
The Transformation of Traditional Banking Activity in Digital

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Abstract:

Purpose: This article investigates specifics of the transformation of banking activity in the conditions of digitalization of the economy. In the light of penetration of digital technologies into all the spheres of our life, the rapid development of financial technologies and their active implementation in the banking sector of the economy, digital financial innovations are formed at the intersection of the concepts of "financial technologies" and "financial innovations".

Design/Methodology/Approach: In order to investigate the process of transformation of the banking sector in the context of digitalization, it is necessary to consider this issue from three points of view: 1) theoretical understanding of the concept of "financial technologies"; 2) the need to ensure the efficiency and sustainability of the banking sector; 3) the change in the IT-architecture of banking activities and the formation of the digital ecosystem with banks in the center. It is also reasonable to analyze promising areas of implementation of financial technologies into the banking sector.

Findings: The main directions of the development of financial technologies in the banking sector, aimed at further transformation of traditional banking services through digital technologies.

Practical Implications: The results of the study can be applied in the development of the legislative regulation of the FinTech industry in Russia.

Originality/Value: The main contribution of this study is to determine the prospects for the development of the domestic banking sector in the context of digitalization, the need to transform in order not only to improve the competitiveness and efficiency of functioning, but also to stay in the banking business.

Keywords: FinTech, transformation of the banking sector, digitalization of the banking sector, digital ecosystem, big data, blockchain technology.

JEL codes: G21, E50, O31.

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1. Introduction

One of the main factors for the growth of the modern economy is the development of digital technologies in the financial market. Digitalization covers both separate and complex sectors, resulting in significant savings of the human resources and all costs connected with them, which improves competition. Nowadays, the financial system in general and the banking sector in particular, are developing in accordance with the modern requirements of the digital economics. Due to the digital transformation, business models and concepts for the banking sector's development are being improved.

The process of digital transformation is considered as the use of digital technologies to improve business models, as well as to improve their efficiency. This process involves the introduction of innovative technologies on an ongoing basis, which will lead to a full digital transformation of the entire economy (Ablyazov and Asaul, 2018). The use of digital technologies improves the ways of interaction between banks, government and potential customers (Thalassinos and Thalassinos, 2018). Digital transformation involves the widespread introduction of modern ways of providing banking services. The number of bank branches is decreasing, and many services are being transferred online, especially when lending or investing funds (Pirainen, 2016). The innovative development is the main opportunity for sustainable and long-term growth in the efficiency of banks. Today, digitalization has become a strategic priority for the banking industry in the world. The driver of the changes taking place in the banking sector are modern financial technologies (Rupeika-Apoga *et al.*, 2018).

2. Theoretical, Empirical and Methodological Grounds

The origin of the term "FinTech" (financial technology) dates to early 90-ies. According to Professor P. Shovel, during this period, the bankers proposed projects to optimize banking services due to technological amplification. Such projects were called "FinTech", considered to be innovative and contributing to the efficiency of financial services. Initially, the concept of "FinTech" was applied to the technology of background work of financial institutions. Then, it was interpreted more widely, including projects of improving the financial literacy and cryptocurrency, on the one hand, and went beyond the boundaries of the English language, becoming a global slogan (Schueffel, 2017).

Most experts agree that the surge in financial technology began after the 2008 global financial crisis and a lack of confidence in banks and sharply complicated access to credit. This period is called the Golden age of FinTech. However, interest of regulators, industry participants and consumers in it and in the financial technology sector arose after 2014. For example, in 2016 in Russia, the Central Bank created the "Department of financial technologies, projects and process organization", there was also established the Association "FinTech", which included the largest representatives

of the Russian financial business – the Bank of Russia, Sberbank, VTB, AlfaBank, etc. In addition, SWIFT and the Bank of Russia announced a competition of FinTech start-ups Innotribe within International Banking Congress in St. Petersburg in July 2017.

