

REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**DIRECTIONS FOR THE DEVELOPMENT OF THE
BANKING SECTOR FROM THE POINT OF VIEW OF
MODERN CHALLENGES**

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Applicant: **Aykhan Valeh Khubanov**

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The work was performed at the "State regulation of the economy" department of The Academy of Public Administration under the President of the Republic of Azerbaijan.

Scientific supervisor:

doctor of economic sciences,
professor

Khatira Mayil Huseynova

Official opponents:

doctor of economic sciences,
professor

Shafa Tofiq Guliyeva

PhD in economics, associate
professor

Mehriban Karam Taghiyeva

PhD in economics, associate
professor

Ramil Mahammadali Aliyev

Dissertation council ED 1.10 of Supreme Attestation Commission under the President of the Republic of Azerbaijan operating under the Ministry of Science and Education of the Republic of Azerbaijan

**Chairman of the
Dissertation council:**

doctor of economic sciences,
professor

Nazim Muzaffarli (Imanov)

**Scientific secretary of the
Dissertation council:**

PhD in Economics

Sevda Mammad Seyidova

**Chairman of the scientific
seminar:**

doctor of economic sciences,
professor

Elshad Yagub Mammadov

GENERAL CHARACTERISTICS OF THE WORK

Topic relevance and level of development. In modern conditions, the rapid changes in the financial sector of the world necessitate the transformation of the banking system to new conditions. The banking sector, as one of the leading sectors of the economy, plays a leading role in the effective implementation of these changes¹. Experience shows that innovations in the financial sector manifest themselves in the banking sector. In recent years, the banking sector of Azerbaijan has been successfully integrating into the global financial system. However, it must be admitted that in terms of the volume and speed of innovations in the world banking system, and the sphere of application of digitalization in the banking, the national banking system still lags far behind the banking scopes of developed countries². It is true that there are many objective and subjective reasons for this. One objective reason is that after Azerbaijan gained its independence in 1991, the national banking system began to form and develop. Before that, the financial system of our country, including the banking sphere, was under the control of the Soviet Union, which was governed by the administrative-emirate style. Although a little more than thirty years has passed, the banking system of our country has gone through a period of great evolution and was formed and developed on the basis of the principles of the market economy. Currently, the development of banking continues successfully as a result of resultive reforms carried out in our republic.

One of the subjective reasons is that the transformation of the banking system to new conditions requires the existence of a perfect legislative framework, the formation of a new institutional system, the formation of human capital, the completeness of the economy and diversified development. All of these need some time through gradual, consistent reforms. One of the factors that negatively affect the

¹ Xankişiyeva L.L. Kommersiya banklarının fond bazarında vasitəçilik əməliyyatlarının təkmilləşdirilməsi (avtoreferat) - Bakı, 2024. https://aak.gov.az/upload/dissertasion/qtisad_elml_ri/LAMI%CC%87YA_XANKISIYEVA_-AVTOREFERAT.pdf

² Хубанов А.В. Краткий обзор развития мировой банковской системы. “İqtisadi və siyasi elmlər jurnalı”, nömrə 2, iyun 2019. Həmmüəllif – Məhərrəmov A.M.

development of the banking system is the lack of a perfect competition system, gaps in this area, etc.

In recent years, Azerbaijan has been intensively expanding its sphere of business relations by cooperating closely with international financial institutions. The number of commercial banks established with the participation of foreign capital is increasing. This increases confidence in the banking sector of our country, and on the other hand, accelerates the flow of foreign investments into our economy. To promote the flow of foreign investments into the economy of our country, including the banking sector, the improvement of the banking legislation and its adaptation to international standards are among the important issues ahead.

Although the integration of the national banking system into the global financial system is a necessity of our time, it has its positive effects as well as negative effects. So, in this case, the impact of any crises that may occur in the global financial system does not leave the banking system of our country unaffected. Therefore, a scientifically based strategy should be developed to protect the national banking system from exogenous risks³. Depending on the nature and type of risks, a concept that will ensure the continuity of the national banking sector against possible crises should be adopted and implemented in various scenarios. However, in this case, it is possible to ensure sustainable and innovative development of the national banking system. Studies show that innovations and challenges in the global financial and banking system are happening so fast that it is not so easy for the national banking system to adapt to the changes taking place there⁴.

In this regard, there is a need to prepare complex scientific studies to ensure the effective integration of the national banking system into the global financial system, to maintain and develop its sustainable progression.

³ Хубанов А.В. Характеристика аспектов нового типа в финансовой и банковской среде - "AMEA-nın Xəbərləri İqtisadiyyat seriyası" jurnalının 2021-2 sayı. Nəmmüəllif – Hüseynova X.M. Səh. 166

⁴ Хубанов А.В. Цифровой банкинг как внутреннее поле борьбы и инноваций - статья, Journal of Economy and entrepreneurship, ном. 7 (132) 2021 г. Журнал включён в Перечень ВАКа РФ.

The following economists made a significant contribution to the study of the development theory of the banking system: E.C.Dolan, J.M.Keynes, C.G.Clark, M.A.Kose, F.A.Lis, A.McGrew, S.B.McDonald, M.P.Malloy, P.L.Miller, F.S.Mishkin, J.Perraton, P.Rose and others. The theoretical and practical aspects of the development of the banking system were studied in the scientific works of the following Russian economists: O.I.Baranovskiy, A.A.Abalkin, Q.N.Beloglaziyy, M.Y.Golovnnina, B.A.Vernikova, V.V.Pavlova, I.K.Kovzanadze, V.V.Kovalenko, A.N.Ivanova and others.

Among Azerbaijani economists: Z.F.Mammadov, M.M.Bagirov, E.M.Sadigov, E.S.Rustamov, R.A.Bashirov, Y.A.Mammadov, F.A. Ganbarov, A.Safarov, V.F.Namazov, E.M.Ismayilov, F.F.Murshudlu and others have contributed enough to economic science on studying of separate aspects of the banking system..

Without reducing the scientific value of those researchers, it should be noted that the development direction of the national banking sector has not been comprehensively studied for the prospective future, the study of the theoretical and methodological foundations of its development taking into account modern challenges, adapting its activities to the requirements of the fourth industrial revolution, determining the development directions of digital banking and global aspects of developing a long-term strategy that ensures the stability of the national banking system against risks have not been carried out sufficiently. It is this dissertation dedicated to the study of those problems, which is particularly relevant in terms of eliminating the indicated gaps, and determined the selection of the topic of the research work.

The object and subject of the research. The object of the study is the banking system of Azerbaijan and the commercial banks included in it.

The subject of the research is the study of the theoretical-methodological foundations of the banking system, the study of the factors affecting the effective functioning of the banking system, and the determination of the strategic development directions of the national banking system.

The purpose and tasks of the research work. The aim of the dissertation work is to comprehensively examine the improvement process of the national banking system in modern conditions and, on this basis, to prepare recommendations on increasing the competitiveness of the banking system of Azerbaijan and to determine the main directions of its development in terms of modern requirements.

