

Varazdin Development and Entrepreneurship Agency and University North
in cooperation with
Azerbaijan State University of Economics (UNEC)
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec



Economic and Social Development

55th International Scientific Conference on Economic and Social Development Development

Book of Proceedings Vol. 1/4

Editors:

Altay Ismayilov, Khatai Aliyev, Manuel Benazic



ISSN 1849-7535



9 771849 753006 >

Baku, 18-19 June 2020

FINANCIAL INNOVATION IN THE CONDITIONS OF DIGITALIZATION OF THE ECONOMY

Ali Abbasov

*Azerbaijan State University of Economics (UNEC),
Baku, Istiqlaliyyat str., 6, AZ1001, Azerbaijan*

Zahid Mamedov

*Azerbaijan State University of Economics (UNEC)
Baku, Istiqlaliyyat str., 6, AZ1001, Azerbaijan
prof.zahid.mamed@gmail.com*

Victoria Kovalenko

*Odessa National Economic University
Odessa, Preobrazhenskaya str., 8, 65082, Ukraine
kovalenko-6868@ukr.net*

ABSTRACT

The study has confirmed that traditional approaches to the provision of banking services and banking business do not satisfy the growing demand and expectations of customers, do not meet the high requirements of efficiency and profitability. In this article the FinTech-companies and FinTech-services as the newest instrument of the market the Fintech of services are defined financial that conforms to relevant requirements of the modern world. In the article investigated modern tendencies are and characteristic features of financial innovations in such classes as radical and socially oriented, banking products and services, channels of service, internal processes. The FinTech companies are systematized and classified by areas of activity and their specialization, a number of their features and potential opportunities in the field of financial services are considered. The role of FinTech-companies and FinTech-technologies in the modernization of the financial services market is disclosed, the current world trends in the development of the FinTech sphere, as well as the prospects for their use, are investigated. There are identified the challenges and threats of the banking business, which are caused by the spread of digitalization of the economy and affect the emergence of financial innovations. It is concluded that the current stage of digitalization of the economy has determined the trends and directions of development of the banking sector. Banks should concentrate all their potential on the implementation of such tasks as:

- Identification of priority digital initiatives and the establishment of their clear coordination with the corporate strategy for the development of banks;*
- Digital initiatives should be reflected in key performance indicators before and after the introduction of financial innovation;*
- Definition of the dichotomy of traditional and digital corporate culture;*
- Formation of an external partnership with FinTech companies capable of generating innovative solutions.*

Keywords: *Innovation, Financial innovation, Digitalization of the economy, Financial services sector, Banks, FinTech companies*

1. INTRODUCTION

National economies' orientation on digital trends requires the use of latest innovative technologies in the financial sector. The financial market's development at the present stage is associated with the latest information technologies. This is especially noticeable in the financial market, where innovations in information are introduced and used due to the capabilities and

needs of financial institutions. The basic principles of introducing financial innovation (digitalization) in financial institutions are as follows: accessibility; special purpose; growth point; medias variety; openness and cooperation; standardization; trust and security. Now the issue of information technologies' use became very relevant and important for the further economic development. Governments are trying to create the most favorable conditions for the production of innovations in various fields. This generally contributes to the construction of a new type of economy – the digital one. The current stage of economy's digitalization has determined the trends and directions of financial institutions' development, therefore they should concentrate all their potential in determining the priorities of digital initiatives and establishing their clear coordination in the corporate strategy for the development of financial institutions; mapping digital initiatives in key performance indicators.