The leaders of FinTech in the world are China and India. The share of banking operations performed with the use of financial technologies exceeds 50%. The penetration of new digital models into the US financial sector, by contrast, is a small share – less than 1% (Skogorev, 2017). In Russia in 2015 investments into financial technologies were 4% of the total volume. In 2016, they grew against the background of a decrease in the total investment volume and amounted to \$15 million. However, the total volume of Russian investments into financial technologies is only 0.2% of the world level (Osipovskaya and Mikhaylin, 2017; Vovchenko *et al.*, 2017).

However, now there is no general approach to the definition of "FinTech". The most widely used definition is its interpretation as "a complex system uniting the sector of new technologies and financial services, start-ups and appropriate infrastructure" (Maslennikov, 2017). As a rule, in all the sources financial technologies are defined similarly, with small variations. Filippov (2018) defines FinTech as "an industry consisting of companies that use technology and innovation to compete with traditional financial institutions in the form of banks and intermediaries in the banking market".

Pshenichnikov (2018) clarifies the composition of these companies (banks and other financial institutions), expands and concretizes the markets of their activity (the market of financial services, including payment systems, capital management, lending, insurance and currency transactions). PwC (Global FinTech Report PwC, 2017) and other authors (Pertseva, 2017) interpret FinTech as a dynamic segment at the intersection of the financial services and technology sectors, in which technology start-ups and new market participants apply innovative approaches to products and services provided by the traditional financial services sector.

The Financial Stability Board (FSB) in 2017 gave a brief definition of "FinTech" as a "technological innovation of financial services", understanding it as a combination of products/services in the form of digital retail payments, digital wallets, FinTech-credit, Robo-advisor (eng. robo-advisor – the robotic advisor), digital currencies, and their main technologies (Financial Stability Implications from FinTech, 2017).

According to the above data FinTech goes far beyond the boundaries of the financial market. This allows to talk about the convergence of the financial world based on financial technologies. Thus, FinTech can be represented as a financial industry with innovations. At the same time, the concept of "financial innovations" is much broader than "financial technologies", because not all financial innovations can be classified as financial technologies (for example, the creation of a new derivative). In addition,

financial innovations can partly be included into the concept of "digital economy", while the functioning of FinTech without digital technologies is almost impossible.

Financial technologies are a transformed service that is provided through IT technologies, solutions and data not used before, that allows it to be delivered at a higher level of utility. The inevitability of the ever-increasing use of digital financial innovations in banking leads to a dual effect:

- on the one hand, the activation of new technologies leads to the modernization of banking services, increasing the availability of banking services and the speed of their provision, which increases the demand for them and leads to an increase in the profitability of institutions by balancing the margin provided in turn by reducing transaction costs;
- on the other hand, the active transfer of transactions to the digital field, as well as the threat of reducing their cybersecurity, increase the risks associated with banking activity; however, the refusal to develop financial technologies in the work of the organization will lead to even more negative consequences.

The financial capacity of banks allows them to make significant investments into innovation. However, if until recently, the main task of IT-departments of banks was the implementation of business goals with the use of digital technologies set by top management, in the era of digital transformation there are tasks of a complete rethinking of the business idea. Thus, we can see that first, there is a transformation of IT-architecture of banks, allowing to use such innovative IT-technologies as:

- cloud technologies and big data (Bigdata). Cloud technologies provide access to data without installing special applications on the device, which allows banks to offer their products anywhere in the world through the centralization of services on the network. Big data, in turn, provides customers with personal targeted proposals based on the analysis of heterogeneous and fast-flowing digital information, the sources of which are the Internet, corporate archives of documents, sensor readings, instruments, etc.;
- API (Application Programming Interface, i.e., application programming interface, application programming interface) integrated into customer interaction systems. An API is a set of prepared classes, procedures, functions, structures, and constants that are provided by an appendix, service, or operating system for the use in external software products (Pshenichnikov, 2018);
- social media and mobile communication with special appendix. Integration of banking business with social networks allows to provide information about customer preferences. Examples of successful implementation of such relations in retail is Amazon, in the banking sector is Deutsche Bank. Digital transformation is achieved through a full-fledged study of customer experience and analysis of both existing needs and the identification of new ones. It is the consumers of banking services that are the driving force of innovative development of banks, as they form requirements for modern banking products and services through the expression of their needs.