Based on that goal, the following tasks were set in the dissertation:

- Studying the theoretical and conceptual foundations of the development of the banking system and examining the economic nature of the concept of "banking activity", "digital ecosystem";
- To examine the institutional development characteristics of the banking sector, the historical stages of its development, as well as its development trends in international practice;
- Based on the multifaceted analysis of the current state of the banking system of the Republic of Azerbaijan, to assess its current development trends and determine its role in the development of the national economy;
- To determine the factors hindering the development of the banking sector of Azerbaijan in modern conditions and the main vectors of anti-crisis measures;
- Developing a model for effective risk management in the banking system;
- Development of scientifically based proposals and recommendations on regulating the banking system and ensuring its stability;
- To determine the possibilities of transformation of the banking system to digital banking.

Research methods. Scientific methods and approaches such as scientific abstraction, logical-dialectical and historical, structural-functional analysis and synthesis, statistical groups, expert evaluation, generalization, dynamic comparison, classification, detailing, selective observation were used in the dissertation work.

The main propositions defended:

- As the banking system develops and grows, there is a need to regulate its activity in a more effective form and to strengthen the

control system. In this regard, the current regulation and control system does not meet modern requirements. In order to effectively regulate the activity of banks in accordance with the new conditions, changes should be made to the existing legislative system on banks and banking activity, and there is a need to improve the institutional system in accordance with international standards;

- It is necessary to modernize the models used for forecasting macroeconomic financial indicators in the Central Bank, and modify them taking into account uncertainty and risk factors;

- The main factor hindering the development of digitalization in the banking system is the lack of professional staff for digitalization. Therefore, when developing a digitalization strategy in the banking system, the development of personnel potential is considered a priority;

- The analysis of the financial activity of the majority of banks operating in Azerbaijan shows that there is a positive dependence between the digitization of banks and their level of profitability;

- It is important to focus on financing and promoting innovative projects in banks, increasing investments in digitalization and reducing risky investments;

- Given that the scale and speed of the transition to digital banking in the banking system is not satisfactory, it is important to increase efforts to bring it to the level of developed countries;

- There is a need to adapt the existing system of risk management to modern requirements in the banking system;

- The management system against cyber security in the banking system should be further strengthened, a centralized cyber security system should be created in the banking system and in the financial markets as a whole, and for this purpose, the amount of funds allocated to the improvement of the software should be increased.

The scientific novelty of the dissertation consists of the following:

- The scientific content of the banking system "digital environment" concept was disclosed (8, p. 1082);

- The level of competitiveness of national credit institutions was determined based on a comprehensive analysis of the current state of the banking system of the Republic of Azerbaijan (7, p. 54);
- A model for risk management in commercial banks and its implementation mechanism were developed (5, p. 184);
- Factors hindering the development of the banking sector of Azerbaijan were identified based on the expert evaluation method (9, p. 14);
- The main directions of anti-crisis measures in the banking system of Azerbaijan were determined against the background of instability in the world economy (1, p. 69);
- In the conditions of modern challenges, the main directions of the development of the banking sector of Azerbaijan were developed (6, p. 172).

Theoretical and practical significance of the work. The main results of the dissertation work are aimed at ensuring the efficient development of the banking system of Azerbaijan in the conditions of global modern challenges for the researchers and analysts of banking structures, when evaluating the current state and forecast of the development directions of the banking system in the conditions of modern problems, and they also can be used in the work of state institutions when making decisions on the banking system. In addition, it is applicable as a methodical material for the management and employees of local credit organizations during the development of tactics and strategies to increase competitiveness in the domestic and foreign banking market, analysis of their prospects in the management of commercial banks under competitive conditions by the Central Bank of Azerbaijan and the financial - banking system of the country, and is relevant it for the Ministry of Economy of the republic during the preparation of proposals, as well as when conducting banking classes at universities, preparing training courses on such subjects as "Finance and Credit", "International Economic Relations", "National Economy" and "Economic Theory".

Approval of research results. The main provisions, results and proposals of the dissertation were published by the author in the scientific journals recommended by the HAC (AAK), were presented

at the national and international scientific and technical conferences: the II International scientific-practical conference "Actual problems of modern science and practice" (October 30, 2020, Russian Federation, Republic of Tatarstan, Chistopol), the virtual Republican Scientific Conference "Social and economic development prospects of the Republic of Azerbaijan: goals, means and inclusiveness of economic development" (DIA, December 8, 2020), republican scientific and technical conference on "Digital development of the banking system" - "Technological perspectives of the fourth industrial revolution: industrial Internet, cyberphysical systems and intellectual technologies" topic (AzTU, November 26-27, 2020).

Structure and scope of work. The dissertation consists of an introduction, three chapters, a conclusion and a bibliography of 166 names. Introduction - 11989 marks. Chapter I – 73987 marks. Chapter II – 59668 marks. Chapter III – 71278 marks. The total volume of the work consists of 224,964 characters, excluding tables, pictures, graphs, diagrams and the list of references.

DISSERTATION CONTENTS

INTRODUCTION

CHAPTER I. THEORETICAL-METHODOLOGICAL ASPECTS OF THE DEVELOPMENT OF THE BANKING SECTOR

- 1.1. Theoretical and conceptual foundations of the development of the banking sector and their study
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MAIN SCIENTIFIC PROVISIONS SUBMITTED TO THE DEFENSE

Proposition 1: As the banking system develops and grows, there is a need to regulate its activity in a more effective form and to strengthen the control system. In this regard, the current regulation and control system does not meet modern requirements. In order to effectively regulate the activity of banks in accordance with the new conditions, changes should be made to the existing legislative system on banks and banking activity, and there is a need to improve the institutional system in accordance with international standards. Here, the main external and internal factors affecting the effective functioning of the banking system are systematized and grouped (scheme 1).

Scheme 1. Factors affecting the effectiveness of the banking system.



Source: Scheme compiled by the author based on expert assessment.

Based on the method of expert assessment, the effect of external factors affecting the effective operation of banks was determined, and the following system of indicators was taken as a basis: 1) Monetary policy conducted by the state (X_1) ; 2) General economic situation in the country (X_2) ; 3) The level of the normative-legal system in the banking sphere of the country (X_3) ; 4) The level of the institutional system in the country (X_4) ; 5) The level of state intervention in the banking sphere (X_5) ; 6) Economic and social stability in the country (X_6) ; 7) Annual income level of the population (X_7) ; 8) The level of confidence in the banking system (X_8)⁵.

Bank experts give a special weight to each indicator between 0-1 and assign a price to each indicator with a number: 1- "very little", 2- "less", 3- "acceptable" and 4- "much", 5- "more than that".

In the assessment of the main indicators of the effectiveness and stability of the banking system, the opinions of bank managers, bank specialists, specialists of credit organizations and ordinary employees working in the banking system were taken as a basis.