2. FINANCIAL INNOVATIONS' DEVELOPMENT OF NON-BANK FINANCIAL INSTITUTIONS

Ensuring a sufficient level of national economies' competitiveness as a prerequisite for increasing its position in the global sphere actualizes the necessity of an in-depth approach to the problems of innovative development. As noted in the EU Digital Order, the global financial crisis of 2008 led to the loss of a significant part of the gains made over the years of economic and social progress and demonstrated the structural weaknesses of national economies. To ensure sustainable growth in the future, it is necessary to develop a complex of measures that would create prerequisites for long-term transformations caused by the development of the digital economy (Kovalenko, 2020). During the crisis, the popularity of financial intermediaries is reduced due to problems associated with the specifics of this form of activity. In the US Congress, an amendment was made several tries to provide the restoration of Glass-Steagall Act, which prohibits the unification of diverse financial structures [9]. The development of national economic systems in recent years is closely linked with leadership in research and development, the emergence of new knowledge, the development of high-tech production and the creation of mass innovative products (Table 1).

Country	Rating by the Innovative Performance Index								
	2010	2012	2013	2014	2015	2016	2017	2018	2019
Ukraine	54	61	71	63	64	56	50	43	47
Russia	59	63	62	49	48	43	45	46	46
Azerbaijan	112	111	105	101	93	85	82	82	84
China	36	36	35	29	29	25	22	17	14
USA	6	5	5	6	5	4	4	6	3
Germany	17	16	15	13	12	10	9	9	9
Poland	52	51	49	45	46	39	38	39	39
India	70	71	66	76	81	66	60	57	52
Japan	18	18	22	21	19	16	14	13	15
Switzerland	1	1	1	1	1	1	1	1	1
Luxembourg	10	11	12	9	9	12	12	15	18

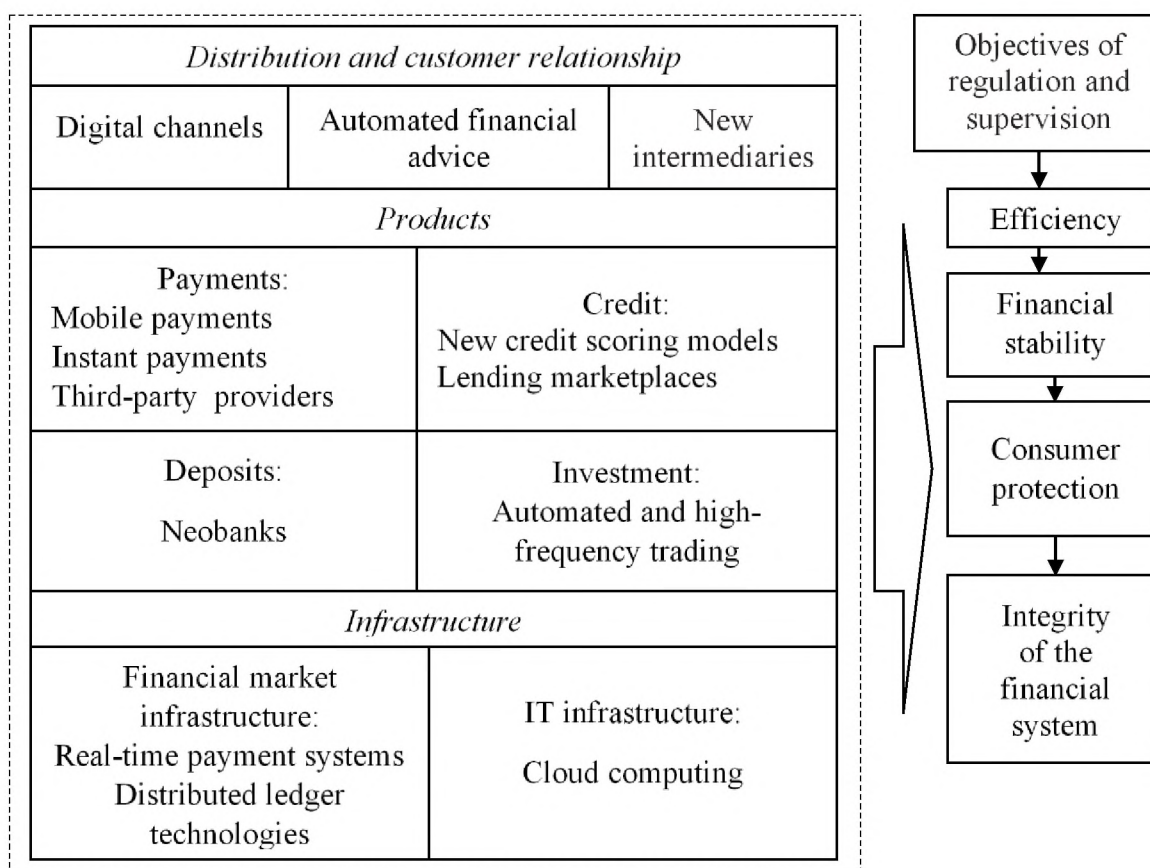
Table 1: Dynamics of the rating for some countries according to the Global Innovation Index in 2010-2019