Clients evaluate their experience of interaction with banks depending on how easy and comfortable it was for them to receive some service, so the banking sector should constantly study the experience of work with clients, identify shortcomings in their work, since new customers will require the use of even more modern technologies. Before the efficiency of banking was assessed by increasing the target sales of products and services, but in the era of the digital economy, banks must reckon with modern digital challenges: now banks are becoming more focused on customers with their urgent needs.

Billions of potential customers can be served using a mobile phone with Internet access, which forces banks to constantly improve the applied digital technologies in order to maintain competitive advantages. Barclays Bank was one of the first banks introduced an online banking system: customers now visit the Bank's branches on average twice a month, while mobile banking services are used up to 18 times a month (Shukla, 2016).

According to Pshenichnikov (2018), the introduction of the above technological components into the banking sector made it possible to form a new model of banking services, which is a whole ecosystem of value exchange. Its main differences from the traditional model of banking business are presented in the Table 1.

Table 1. Key differences between traditional and digital models of banking

Distinguishing features	Traditional model	Digital model
Customer service time frame	Limited. Service is carried out only at a clearly defined time	Unlimited. Possibility of round-the-clock access
The speed of customer service	Depends on the qualification and experience of the Bank employee	Immediate
Approach to service	Flexible, however, is limited to a small variety of service channels	Flexible and carried out through any convenient channel for the client
Maintenance cost	High, taking into account the Bank's costs for the personnel and maintenance of departments	Low, often services are provided free of charge
Scope of service	Limited branching of the branch network and staffing	Unlimited, can go beyond the geographical location of the banking institution
Status of the operator in the service process	Functions of the operator is performed by an employee of the Bank	Functions of the operator are performed by the Bank's client
The procedure for learning new services and promotions	Requires time and cost	Carried out quickly, via SMS and e-mail newsletter

Consumable component of the operation of the service system	The key models are articles on the staff and maintenance of departments	The key articles are articles for the purchase and maintenance of servers and software package
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Competition in the banking sector is toughening, and without the introduction of new technologies into the service mechanism, even the strongest banks with a conservative strategy will lose a significant part of customers. By 2020, more than 20% of businesses in the financial services industry will be at risk due to the impact of the FinTech segment. For retail banking, this assessment is in the range of 20-60% of profits in the next 10 years (Belous and Lyalkov, 2017). However, updating the software does not solve the problem. It is necessary to make the structural transformation with the use of FinTech.

The digital transformation of banks requires an integrated approach based on the development and application of a digital strategy. The digital transformation covers all the aspects of financial and credit activity, including the Bank management mechanisms, so the digital transformation of the banking sector should be aligned with other development strategies in order to develop solutions that contribute to maximum efficiency. The digital strategy should be aimed at solving four main tasks: the implementation of digital technologies, the transformation of the process of forming the cost of services, the financial aspect of digitalization, as well as changing the organizational structure (Matt *et al.*, 2015).

To successfully implement the digital strategy, it is necessary to coordinate the above-mentioned areas of the development, which largely depends on the Bank's operating model. There is no general operating model suitable for all the banks, therefore, depending on the maturity of the bank, its structure, services provided, there are different models in the implementation of the digital strategy:

1. *Confederate model*: This type of operating model is mainly applicable to large banks that conduct the digital transformation gradually, in various areas of their activity. In such a situation, some units are involved into the implementation of the digital strategy, independently regulating the flow of digital technology costs and applying new requirements for staff skills, while other departments may not participate in the digital transformation. It is expected that hereinafter, all employees of the bank will appreciate benefits of the digital transformation and will also enter into the implementation of this process. An example of this operating model is the transition to electronic document management: the innovation is transferred from division to division and eventually introduced into the Bank's activities on a regular basis.