According to the assessment of the expert group, the efficiency of the banking system was calculated by the following formula:

$$f = \sum_{i=1}^n n_i X_i$$

(formula is compiled by the author based on the assessment of experts)

Here, n –the importance level (specific weight) of the i -th indicator; X_i - is the value given by the expert of the i -th indicator. The proposed methodology was tested in “Pasha Bank”, “Kapital Bank” and “Unibank”.

$$F_{med} = (3.627 + 2.805 + 2.543) / 3 = \mathbf{2.991}$$

According to the methodology under review, the effective activity of banks is interpreted as follows:

1. $1 \leq F \leq 2.5$ Banking activity - ineffective
2. $2.5 \leq F \leq 3.5$ Banking activity - moderately efficient
3. $3.5 \leq F \leq 5$ Banking activity was very efficient.

⁵ Xubanov A.V. Bank sisteminin effektiv və dayanıqlı fəaliyyətinə təsir edən amillərin qiymətləndirilməsi - “İqtisadi artım və ictimai rifah” jurnalı. Nömrə 4. 2023

The results of the expert assessments conducted for “Pasha Bank”, “Kapital Bank” and “Unibank” are given in the table below (table 1).

Table 1

**The results of the expert assessment of the external factors
affecting the effective operation of banks**

Indicators	“Pasha Bank”			“Kapital Bank”			“Unibank”		
	n_i	X_i	$n_i X_i$	n_i	X_i	$n_i X_i$	n_i	X_i	$n_i X_i$
X_1	0.127	5	0.635	0.127	4	0.508	0.127	3	0.381
X_2	0.119	3	0.357	0.119	3	0.357	0.119	3	0.357
X_3	0.098	4	0.392	0.098	3	0.294	0.098	2	0.196
X_4	0.151	3	0.453	0.151	2	0.302	0.151	2	0.302
X_5	0.137	3	0.411	0.137	3	0.411	0.137	2	0.274
X_6	0.088	5	0.44	0.088	3	0.264	0.088	4	0.352
X_7	0.129	4	0.516	0.129	3	0.387	0.129	2	0.258
X_8	0.141	3	0.423	0.141	2	0.282	0.141	3	0.423
F=	$\sum_{i=1}^n n_i X_i$		3,627			2.805			2,543

Source: the table was compiled as a result of calculations by the author, based on the evaluation of experts .

As can be seen from the table, as a result of the expert assessment, the average value of the efficiency indicator for the studied banks is equal to **2.991** . This indicator for “Pasha Bank” was **3,627** – very efficient, for “Kapital Bank” it was **2,805** – moderately efficient and for “Unibank” this indicator was **2,543** – moderately efficient.

The result of the study shows that the level of efficiency and stability in other banks, except for “Pasha Bank”, is not so high. Adequacy of experts' opinions was calculated by the following formula:

$$U = \frac{12\delta}{n^2(m^3 - m)}$$

(formula is compiled by the author based on the assessment of experts)

δ - the sum of the squares of the deviation of the expert price of the indicator from the average price;

n - number of experts;

m - is the number of expert objects.

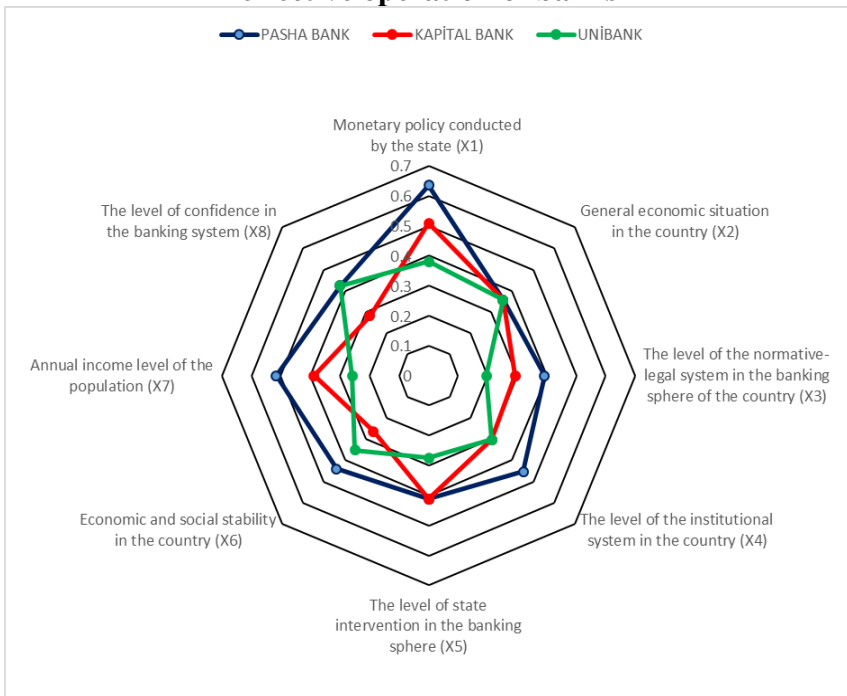
The value of U varies between 0 and 1, that is

$$0 \leq U \leq 1$$

0 indicates complete inadequacy and 1 indicates complete adequacy. When $U \geq 0.6$, the adequacy of expert opinion is high. In our study, $U = 0.85$, which indicates the adequacy of expert assessment.

The obtained results are illustrated in the following network graph:

Diagram 1. Diagram of the influence of external factors on the effective operation of banks



Source: Chart, compiled by the author based on the evaluation of experts.

This methodology allows identifying the weak and strong aspects of the banking system during its operation. As can be seen

from the diagram, the main factor that hinders the stability and effectiveness of the banking system in terms of external factors is the lack of a normative legal framework in accordance with modern requirements. This negative effect is evident on all three banks taken as the research object. The same situation is observed in other banks operating in our country. Therefore, there is a need to improve the normative legal framework in the banking system. Successive reforms to strengthen the institutional system in the country, especially in the banking system, should be continued⁶. Using this diagram, based on the results of the research on the effectiveness and sustainability of banks, scientifically based proposals and recommendations have been developed.

Proposition 2: It is necessary to modernize the models used for forecasting macroeconomic financial indicators in the Central Bank, and modify them taking into account uncertainty and risk factors. Our research shows that the models used in forecasting the main financial indicators of the banking system and managing risks do not fully take into account modern realities⁷. Thus, the existing models do not include the new challenges and risks that arise in the banking system. New approach methods should be used to take into account the possible risks that may arise during the management of banks' activities and to manage them effectively. During the conducted research, it was determined that the process of risk management in the banking system goes through several stages. A risk management strategy should be developed for each stage. The advantage of our proposed risk management model is that each commercial bank can adapt it to the activity of a specific bank by modifying it. By using this model, it is possible to keep the risks in the banks within the permissible limit and achieve stable and effective operation of the banks. The main feature of our proposed model is that it is possible to

⁶ Хубанов А.В. О защите банковских активов во время финансовых затруднений. "Azərbaycan Dövlət İqtisad Universitetinin elmi xəbərləri" jurnalı (nömrə 3, 2021). Həmmüəllif – İbrahimli Ç.A.