(Source: The Global Innovation Index, 2019)

Switzerland takes the leading place in the world in the Global Innovation Index, which characterizes the creation of favorable conditions for innovative performance. At the same time, a rating increase is observed in the analyzed countries.

2.1. Theoretical basis for financial innovations' development

The use of new financial products, instruments and technologies helps to increase the income of financial institutions, enhance their competitiveness in the market, improve their image and increase the level of trust on the part of non-financial corporations and households. Most scientists associate the development of para-banking institutions with the advent and implementation of financial innovations. The weakening of bank-centricity of the financial sector due to an increase in the share and role of non-banking financial institutions is an independent systemic innovation that stimulates an the level of return on financial resources increase in the national economy as a whole (Mishchenko, 2010). The most acceptable concept of “financial innovation” is the following one: “the result of a creative search for a new approach to solving problems in the financial sector, which is realized through the creation and diffusion of new financial products, services, instruments, technologies, processes and organizational forms focused on the effective management of financial resources and risks, ensuring financial stability and competitiveness in the face of variability, uncertainty and information asymmetry of the economic environment” (Pantelieieva, 2014). The spread of innovations in the financial market is associated with the concept of “diffusion of innovations”, the main forms of which in non-banking financial institutions are: movement, adaptation, integration, construction of financial innovations, and, if necessary, creation of new financial institutions and innovations. The development of financial innovations is associated with transformations of the financial market itself (Fig. 1).



*Figure 1: Transformations in the financial sector
(Source: González-Páramo, José Manuel, 2018)*

The current classification of financial innovations in non-banking financial institutions is presented in Table 2.

Sign	The object of financial innovation	Instruments
Financial markets	Money market	Loans, deposits, certificates of deposit, short-term bonds
	Capital market	Stocks, bonds, investment certificates
	Derivatives markets	Derivatives
	Currency market	Foreign currency, loans and deposits, bonds
	Gold market	Gold, investment coins, “gold” deposits
	State finance	Government securities, government loans, public-private partnerships
Financial institutions	Financial institutions	New financial institutions, financial transactions, technologies, organizational and management methods
	Financial market regulators	New methods of regulation and supervision of financial institutions
	Laws, rules, customs, national characteristics	Legislative and regulatory framework for taking into account rules, customs, national characteristics
Financial instruments	Securities, loans, deposits, derivatives, structured products, hybrid instruments	Stocks, bonds, investment certificates, securities derivatives, credit notes, securitized bonds, project finance, subordinated debt, factoring
Financial operations and services	Separate operations and services that provide financial institutions	Loans, deposits, insurance and retirement benefits, underwriting, IPOs, leasing, building financing certificates, guarantees
Financial technology	Online service technologies customers	E-trading, payment cards, e-money, P2P-crediting
	Payment technologies	Payment cards, electronic money
	Risk management technologies	Derivatives, guarantees, letters of credit, securitization, scoring, risk hedging
	Laying and support technologies contracts	Financial engineering, project financing, mezzanine financing