2. *Shared services model*: If the company has already passed the stage of awareness of the importance of the digital transformation and made the first steps towards the implementation of the digital strategy, then with the relatively large size of the Bank,

it is possible to use the so-called model of shared services based on the transfer of similar functions to one centralized department. The department responsible for performing certain operations becomes the center of shared services. This model is analogous to outsourcing, in which some functions are provided by an external counter agent. The main purpose of this operating model is to improve the coordination of actions within the bank and rationalization of business processes due to the lack of standard recurring activities, and, therefore, the cost of certain banking operations.

3. *The model of strategic competence centers:* The next stage in the development of the bank's operating model in the context of the digital transformation is the formation of competence centers – a structural organizational unit that controls information systems and business processes through the collection and analysis of data and generation of ways to use them as efficiently as possible. This element of the organizational structure will allow to coordinate the implementation of the digital strategy, to predict trends in the market and to position the bank in order to improve its competitiveness.

4. *Digital operating model:* This model can be implemented in banks that are in the final stages of the digital transformation; as a rule, the model is suitable for so-called "net players", that is, single-industry organizations. A digital platform for activity is a distinctive feature of the digital operating model. Nowadays, this model is used either in companies that provide services of mobile payment systems, or in banks, based on the modern on-line banking system.

In general, the banking sector is aimed at this stage of the development of operating models, as eventually, an increasing number of customers realize that to obtain a variety of banking products and services is not necessary to go to a branch of the bank, and a person can use the achievements of digital technologies. The introduction of digital financial innovations in the banking sector of the economy makes it urgent to create a general space that unites the banking business and the digital environment. The mechanism reflecting the transformation of the Russian banking system under the influence of various factors is presented in Figure 1.

Experts of the international consulting firm A.T. Kearney (2014) distinguish three main approaches to the process of the digital transformation of the banking sector.

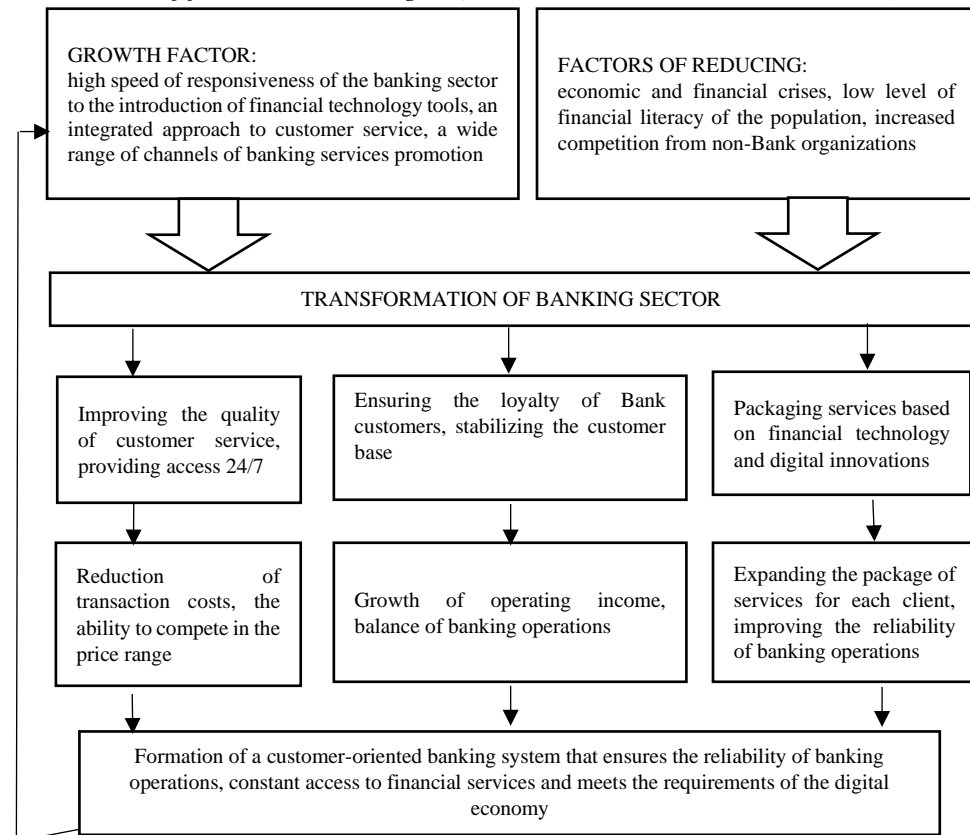
The first approach, followed by 26% of banks in the world, is based on the introduction of digital technologies as a separate project, which does not imply a full-scale digital transformation. In this case, the digital transformation is implemented gradually, based on long-term planning and the implementation of pilot projects.