⁷ Хубанов А.В. Долгосрочная борьба: мировая кредитная система против экономических кризисов - "Kooperasiya" elmi-praktiki jurnal, nömrə 3 (58)-2020. Səh. 186

assess the plausible risks before the crisis and reduce its negative effects.

Proposition 3: The main factor hindering the development of digitalization in the banking system is the lack of professional staff for digitalization. Therefore, when developing a digitalization strategy in the banking system, the development of personnel potential is considered a priority. The research was conducted based on the evaluation method of experts related to commercial banks, and the following system of indicators was taken as a basis for internal factors by the expert group: 1) Optimality of the structure of the banking system (Y_1); 2) The level of the infrastructure of the banking system (Y_2); 3) Level of use of innovation technologies in the banking system (Y_3); 4) Level of application of modern management in the banking system (Y_4); 5) Liquidity and volume of bank assets (Y_5); 6) Existence of a strategic development strategy in the banking system (Y_6)⁸.

During the expert evaluation, the approach used in the current scientific work was repeated. According to the assessment of the said expert group, the efficiency of the banking system was calculated according to the following formula:

$$f = \sum_{i=1}^n n_i Y_i$$

(formula is compiled by the author based on the assessment of experts)

Here, n – the level of significance (specific weight) of the i -th indicator; Y_i – is the value given by the expert of the i -th indicator. At the next stage, the quantitative measure of the internal factors affecting the effectiveness of the banking system was calculated based on expert assessment.

$$F_{med} = (4.316 + 2.944 + 2.129) / 3 = \mathbf{3.129}$$

⁸ Xubanov A.V. Bank sisteminin effektiv və dayanıqlı fəaliyyətinə təsir edən amillərin qiymətləndirilməsi - “İqtisadi artım və ictimai rifah” jurnalı. Nömrə 4. 2023

According to the considered methodology, the indicators affecting the effective operation of banks are interpreted as follows:

1. $1 \leq F \leq 2.5$ Banking activity - ineffective
2. $2.5 \leq F \leq 3.5$ Banking activity - moderately efficient
3. $3.5 \leq F \leq 5$ Banking activity was very efficient.

The results of the calculation are given in the table below (table 2).

Table 2

Results of expert assessment of internal factors affecting the effective operation of banks

Indicators	“Pasha Bank”			“Kapital Bank”			“Unibank”		
	n_i	Y_i	$n_i Y_i$	n_i	Y_i	$n_i Y_i$	n_i	Y_i	$n_i Y_i$
Y_1	0.217	4	0.868	0.217	3	0.651	0.217	2	0.434
Y_2	0.119	5	0.595	0.119	4	0.476	0.119	2	0.238
Y_3	0.168	4	0.672	0.168	3	0.504	0.168	3	0.504
Y_4	0.141	4	0.564	0.141	4	0.564	0.141	2	0.282
Y_5	0.197	5	0.985	0.197	3	0.591	0.197	1	0.197
Y_6	0.158	4	0.632	0.158	1	0.158	0.158	3	0.474
F=	$\sum_{i=1}^n n_i Y_i$		4,316			2,944			2.129

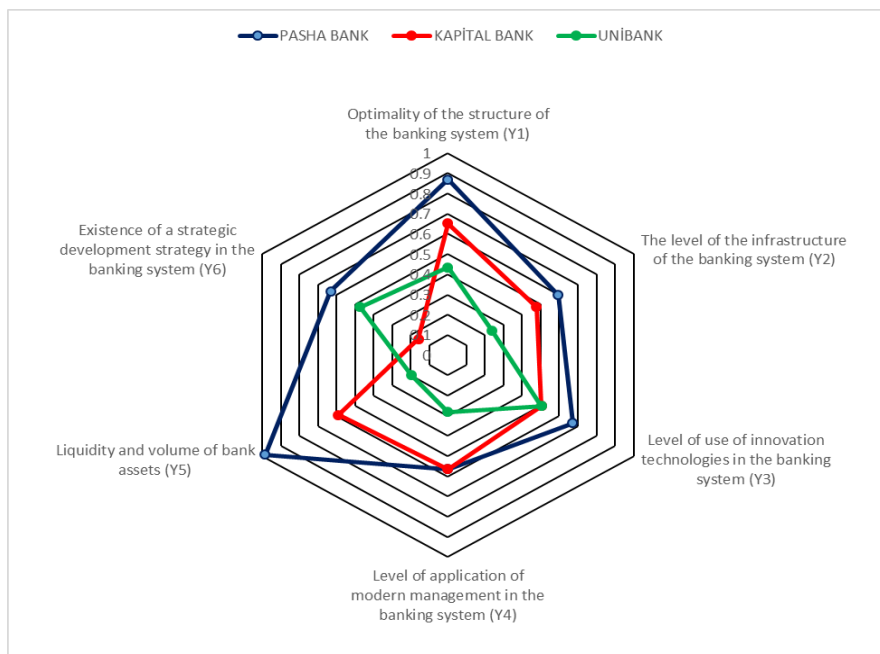
Source: the table was compiled as a result of calculations by the author, based on the assessment of experts.

As can be seen from the table, as a result of the expert assessment, the average value of the effectiveness indicator for the studied banks is **3.129**. This indicator for “Pasha Bank” was **4,316** – very efficient, for “Kapital Bank” it was **2,944** – moderately efficient and for “Unibank” this indicator was **2,129** – ineffective.

The result of the research shows that the level of efficiency and stability in other banks, except for “Pasha Bank” and KapitalBank, is not so high.

The results obtained on the basis of expert evaluation are depicted in the diagram below (Diagram 2).

Diagram 2. Diagram of the influence of internal factors on the effective operation of banks



Source: chart compiled by author based on expert assessment.

As can be seen from the diagram, the main factors hindering the effective operation of the banking sector in terms of internal factors are the lack of an effective strategy for strategic development in the banking system and the weak modern management of the banking system. Although these factors manifest themselves more in “Unibank”, they are characteristic of almost all banks operating in Azerbaijan. Therefore, the strategic development program and bank management in the banking sector should be improved.

As a result of the conducted research, it was determined that the current potential of the banking system of Azerbaijan is not fully used ⁹. Actions towards the full use of this potential should be

⁹ Хубанов А.В. Цифровое развитие банковской системы - Dördüncü sənaye inqilabının texnoloji perspektivləri: sənaye interneti, kiberfiziki sistemləri və

strengthened. The main factors that negatively affect the effective functioning of the banking system are the failure of the normative-legal base to meet modern requirements and low confidence in the banking system. In addition, the weak strategic management and management system in the banking scope have a negative impact on their effective operation. Therefore, reforms in this direction should be continued and an institutional system that meets modern standards should be formed.

The advantage of our proposed method is that with this one, it is possible to determine the impact value of the factors affecting the operation of any banking system, and to develop preventive measures to reduce the negative effects of the factors that hinder the effective operation of banks.