*Table 2: Modern classification of financial innovations in the financial sector
(Source: compiled by the authors)*

The growth in demand for financial services determines the use of new technical solutions, technologies and means of providing traditional services by non-banking financial institutions, as well as the development of new services and products that maximally meet the urgent needs of consumers, creating an innovative environment and an appropriate structure of the non-banking financial services market (Kovalenko, 2020). The basic principles of introducing financial innovations (digitalization) in non-banking financial institutions are as follows:

- Accessibility – ensure equal access for every citizen to the services, information and knowledge provided on the basis of information and communication technologies.
- Purpose – aimed at creating benefits (profits) in various aspects of everyday life.

- Growth point – mechanism (platform) of economic growth due to increased efficiency and increased productivity from the use of digital technologies.
- Medias variety – contribute to the development of the information society, the media, the “creative” environment and the “creative” market.
- Openness and cooperation – focused on international, European and regional cooperation for the global integration of the e-commerce market and services, banking and exchange activities, cooperation and interaction in regional markets.
- Standardization – standards increase competition, reduce costs and cost of production, guarantee compatibility, maintain quality, and increase country’s GDP.
- Trust and security – building trust, including information security, cybersecurity, protecting the confidentiality of personal information, privacy and rights of ICT users, is a prerequisite for the simultaneous development and security of financial innovations in non-banking financial institutions.

2.2. FinTech development trends

Despite the numerous achievements of scientists in the field of FinTech development, issues of deepening the theoretical aspects of the development and implementation of new innovative financial technologies in practice, understanding of the processes of their influence on the development of the financial services market remain relevant. The questions of the essential definition of FinTech, the features of its existence in modern conditions of the active development of the information society remain unexplored. FinTech is an innovative way to use technology in the development and delivery of financial services, transforming the banking world through the use of artificial intelligence, Big Data technologies, digital payments (Desai, Kavitha, 2019). The term “FinTech” (sometimes: fintech, or Fintech) is a neologism, derived from the words “finance” and “technology” and describes the combination of modern technologies related to the Internet (for example, cloud technology, mobile Internet) with the financial services industry (for example, lending, transaction banking) (Gomber, Koch, Siering, 2017). Digitalization opens up new channels not only for financial transactions, but also for FinTech companies. New technological systems are implemented on the basis of the following principles:

- availability and speed of work (the Internet as the main place of service);
- scalability and openness (Open-API interfaces);
- distributives (technology of distributed registries);
- customer information’s safety and security (validation, encryption and cryptography);
- standardization (tokenization of contract elements), use of cloud repositories for data storage, for analysis – large amounts of information and machine learning methods. The implementation of these principles allows FinTech-companies to provide services independently of banks, creating the basis for increased competition (Table 3).

Considering the transformation of financial services, it should be noted that their range has grown significantly. In particular, FinTech includes:

- payment related products – mobile payments, ecommerce, P2P transfers, alternative payment instruments; blockchain technologies are exceedingly notable, e.g. cryptocurrency;
- financing instruments that represent an alternative to banking institutions in terms of lending – crowdfunding, factoring and in terms of investment business – asset management tools – private finance management, robo-trading, risk management;
- technologies mediating the provision of financial services – datamining tools, marketplace;

- services associated with RegTech industry regulation (regulatory technologies), aimed at ensuring compliance with supervised regulatory requirements and SupTech (supervisory technologies), which contribute to the implementation of regulatory functions by regulators (Travkina, Molokanov, 2019).