The second approach is implemented through the creation of a subsidiary, which was originally built to meet the needs of the digital economy. This is the most popular method of the digital transformation and it is used by 42% of banks. The advantages of the approach are a clear focus on the needs of customers in the long term, the

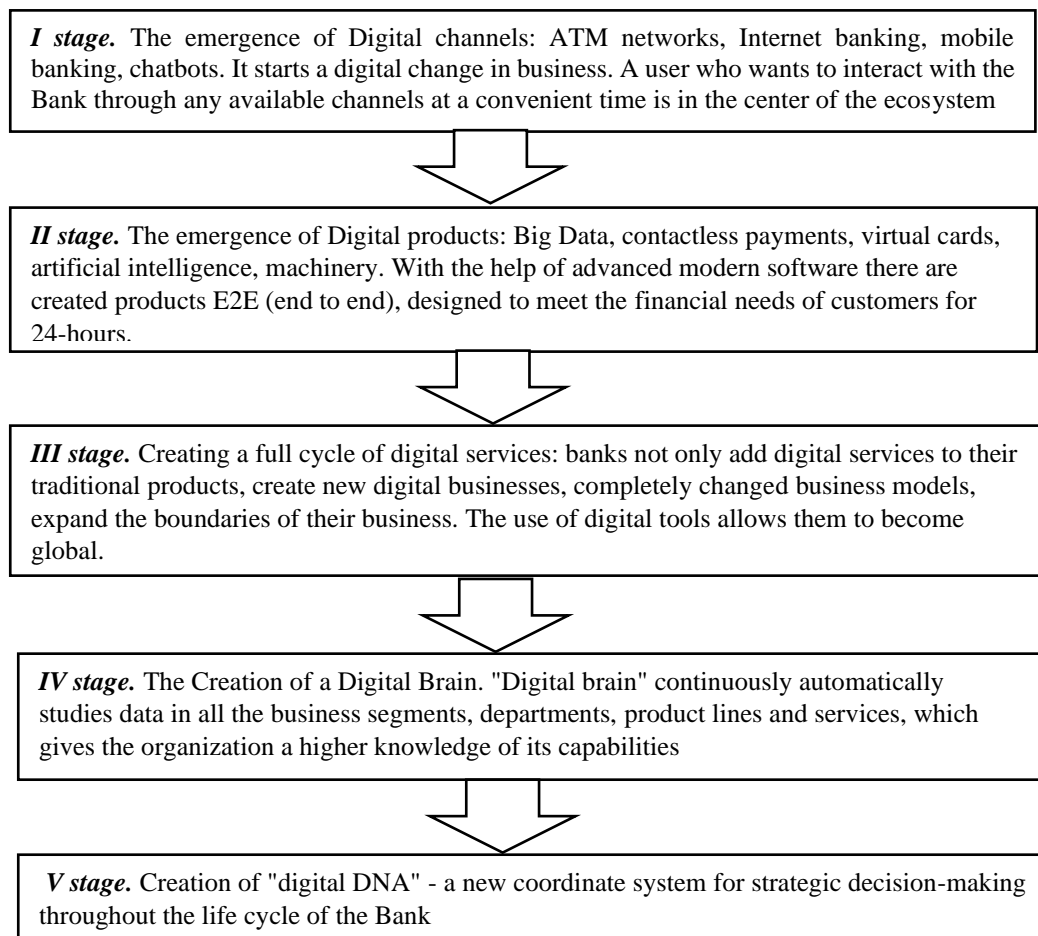
creation of teams within the organization, including specialists in various fields (information technology, software, analytics, marketing), thereby achieving high flexibility of the organizational structure, as well as the opportunity to test new direction of activity without damage for existing ones.

