10/11/10-examples-of-customer-experience-innovation-in-banking/#33a62144729d>, (26.12.2019)
15. <https://www.icicibank.com/Personal-Banking/insta-banking/20-years-digital-banking/index.html>, (02.11.2019)
16. https://www.pashabank.az/press_centre, (24.03.2020)
17. <https://www.taxes.gov.az/uploads/2017/PV/nagdsiz.pdf>, (10.03.2020)
18. <https://www2.deloitte.com/us/en/insights/industry/financial-services/bank-branch-transformation-digital-banking.html>, (12.01.2020)
19. <https://www2.deloitte.com/us/en/insights/industry/financialservices/artificial-intelligence-ai-financial-services-frontrunners.html>, (21.01.2020)

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