Proposition 4 The analysis of the financial activity of the majority of banks operating in Azerbaijan shows that there is a positive dependence between the digitization of banks and their level of profitability. The analysis of the banking system of Azerbaijan shows that the determinants of financial activity of banks are changing in a positive direction as large capitalization and digitization are applied (table 3)¹⁰.

In other words, there is a positive relation between the digitization of large operating banks and their level of profitability. Digitization of the banking sector of Azerbaijan and the volume of investments in this direction are increasing year by year¹¹. Therefore, the profitability of the banking sector is to increase in the near future.

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¹⁰ Хубанов А.В. Характеристика аспектов нового типа в финансовой и банковской среде - статья, "АМЕА-nın Xəbərləri İqtisadiyyat seriyası" jurnalının 2021-2 sayı. Həmmüəllif – Hüseynova X.M.

¹¹ Bank sektoru və rəqəmsallaşma - <https://banco.az/az/news/bank-sektoru-ve-reqemsallasma#:~:text=Az%C9%99rbaycanda%20da%20son%20ill%C9%99rd%C9%99%2C%20x%C3%BCsusil%C9%99%20d%C9%99%202018-ci%20ild%C9%99n,hiss%C9%99si%20internet%20v%C9%99%20mobil%20bank%C3%A7%C4%B1%C4%B1%C4%9Fa%20s%C3%BCr%C9%99tli%20ke%C3%A7id%20etmi%C5%9Fdir>.

Table 3

The dynamics of the profit indicator of the Azerbaijani banking system (million man.)

Profits and losses	2018	2019	2020	2021	2022
1. Profit (loss) before taxes	351.7	693.0	733.3	774.6	1,056.0
2. Profit taxes	72.3	156.1	165.5	165.6	196.6
3. Net profit (loss)	279.4	536.9	567.8	609.0	859.4

Source: Prepared by the author on the basis of the statistical compilations of the Azerbaijan SSC for the relevant years.

Proposition 5: It is important to focus on financing and promoting innovative projects in banks, increasing investments in digitalization and reducing risky investments. The analysis of the banking system of Azerbaijan shows that the basis for ensuring the efficient and stable operation of banks is their innovative development¹². Without expanding the application of modern innovative technologies in the banking system, it is impossible to ensure their efficient operation. In this regard, the situation in the banking system of Azerbaijan is not so good. Except for a few banks, the volume of funds invested in innovative technologies is at a low level in the banking system. In order to ensure the competitiveness of the banking system and stimulate their sustainable development, financing of innovative projects in the banking system should be encouraged. On the other hand, studies show that one of the main problems in the banking system is the large volume of risky investments. In this regard, it is recommended to reduce their volume in the banking system. In general, the process of increasing digitization and increasing innovative technologies in the banking sector continues dynamically¹³. Digitalization and innovation of the banking system is not limited to the use of plastic cards. The application of innovative

¹² Хубанов А.В. О сегодняшней роли технологий в банковском секторе - "Azərbaycan Respublikasının sosial-iqtisadi inkişaf perspektivləri: Məqsədlər, Vasitələr və İqtisadi İnkişafın İnklüzivliyi" Virtual Respublika Elmi Konfransı. DİA, 8 dekabr 2020-ci il.

¹³ Хубанов А.В. Краткий обзор развития мировой банковской системы. "İqtisadi və siyasi elmlər jurnalı", nömrə 2, iyun 2019. Həmmüəllif – Məhərrəmov A.M.

technologies in the banking system should be expanded in all areas. Innovations in the banking system are implemented in the management system and minimize the costs of banking services as a whole. The quality of banking services provided to customers increases due to the introduction of new innovative services in the banking system. Generally speaking, the application of innovative technologies in the banking sector is going to accelerate the transformation of the banking sphere into a new digital banking.

As the main locomotive of the financial sector in the national economy, the banking sector plays an important role. In this regard, building the country's banking sector at the level of modern standards, applying innovative technologies in this sphere is a very important issue in the conditions of globalization and tough competition. The application of innovative technologies in the banking system system by minimizing marginal costs in banks will lead to the offer of new innovative services and products for customers, efficiency and stability of the banking. In this regard, the application of innovative technologies in the banking system should be stimulated and investments in digitalization in the banking system should be increased¹⁴.

One of the main conditions for the development of effective digital banking in the country's economy is the provision of high-speed Internet in all regions of the country and increasing the digital literacy of the population. Therefore, in order to provide all regions of the country with quality internet and make it accessible, comprehensive work should be done at the state level. In terms of digital literacy, complex programs for the formation of human capital should be developed. Experience and studies show that those countries that are fully provided with high-speed internet and have a digitally literate population, the application of new information technologies and digital banking develop faster in those countries¹⁵.

¹⁴Rəqəmsallaşma bank sistemində yeni müştəri seqmenti formalaşdırır - <https://banco.az/az/news/reqemsallasma-bank-sisteminde-yeni-musteri-seqmenti-formalasdirir>

¹⁵Хубанов А.В. Цифровой банкинг как внутреннее поле борьбы и инноваций - статья, Journal of Economy and entrepreneurship, ном. 7 (132) 2021 г. Журнал включён в Перечень ВАКа РФ.

Due to the systemic reforms in the banking sector of the Republic of Azerbaijan, serious steps are being taken in the direction of the growth of digital banking.

It would also be appropriate to note that in the volatile economic conditions of 2023, the Central Bank of the Republic of Azerbaijan fulfilled its functions and carried out work aimed at the stability of the banking system. At that time, the fiscal system resisted the impact of crisis factors, and the economic strength of this segment increased.

Holders of bank assets invested them in low-risk securities. In the first 6 months of 2023, 58% of this type of financing (an amount close to 1 million manats) was invested in non-high-risk government bonds, and the remaining 39% was invested in corporate securities, commodities and cash. Due to the lack of high-risk capital in the financial sector, the need for second-tier fiscal instruments was not announced. It should also be noted that 95% of the assets were in US dollars¹⁶.

According to the report submitted by the International Bank of Azerbaijan on December 31, 2023, trade and investment securities were around 2.3 billion manats. Deposits in banks and other financial institutions amounted to 1.9 billion manats. Loans granted to banks and other financial institutions were close to 377 million manats¹⁷.

Thus, the ratio of trade and investment securities to loans given to clients is 0.46. The ratio of these securities to retained earnings is 6.1.