Technologies		Financial services				
Foundations	Innovations	Pay	Save	Borrow	Manage	Get advice
Artificial intelligence, Big Data	Machine Learning		Investment advice			
				Credit decisions		
				Fraud Detection		
	Predictive analytics	RegTech, SupTech, InsureTech				
			Asset trading			
Distributed computing	Distributed ledger	Settle payments				
		B2B services				
		Back-office				
		Digital currencies				
Cryptography	Smart contracts	Automatic transactions				
	Biometrics	Identity protection				
Internet	APIs	Dashboards				
		Digdital Wallets				
			P2P, Microcredits		Factoring	
	Mobile access		Crowd-funding			

Table 3: Technologies, transforming financial services

(Source: Travkina, Molokanov, 2019)

The TOP 10 leading FinTech companies in 2019 include: “Ant Financial” (China), “Grab” (Singapore), “JD Digits” (China), “GoJek” (Indonesia), “Paytm” (India), “Du Xiaoman Financial” (China), “Compass” (United States), “Ola” (India), “Opendur” (United States), “OkNort” (United Kingdom) (KPMG, 2019).

In 2019, the following nominees were noted in the field of introducing financial innovations in the financial services market:

1. The largest financial institution for the introduction of financial innovation – 2019 was a historic year for Citi Ventures (USA), demonstrating innovative achievements in the field of venture investment and product development. Portfolio Company Citi Ventures HighRadius becomes the first unicorn startup in 2020 with volumes of \$125 million.
2. Breakthrough innovations in the field of financial services, namely, artificial intelligence – Ping An Group (China), the company has developed an interview system based on artificial intelligence. This solution can be used to recruit candidates for entry-level positions, as well as for leadership positions that require complex skills.
3. An innovative solution in the field of financial services – JUMO Platform (South Africa), offered traditionally hard-to-reach customers a list of instant, affordable, high-quality borrowing options using a mobile phone. Its affordable financial services market is interface-independent and uses technology widely spread in every market.
4. The best use of advanced technologies in products and services – OneConnect Financial Technology Co., Ltd (China), FiMAX blockchain trade finance network – blockchain solutions aimed at the organic combination of various parties in trade finance.
5. Touchpoint Innovation (RBC, Canada) – DRIVE, mobile and web application, allows Canadian car owners to keep abreast of car maintenance.

6. Innovative incubator – Citi Ventures, D10X (USA) – a global program that encourages internal entrepreneurship by allowing Citi employees to create, test and launch new solutions that are exponentially better for their customers.
7. RegTech Innovation (TSYS, USA) – an instrument for assessing fraud and risk management, which includes innovative capabilities of machine learning in real time to provide advantages in the fight against fraud in transactions.
8. Innovations in marketing (Caixa Bank SA, Spain) – the approach is focused on quick and interactive tests aimed at optimizing user interaction and digital sales (Kovalenko, 2020).

3. FINTECH AND BANKING BUSINESS: ADVANTAGES AND THREATS

The FinTech industry has evolved from the initial stage to the stage at which it is able to determine user expectations. FinTech service providers do not look like startups, but more like companies with professional management, broad operational capabilities, a comprehensive set of products and an international presence. Many of these companies went through several rounds of fundraising, expanded staff, created corporate departments such as human resources, accounting and legal, and went far beyond their global regional markets. The intensity of development of FinTech is primarily caused by the growth of the Internet around the world, as well as digitalization processes, covering almost all spheres of human life, including the financial sector (Fig. 2).