The third approach to the digital transformation of banks is based on the recognition of digital technologies as the main value of the organization. This method can be combined with other approaches, but it implies a more complete implementation of the digital strategy through the transformation of all the internal and external processes of the bank. 32% of banks began the realization of the digital transformation with the help of this approach.

Figure 1. The mechanism of transformation of the banking sector with the introduction of financial technologies (Kazarenkova and Svetovtseva, 2018)



According to experts, in the banking sector, the digital transformation can take place in five main stages (Figure 2).

Figure 2. Stages of the digital transformation of the banking sector

3. Results

Based on the analysis of foreign experience, it is possible to identify the main promising areas of the financial technologies use in the banking sector, including:

1. Application of smart assets and smart contracts for loans. The implementation of blockchain- technology in the form of a "smart" asset (blockchain 2.0) can be used to account for tangible and intangible assets, including financial ones. Assets, the ownership of which is registered on the blockchain, transactions with which (on the transfer of ownership to which) can be made with the help of smart contracts.
2. Keeping credit histories of borrowers using blockchain technology. Blockchain-platform "Credit Bureau" (White Paper on the Development of China's Blockchain Industry, 2018) – accumulation and storage of data on the credit history of borrowers will allow the sharing of information by interested users without intermediaries.
3. Blockchain-technologies (platforms) for the use of bank guarantees.

4. Blockchain technologies (platforms) for trade financing – factoring operations, non-cash payments by letters of credit.
5. Blockchain technologies (platforms) for the exchange of interbank messages at the domestic and international level.
6. Bill transactions between banks. Electronic bills are issued in the form of smart contracts. In the system there can be implemented operations of sale of bills, transfer, acceptance, discounting. Potential users are Central Bank, stock exchanges, commercial banks and other organizations involved into bill transactions.
7. Application of blockchain technologies for clearing and calculations according to the T+0 standard.

The digitalization has a great potential, but it is associated with new risks and threats that still require awareness. However, on the other hand, financial technologies are risk management tools in banks (for example, big data can be used to minimize credit risk, in internal audit, control, ML/TF, etc.). A limiting factor in the development of the digitalization of the banking sector in Russia is a relatively small amount of investment in FinTech.

4. Conclusions and Recommendations

Thus, we concluded that FinTech in the banking sector is the result of the mutual influence of two Megatrends – the digitalization of society and the financialization of the economy – objective global irreversible trends along with globalization and informatization, virtualization and networking, etc. This means that the transformation of the banking sector of the economy through the introduction of financial technologies into business processes is a systemic and large-scale phenomenon, a new stage in the development of banking business.

In Russia, financial technologies for some time considered to be unreliable and high-risk technologies, so the banks had if not to abandon them, then to use them very carefully. Nevertheless, the increased attention to this industry and the growing investment into FinTech all over the world have led to the support and guidance of the mega-regulator in the development of financial technologies in Russia. At the same time, in the development of FinTech, the Central Bank pursues a rather conservative policy, for example, prohibiting cryptocurrencies and attracting private deposits without a banking license.