Also, in the report submitted by IBA on deposits and securities portfolio as of December 31, 2023, it is reflected that interbank deposits were equivalent to 1,847,849.50 thousand manats, of which 330,815.80 thousand manats were equivalent to "AAA - A" investment grade. Securities of financial institutions amounted to 184,820.79, and among them, the amount of "AAA - A" investment grade was equivalent to 138,815.09 thousand manats. However, as for the securities of non-financial institutions, the indicators here were the

¹⁶ Azərbaycan Respublikasının Mərkəzi Bankı. Maliyyə sabitliyi hesabatı - <https://uploads.cbar.az/assets/09b9304488242bc054f8c2eb6.pdf>

¹⁷ Azərbaycan Beynəlxalq Bankı. Maliyyə- vəziyyəti haqqında hesabat - https://abb-bank.az/storage/uploads/files/1704982587_Maliyy%C9%99%20v%C9%99ziyy%C9%99ti%20haqq%C4%B1nda%20hesabat%2031.12.2023.pdf

equivalent of 557,185.09 and only 3,335.15 thousand manats, respectively¹⁸.

Proposition 6: Given that the scale and speed of the transition to digital banking in the banking system is not satisfactory, it is important to increase efforts to bring it to the level of developed countries. The following table shows the average monthly number of transactions per 1,000 people, the average monthly number of transactions per ATM and also the average monthly number of transactions per POS-terminal (table 4):

Table 4

Indicators of use of payment cards and terminals

Year, month	Average monthly transaction per 1000 payment cards		Average monthly transaction per ATM		Average monthly number of transaction per POS-terminal	
	number, operation	volume, manats	number, operation	volume, manats	number, operation	volume, manats
2018	1573.8	240445.	2237.7	440648.2	19.1	2478.6
2019	1887.2	274370.3	2415.3	525391.0	32.5	2948.6
2020	2134.8	276308.8	2616.1	627675.8	68.7	5177.7
2021	2795.5	298005.1	2889.8	680506.6	146.3	7006.0
2022	4192.2	384286.3	3551.9	842997.4	232.4	8606.5

Source: Prepared by the author based on CBAR statistical bulletins for the respective years

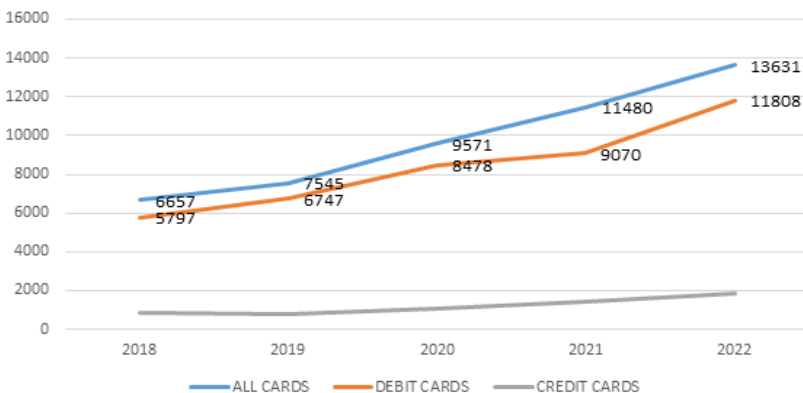
As it can be seen, there has been significant progress in the development of digital banking during the period under review. This was mainly achieved as a result of the reforms carried out in the banking system in the direction of the development of digital banking. Digital banking is widely used in almost the entire banking system.

¹⁸ Azərbaycan Beynəlxalq Bankı. Depozitər və qiymətli kağızlar portfeli (investisiya portfeli daxil) - https://abb-bank.az/storage/uploads/files/1706248276_depozitler-ve-qiymetli-kagizlar-portfeli-investisiya-portfeli-daxil-31122023.pdf

Commercial banks are taking serious steps in this regard and taking systematic measures for the development of digital banking¹⁹.

Due to the systemic reforms in the banking sector of the Republic of Azerbaijan, serious steps are being taken in the direction of the growth of digital banking. Currently, the number of plastic payment cards in the banking system has exceeded 15 million, and this number is dynamically increasing. In one year, the number of plastic cards increased by 19% compared to 2022. The growth was on both debit cards and credit cards. At the same time, the volume of transactions for all types of cards has also increased significantly (Diagram 3):

Diagram 3. Dynamics of the volume of card transactions



Source: Prepared by the author based on CBAR statistical bulletins for the respective years

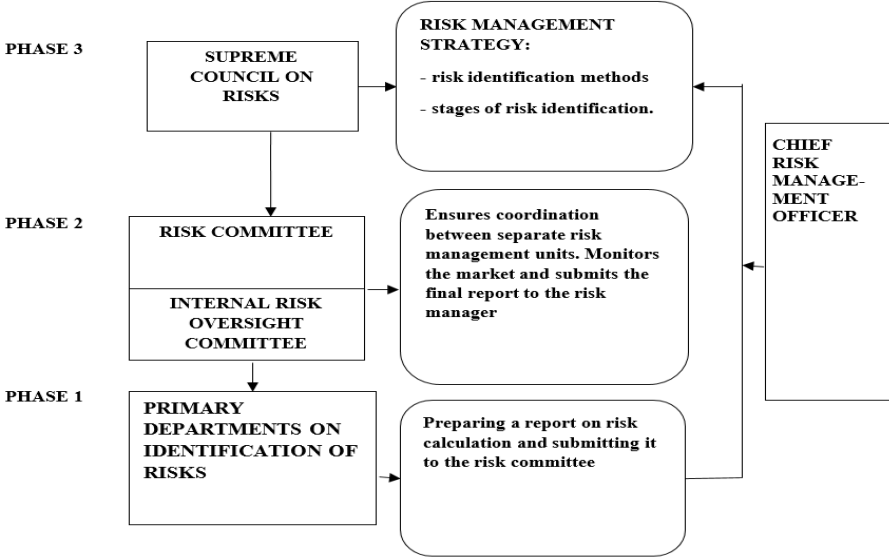
As can be seen from the graph, in 2022, compared to 2018, there was a more than two-fold increase in the volume of transactions made with plastic cards. The increase was mainly due to transactions made on debit cards. Due to the increase in number of plastic payment cards, the volume of non-cash payments raised to nearly 4 billion manats.

¹⁹ Xubanov A.V. Bank sisteminin effektiv və dayanıqlı fəaliyyətinə təsir edən amillərin qiymətləndirilməsi - “İqtisadi artım və ictimai rifah” jurnalı. Nömrə 4. 2023

This is important in terms of prevention of tax evasion in the economy and reduction of the hidden economy.

Proposition 7: There is a need to adapt the existing system of risk management to modern requirements in the banking system. As a result of the research, the below model for effective risk management in commercial banks was proposed (scheme 2).

Scheme 2: Risk management model in commercial banks



Source: the scheme was prepared by the author based on the analysis of the activity of commercial banks of the Republic of Azerbaijan.

As it can be seen from the scheme, it is proposed to implement the process of risk management in a commercial bank in three stages. At the first stage, the primary structural units develop their proposals for determining bank risks, examine methods and ways for identifying and evaluating them, analyze the permissible limits of risks and risk criteria. After agreeing the risk identification process with the higher authorities, they start the risk assessment operation. The final result is submitted to the risk management department.