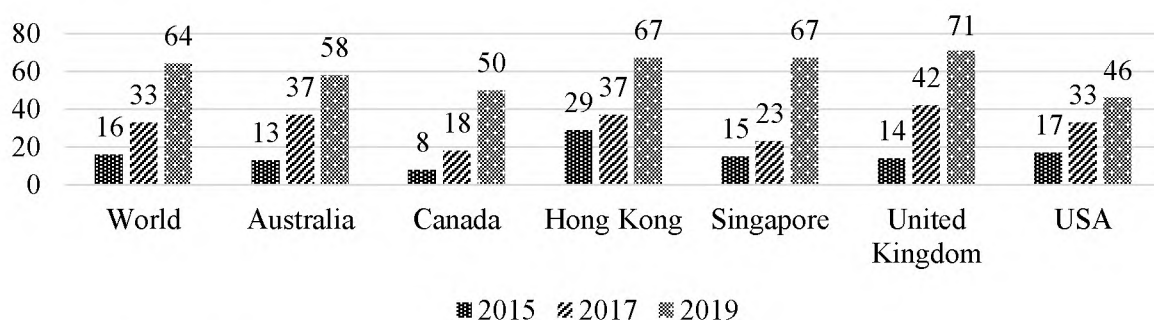


Figure 2: Penetration rate comparison FinTech in markets in 2015-2019, %
(Source: compiled by the authors, KPMG, 2019)

The modern development of FinTech raises many questions about the further development of the banking industry, in particular, in Azerbaijan and Ukraine. Thus, the scientific works of Azerbaijani economists focus attention on the digitalization and e-transformation of the financial industry and the banking system in the framework of the network economy (Abbasov, Mamedov, 2004; Abbasov, Mamedov, 2007; Kerimov, Babayev, Kerimova, 2018), studying the digital banking model in the modern economic paradigm (Mamedov, 2019; Abbasov, Mamedov, Aliev, 2019), the imperatives of activating the innovative component of foreign economic banking (Murshudli, 2013) and the development of international banking business (Murshudli, 2018; Murshudli, 2018a) in the context of financial globalization. The team of Ukrainian authors of the scientific article (Zveryakov, Kovalenko, Sheludko, Sharah, 2019) determine that, under the conditions of further development of FinTech, the key to banking business models may be the discovery of innovation – applications that allow other companies to participate in the customer value chain. This will facilitate the adaptation of banks to market conditions in which the regulator itself stimulates competition from other market entities, for example, in the payment services market. Banks can benefit a lot from open APIs, as it is possible to integrate third-party services – within their own platform. Banks can become a source of innovation – “FinTech enablers” – and take on innovative services previously provided by other companies – links in the value chain.

Thus, a cooperation strategy, not just competition, can bring many benefits to banks. These types of system platforms for innovative one-stop-shop customer service are already in use by banks. FinTech companies can also expand their part of the market through cooperation with banks, the formation of a new approach to the client, innovative use of infrastructure (Cloud Computing) and a database (Big Data). Key players in the digital banking platform market are Appway, CREALOGIX, Temenos (Switzerland); Backbase (Netherlands); ebanklT, Finastra, ieDigital (United Kingdom); EdgeVerve, Intellect Design Arena, TCS (India); ETRONIKA (Lithuania); Fidor, SAP (Germany), Fiserv, Kony, Technisys, BNY Mellon, Oracle (USA); Halcom (Slovenia); NETinfo (Cyprus); N.F. Innova (Austria), SAB, Sopra, Worldline (France), Tagit (Singapore). With the development of technology and the emergence of new business models of the FinTech industry, completely new players, which are not directly related to the financial sector, will arise. Financial companies that have taken a wait-and-see attitude to understand which technology will win and become widespread risk losing their market position. According to PWC, more than 80% of banks in the world lose their income due to the development of the functionality of FinTech companies. However, in conditions of mass technologicalization, retro-banks or insurance companies can occupy a certain niche: their services will be in demand by conservative customers. The model of non-banks is becoming popular – these are “full-fledged” banks with a traditional set of services (opening accounts, lending, deposits, etc.), but, as a rule, without a network of physical branches; for the sale of products and the provision of services using special mobile applications, sites, accounts on social networks. The convenience of a new generation bank lies in its simple interface, powerful remote support service and understandable rates. Based on the foregoing, it is possible to summarize the opportunities and threats that FinTech developing brings to the banking business (Table 4).