References:

- Abyazov, T., Asaul, V. 2018. On competitive Potential of Organization under Conditions of the New Industrial Base Formation. SHS Web of Conferences, 44.
- Bakhareva, A.A. 2017. Prospects for the Development of the Banking Sector in the Context of the Introduction of Modern Financial Technologies. Symbol of Science, 1, 12-14.
- Belous, A.P., Lyalkov, S.Yu. 2017. The Vector of Development of Banks in the Digital Revolution. Banking, 10, 16-19.

- Filippov, D.I. 2018. On the Impact of Financial Technologies on the Development of the Financial Market. *Russian Journal of Entrepreneurship*, 5(19), 1437-1464.
- Financial Stability Implications from FinTech. 2017. Supervisory and Regulatory Issues that Merit Authorities' Attention. 27 June, available at: www.fsb.org/wp-content/uploads/R270617.pdf.
- Global FinTech Report PwC. 2017. Available at: www.pwc.com/jg/en/publications/pwc-global-fintech-report-2017.pdf.
- Kazarenkova, N.P., Svetovtseva, T.A. 2018. The Transformation of the Russian Banking System under the Influence of the Digitalization of the Economy. *News of South-West State University. Series: Economy. Sociology. Management*, 4(29), 188-195.
- Kearney, A.T. 2014. Going Digital: The Banking Transformation Road Map. Available at: www.atkearney.com/documents/10192/5264096/Going+Digital+-+The+Banking+Transformation+Road+Map.pdf/60705e64-94bc-44e8-9417-652ab318b233
- Maslenikov, V.V., Fedotova, M.A., Sorokin, A.N. 2017. New Financial Technologies are Changing Our World. *Bulletin of the Financial University*, 22 (21), 6-11.
- Matt, C., Hess, T., Benlian, A. 2015. Digital Transformation Strategies. *Business & Information Systems Engineering*, 5(57), 339-343.
- Osipovskaya, A.V., Mikhaylin, A.V. 2017. The Development of Financial Technologies in the field of banking services: the main directions. *Young Scientist*, 26, 124-127.
- Pertseva, S.Yu. 2017. Fintech: The Mechanism of Functioning. *Innovation in Management*, 12, 50-53.
- Piirainen, L. 2016. Digitalization of the Financial Sector and Change Management. Bachelor's Thesis, 60 p.
- Pshenichnikov, V.V. 2018. Influence of Financial Technologies on Changing the Model of Customer Banking Services. *Theory and Practice of Service: Economics, Social sphere, Technology*, 1(35), 48-52.
- Rupeika-Apoga, R., Zaidi, H.S., Thalassinos, E.Y. and Thalassinos, I.E. 2018. Bank Stability: The Case of Nordic and Non-Nordic Banks in Latvia. *International Journal of Economics & Business Administration*, 6(2), 39-55.
- Schueffel, P. 2017. Taming the Beast: A Scientific Definition of Fintech. *Journal of Innovation Management*, 4(4).
- Shukla, R. 2016. Banking Digitalization, Revolution, a Way Forward. Available at: www.happiestminds.com/wp-content/uploads/2016/11/Banking-Digitalization-Revolution-A-way-forw-ard.pdf
- Skogorev, I. 2017. Financial Technologies in Banks are no Longer the Future, but the Present. Available at: www.nbj.ru/publs/upgrade-modernizatsija-i-razvitie/2017/08/27/finansovye-texnologii-v-bankax-uzhe-ne-buduschee-a-nastojaschee/index.html.
- Thalassinos, I.E., Thalassinos, Y. 2018. Financial Crises and e-Commerce: How Are They Related. Available at SSRN: <https://ssrn.com/abstract=3330169>.
- Vovchenko, G.N., Andreeva, V.A., Orobinskiy, S.A. and Filippov, M.Y. 2017. Competitive Advantages of Financial Transactions on the Basis of the Blockchain Technology in Digital Economy. *European Research Studies Journal*, 20(3B), 193-212.
- White Paper on the Development of China's Blockchain Industry. 2018. Available at: www.cryptozona.ru/china-s-it-ministry-2017-saw-peak-investment-indomestic-blockchain-industry