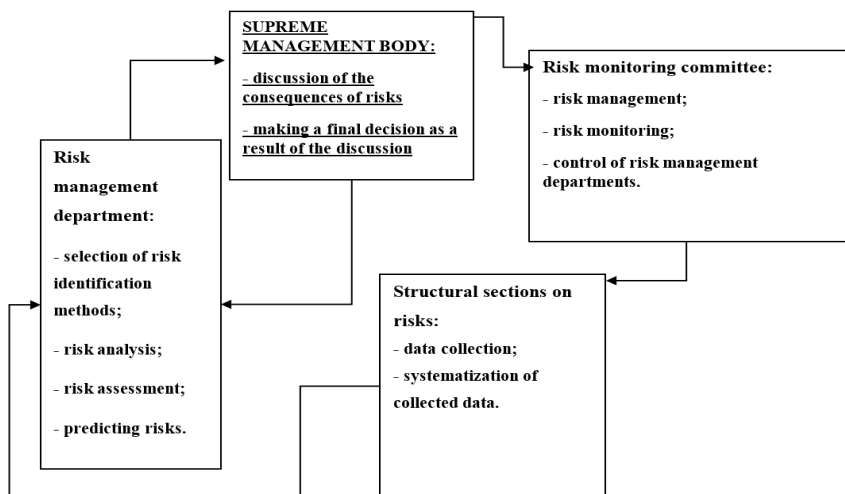
At the second stage, the risk management department analyzes and evaluates the results of the risk assessment report carried out by

the primary department in detail and determines whether it is in accordance with existing regulations and modern research methods. At this stage, the risk management department regularly monitors and controls the activity of primary structural units and makes suggestions for improving risk management.

At the third stage, the risk management department submits the results of the report by the primary structural units to the Supreme Supervisory Board. In the Supervisory Board, the submitted report on the bank risks is discussed collegially and a decision is made on whether to take or not to take risk reduction measures. At this time, it is very necessary to ensure close coordination and feedback between stages and departments.

Our proposed model can prevent losses that may occur during the operation of banks in conditions of uncertainty and risk, and ensure their stable, sustainable development. For the effective application of the above model in commercial banks, we have developed a block diagram containing its implementation mechanism (scheme 3).

Scheme: 3. Implementation mechanism of risk management in commercial banks



Source: The scheme was compiled by the author based on the model of risk management in commercial banks of the Republic of Azerbaijan.

Our proposed mechanism fully includes the relationship between the different departments of the commercial bank responsible for risk management, the exact function of each of them and the consistency of the risk management procedure²⁰. The proposed mechanism was developed in accordance with the modern methods of the risk management system available in the world in the banking, the legislation on banks in our country and the internal regulations of commercial banks. Application of this mechanism in commercial banks is important in terms of effective risk management and timely and prompt action against possible crises.

Proposition 8: The management system against cyber security in the banking system should be further strengthened, a centralized cyber security system should be created in the banking system and in the financial markets as a whole, and for this purpose, the amount of funds allocated to the improvement of the software should be increased. The experience shows that as the financial system becomes globalized, internet banking develops, and the volume of mobile payments increases, ensuring the cyber security of the funds in bank customers' accounts becomes more relevant²¹. Studies show that tens of billions of dollars are withdrawn from citizens' accounts without their consent every year. This reduces trust in the banking system. Therefore, it is necessary to ensure cyber security in the banking system and to increase the funds allocated for the improvement of software for this purpose²². Customers' and banks'

²⁰ Хубанов А.В. Характеристика аспектов нового типа в финансовой и банковской среде - статья, "AMEA-nın Xəbərləri İqtisadiyyat seriyası" jurnalının 2021-2 sayı. Nəmmüəllif – Hüseynova X.M.

²¹ Хубанов А.В. Актуальные процессы в сфере глобального цифрового банкинга - Материалы II Международной научно-практической конференции "Актуальные вопросы современной науки и практики", 30 oktyabr 2020-ci il. Rusiya Federasiyası, Tatarstan Respublikası, Çistopol şəh. Səh. 223-225.

²² MIT Technology Review. A \$620 million hack? Just another day in crypto - [https://www.technologyreview.com/2022/04/15/1050259/a-620-million-hack-just-another-day-in-](https://www.technologyreview.com/2022/04/15/1050259/a-620-million-hack-just-another-day-in-crypto/#:~:text=In%202021%2C%20criminal%20hackers%20stole%20approximately%20%243.2%20billion,dof%20smaller%20hacks%20involving%20tens%20of%20millions.)

[crypto/#:~:text=In%202021%2C%20criminal%20hackers%20stole%20approximately%20%243.2%20billion,dof%20smaller%20hacks%20involving%20tens%20of%20millions.](https://www.technologyreview.com/2022/04/15/1050259/a-620-million-hack-just-another-day-in-crypto/#:~:text=In%202021%2C%20criminal%20hackers%20stole%20approximately%20%243.2%20billion,dof%20smaller%20hacks%20involving%20tens%20of%20millions.)

funds are illegally withdrawn by hackers without their knowledge. In this regard, effective protective strategies in terms of cyber security should be developed. For this reason, in order to ensure cyber security in the banking system, the Central Bank of Azerbaijan adopted the "cyber security strategy in financial markets" covering the years 2023-2026. In addition, the "Strategy of the Republic of Azerbaijan on information security and cyber security for 2023-2027" was approved by the decree of the President of the Republic of Azerbaijan dated 28.08.23. The adoption of this strategy will ensure the minimization of possible risks related to cyber security in the financial system of Azerbaijan. In accordance with the adopted strategy, the following proposals are made to ensure information security in financial markets:

- Normative-legal base should be further improved;
- The management system against cyber security in the banking system should be further strengthened;
- Information technologies should be used more effectively in the banking system;
- Resilience of the banking system against cyber security should be ensured;
- A centralized cyber security system should be created in the banking system and financial markets as a whole.

As an outcome of the research conducted in the dissertation, the following results were obtained and suggestions were made:

As a result of a comprehensive study of the banking system of Azerbaijan, the main directions of sustainable development of banks were determined, the factors hindering its effective development also were determined, and scientifically based proposals and recommendations were developed in order to reduce them. The results obtained as an outcome of the research are as follows:

1. The emergence and formation of the digital ecosystem in the banking system is a new economic problem of recent times and has not been studied widely enough.

2. In the study, the approach to the concept of digital ecosystem in the economic literature was investigated and a more detailed

explanation of the term was given, taking into account the local characteristics. It was proposed to apply the universal hybrid model of the digital ecosystem in Azerbaijan.

3. As a result of the research, it was determined that the financial sector, especially the banking scope, which is its leading sector, is one of the most dynamically developing spheres in our country. Application of internet banking, mobile banking, artificial intelligence and other contactless technologies is one of the main requirements of the modern era. Currently, internet banking is developing rapidly in our country. However, it should be noted that the banking system in our country still lags behind the majority of some developed countries in terms of the application of digitalization. Systematic reforms should be continued in this direction. In particular, there is a need to develop training programs for the active use of Internet banking by customers and to stimulate its widespreading.