Areas of influence	Treats	Opportunities
Consumer sector	confidentiality and data security; lack of continuity in banking processes; unacceptable marketing practices	high-specialized banking services' provision; transaction costs' reduce; banking processes' accelerating
Banks and the banking system	strategic risks and profitability risks; increasing the relationship between financial parties; high operational risk; third parties management risk; compliance risk includes the failure of consumer protection and data protection regulation; terrorism financing risk, money laundering risk; liquidity risk and banks' financing sources volatility risk	improvement and more effective realization of banking processes; innovative use of data for marketing and risk management purposes; potential positive impact on financial stability due to increased competition; RegTech
Effective sign: banks' implementation of innovative Big Data analysis approaches – super data arrays of unstructured information, which is a source of client analytics and forecasting, allows to establish a new standard of multichannel service and multidimensional information profile of a client on the basis of revealed behavioral patterns, prevent customer migration, within the client-oriented paradigm, ensure cross-sales growth of banking products and services, minimize credit risks, identify fraudulent transactions, increase loyalty and trust		

*Table 4: Risks and advantages for banking sector arising from FinTech
(Source: compiled by the authors)*

Financial technologies affect the banking mainly through changes in the market structure: they reduce barriers of entry to the market and increase its spatial coverage. The strength of this influence depends on the appearance of the same innovations, but also on the spread of these innovations in the market. The banking services market is also affected by competition from non-banking financial institutions, including FinTech companies. They have financial assets, i.e. property obligations of other organizations, and meet the same or similar needs as banks (Shmuratko, Sheludko, 2019). Thus, banks operate under conditions of enhanced competition, and in order to maintain a competitive advantage, it is necessary to offer services that compete with insurance companies, investment funds or other para-bank institutions, as well as with the rapidly growing FinTech sector. If initially Fintech was an alternative and a threat to traditional banking, now the introduction of these innovations in the banking market is so significant that banks began to conquer the situation and compete with Fintech companies. Because of their financial strength, banks acquire that entities, which is preserving and further increasing the attractiveness of financial technologies for market subjects.

4. CONCLUSION

The current stage of digitalization of the economy has determined the trends and directions of development of non-bank financial institutions, so they must concentrate its full potential, namely: defining the priorities of digital initiatives and establishing a clear consistency of them in the corporate strategy of financial institution development; displaying digital initiatives in key performance indicators as well as in assessing business value growth before and after the introduction of financial innovation. Analysis of the effectiveness of financial innovation implementation should be based on an assessment of the results obtained in terms of their impact on the level of competitiveness, financial stability, profitability and reputation of a non-bank financial institution. From the point of view of evaluating the effectiveness of financial innovation for consumers, it is necessary to analyze the conformity of the results of its use to the requirements and needs, which are acceptability of financial innovation for its quality, availability and costs. Coherence of organizational and planned measures for introduction of financial innovations should help to increase the level of innovation and performance of the non-banking financial sector. The growing demand from banks for improved customer service, the introduction of cloud platforms to provide greater scalability, and the introduction of smartphones and tablets will drive the growth of the digital banking platform market. The main factor limiting the growth of the market is the complexity of integrating digital banking platforms with legacy systems.

ACKNOWLEDGEMENT: *The authors received no direct funding for this research.*

LITERATURE:

1. Abbasov A.M. Mamedov Z.F. (2004). *Digitalization of Finance: E-money, E-banking, E-market of Securities: Monograph*. Baku: BSU Publishers, 175.
2. Abbasov, A.M., Mamedov, Z.F., Aliev, S.A. (2019). Digitalization of the Banking Sector: New Challenges and Prospects. *Economics and Management*, 6, 81-89. [https://doi.org/ 10.35854/1998-1627-2019-6-81-89](https://doi.org/10.35854/1998-1627-2019-6-81-89)
3. Abbasov A.M., Mamedov Z.F. (2007). *Electronization of the Financial Industry in a Network Economy. Monograph*. Baku: Azernashr State Publishing House, 336.
4. Bloomberg. (2016). *Republican Platform under Trump Backs Glass-Steagall's Return*. Retrieved 02.03.2020 of from <https://www.bloomberg.com/politics/articles/2016-07-18/republican-platform-under-trump-backs-glasssteagall-s-return>.
5. Desai, K.R., Kavitha, J. (2019). Fintech Innovations and its Impact on the Profitability of Selected Banks. *International Journal of Business and Management Invention*, 8(01), 41-45.

6. Gomber, P., Koch, J-A., Siering, M. (2017). Digital Finance and FinTech: Current Research and Future Research Directions. *Journal of Business Economics*, 87(5), 537-580.
7. González-Páramo, J.M. (2018). *Financial Markets, Insurance and Private Pensions: Digitalisation and Finance*. OECD. Retrieved 19.03.2020 of from <http://www.oecd.org/finance/Financial-markets-insurance-pensions-digitalisation-and-finance.pdf>.
8. Kerimov A.E., Babaev A.A., Kerimova D.A. (2018). Innovations in the Banking System of Azerbaijan: Problems of Integration of Banking Systems and Development of Electronic Financial Services. In *Actual Issues of Financial Policy and the Development of the Monetary System. Monograph*. Baku: "Science and Education" Publishing House, 520 (183-264).
9. Kovalenko, V. (2020). Development of Financial Innovations in Non-bank Financial Institutions. *Pryazovskyi economic herald*, 1(18), 244-250.
10. KPMG. (2019). *Fintech100 2019: world leading fintech innovators*. Retrieved 10.04.2020 of from <https://home.kpmg/xx/en/home/insights/2019/11/2019-fintech100-leading-global-fintech-innovators-fs.html>.
11. Mamedov, Z.F. (2019). Digitalization of the banking sector of Azerbaijan: new challenges and prospects. In *Caspian Region in Digital Economy Era: Materials of the International Scientific and Practical Forum (Astrakhan, May 24-25)*. Astrakhan: Astrakhan State University, "Astrakhan University" Publishing House, 426 (38- 44). Retrieved 30.03.2020 of from https://elibrary.ru/download/elibrary_39551047_56600930.pdf.
12. Mishchenko, S. (2010). Problems of Estimation of Influence of Stability of Functioning of Monetary Sphere on Economic Security of the Country. *Finance of Ukraine*, 7, 35-49.
13. Murshudli, F.F. (2013). *Banking Services of Foreign Economic Activities of Azerbaijan in the Conditions of Financial Globalization*. Baku: "East-West" Publishing House, xvi, 416 (254-266).
14. Murshudli F.F. (2018). Innovative Trends of International Banking Business (Case of Azerbaijan). *MGIMO Review of International Relations*, 1(58), 186-212. doi: 10.24833/2071-8160-2018-1-58-186-212.
15. Murshudli F.F. (2018a). International Banking: Innovative Imperatives. In *Actual Issues of Financial Policy and the Development of the Monetary System. Monograph*. Baku: "Science and Education" Publishing House, 520 (264- 294).
16. Pantieliieva, N.M. (2013). *Financial Innovations in the Banking System: Theory, Methodology, Practice*. Kiev: UBS NBU, 526.
17. Shmuratko, J., Sheludko S. (2019). Financial Technologies' Impact on the Development of Banking. *Financial and credit activity: problems of theory and practice*, 4(31), 52-60.
18. *The Global Innovation Index*. (2019). Retrieved 02.03.2020 of from: <http://www.globalinnovationindex.org>.
19. Travkina, E., Molokanov, A. (2019). Modern Types of Financial Innovations in the Conditions of Digitalization of the Global Banking. *Advances in Economics, Business and Management Research. 2nd International Conference on Economy, Management and Entrepreneurship (ICOEME 2019)*, 85, 18-22.
20. Zveryakov, M., Kovalenko, V., Sheludko, S., Sharah, E. (2019). FinTech Sector and Banking Business: Competition or Symbiosis? *The Economic Annals – XXI*, 175(1-2), 53-57.