4. Analysis of the banking sector shows that the number of banks and credit organizations has decreased significantly in recent years. The trend shows that institutional reforms in the direction of bank concentration will continue in the near future. This is important both from the point of view of increasing the capitalization of the banking sector and also from the point of view of increasing their stability. On the other hand, experience shows that large banks are also more effective in implementing digitalization and investing in other areas of the economy. Large banks are also more effective than smaller banks in terms of investing in creating a digital ecosystem. Because creating it requires a large amount of investment. Such investments can only be made by large banks with large financial resources.

5. The analysis of the banking sector of Azerbaijan shows that “Kapital Bank”, “Pasha Bank” and “Unibank” invest more in the creation of digital banking and use more innovative financial technologies in their activities. On the other hand, the analysis shows that banks that invest more in digital banking are more profitable than other banks. This once again indicates how economically efficient digital banking is.

6. Creating digital banking in the banking system consists of several stages. The first stage includes the development of a strategic

plan for the creation of a digital ecosystem. The period of introduction and gradual expansion of digital banking belongs to the second stage. The third stage is the period of mature formation of digital banking. And finally, the fourth stage is the period of evolution of digital banking. At each stage, the formation and development of digital banking has its own risks. In the dissertation work, the risks that may arise at each stage are identified. All these risks must be taken into account during the strategic planning of digital banking. Otherwise, the formation and development of the digital ecosystem may result in failure.

7. The lack of specialized units dealing with risk management in the banking system hinders the sustainable development of the banking system. At the same time, the existing methods of risk management in the banking system do not meet the requirements of the modern era. They should be improved and modern methods of risk management should be used. Research shows that when the risk management system is effectively established by commercial banks, their stability increases.

8. Although the central bank has developed conceptual requirements and methodology for risk management, there is no universal method of risk management for all banks. Each commercial bank should independently develop risk assessment methods depending on its development level and characteristics.

9. The process of conducting stress tests in the banking system is not sufficiently developed. Improved stress-tests should be used regularly for risk assessment.

10. The level of risk limits in banks is not determined according to their volume, characteristics and level of development.

11. In many cases, the functions of state bodies on the banking supervision system overlap, which has a negative impact on the effective operation of banks.

12. A fair competition system should be created in the banking system and an antimonopoly legislative framework meeting modern standards should be adopted.

As a result of the study, the following proposals and recommendations were made:

For state structures:

- At the current stage, the main task facing the banking system is to develop a strategy for the development of the digital ecosystem for the long term.
- The legislative framework for digitalization of the banking system should be improved and adapted to international norms.
- In the banking system, the institutional base should be adapted to international standards, and an effective competitive environment should be created.

Suggestions and recommendations for the Central bank:

- Currently, the main task facing the Central Bank is to ensure the stability of the banking system and ensure effective crediting of the priority areas of the economy, including the non-oil sector and the real sector. In this regard, the Central Bank should regulate the activity of banks and ensure economic activity.
- Improving monetary policy in accordance with the Action Plan of the "Socio-economic Development Strategy of the Republic of Azerbaijan in 2022-2026 ", the Central Bank should determine the inflation target and the interest rate corridor at the optimal level, taking into account the risks in the financial market.
- In order to achieve the set goal, the Central Bank should reduce the shadow economy by reducing cash transactions and other economic reforms, diversify the country's economy, and ensure the development of the non-oil sector.
- For this purpose, reforms in the direction of improvement of financial markets should be continued.
- To reach the goal shown above, the institutional base of banks should be strengthened and banking legislation should be improved taking into account modern challenges.
- Coordination between fiscal and monetary policy, as well as between different financial institutions, should be strengthened.
- Taking into account the relatively poor use of their assets by local commercial banks for investment generation, we consider it expedient from a financial perspective to organize state-guaranteed

special low-interest credit channels by the Central Bank. The activity of the Central Bank in this field should be higher, commercial banks should encourage investments in the real and financial sectors, accountability for these matters should be demanded on more serious grounds.

- Systematic measures should be developed in order to develop the digital literacy of the population.

- A centralized cyber security system should be created in the banking system and financial markets as a whole.

- In order to ensure cyber security in the banking system, the amount of funds allocated to software improvement should be increased.

Recommendations for commercial banks and other credit institutions:

- Each bank should develop an adequate development strategy according to its development level and characteristics in order to ensure financial stability.

- Digital infrastructure should be developed in the banking system (ISO 20022).

- Control over the payment system should be strengthened and cyber security should be ensured.

- In this regard, the application of innovative technologies in the banking system should be stimulated and investments in digitalization in the banking system should be increased.

- In the banking system, bank customers should be provided with quality service and their rights should be protected.

- Confidentiality of personal data of bank customers must be ensured.

- The volume and quality of digital services in the banking system should be increased.

- Interest rates should be gradually lowered, access to financing for small and medium entrepreneurs should be facilitated.

The main provisions of the dissertation work, the obtained results and suggestions are reflected in the following published articles and theses by the author:

1. A.V.Khubanov. "A brief overview of the development of the world banking system". "Journal of Economics and Political Sciences", number 2, June 2019. Co-author – A.M.Maharramov

2. A.V.Khubanov. "Actual processes in the sphere of global digital banking" - Materials of the II International scientific and practical conference "Actual issues of modern science and practice", October 30, 2020. Russian Federation, Republic of Tatarstan, Chistopol city.

3. A.V.Khubanov. "Digital development of banking system" - Republican scientific and technical conference on topic of "Technological perspectives of the fourth industrial revolution: industrial internet, cyber-physical systems and intelligent technologies" AzTU, November 26-27, 2020.

4. A.V.Khubanov. About today's role of technology in the banking sector - "Prospects of socio-economic development of the Republic of Azerbaijan: Goals, Means and Inclusiveness of Economic Development" Virtual Republican Scientific Conference. DIA, December 8, 2020.

5. A.V.Khubanov. "A long-term struggle: the world credit system against economic crises" - "Kooperasiya" scientific and practical journal, number 3 (58)-2020.

6. A.V.Khubanov. "Characterization of aspects of a new type in the financial and banking environment" - article, 2021-2 issue of the "AMEA-nın Xəbərləri. İqtisadiyyat seriyası" magazine. Co-author – Khuseynova K.M.

7. A.V.Khubanov. "On the protection of bank assets during financial difficulties" – article. Azerbaijan State University of Economics - Scientific reviews . Year 9, Volume 9, July – September 2021. Co-author – Ibrahimli C.A.

8. A.V.Khubanov. "Digital banking as an inner field of struggle and innovations" - article, Journal of Economy and entrepreneurship, Vol. 15, Nom. 7 (132), 2021. The journal is included in the list of HAC, RF.

9. A.V.Khubanov. “Evaluation of the factors affecting the effective and stable operation of the banking system” – “Economic growth and public welfare” magazine. Number 4, 2023.

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Address: AZ 1143, Baku city, H. Javid avenue 115

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