



IMPLEMENTATION OF FINANCIAL TECHNOLOGIES AS BANKING INNOVATIONS: LITERATURE REVIEW

ABDURAKHIMOVA DILORA KARIMOVNA

Abstract

Keywords:

banking innovations,
financial technologies,
banking services
market, innovative
banks, neo banks

The purpose of this paper is to carry out content analyses on the existing literature to investigate the knowledge state of innovation facilitators adopted to promote financial innovation. In total, 26 papers were analysed for literature review. Some initiatives were led by regulators, revealing a regulatory strategy change. Based on our results, we discuss several important observations and propose avenues for future research capturing each of the identified perspectives. This paper contributes to incubation research and the financial innovation and FinTech literature streams.

Author correspondence:

ABDURAKHIMOVA DILORA KARIMOVNA

Associate Professor, Doctor of Philosophy (PhD) in Economical sciences, Department of Corporate Finance and Securities, Tashkent Institute of Finance, Tashkent, Uzbekistan

E-mail: abdurahimovadilora10@gmail.com

INTRODUCTION

In recent years, the vast majority of emerging banking products in the context of digitization of the economy are precisely digital banking products.

Although definitions of innovative digital banking products are expressed by foreign Economist scientists in economic literature in a certain form of discrepancy (at the cost of some translational inaccuracies), although they seem close to each other in content in general, their analysis of output made it possible to determine the presence of certain differences, shortcomings and advantages.

The study of definitions regarding innovative digital banking products requires clarification, first of all, on the term “innovation”.



LITERATURE REVIEW

Anthropologist H.G.Barnet calls innovation the basis of cultural change and describes innovation as "any thought, behavior or something new because they differ qualitatively from existing forms"¹.

Sociologist E.M.Rogers extends the definition further, calling innovation " an idea that is perceived by man as new"².

M.Teyki and M.M.Caravallos brought this vision as "the type of innovation that can create value in combination with additional innovations"³.

In recent years it has also been possible to observe the frequent use of the term "system innovation".

The most common use of the term "systematic innovation" refers to a situation where the innovation system goes beyond the boundaries of one organization, and the implementation of coordination at the macro level of many innovations has led to the emergence of the approaches of a number of foreign researchers, such as D.J. Teece⁴, S. Kano⁵, S. Gopalakrishnan and P. Bierly⁶, J. Teylek and R. Levitt⁷ and other scientists.

Tinesh Basin notes that "neo bank offers a new concept of simplifying banking services using information technology and artificial intelligence"⁸.

¹ H. G. Barnett, *Innovation: The Basis of Cultural Change* (New York: McGraw-Hill Book Company, 1953), p. 7.

² * Everett M. Rogers, *Diffusion of Innovations* (New York: The Free Press of Glencoe, 1962), p. 13.

³ Takey S.M., Carvalho M.M. Fuzzy front end of systemic innovations: A conceptual framework based on a systematic literature review//*Technological Forecasting and Social Change*.- 2016. - №111, P. 97-109.

⁴ Teece D.J. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy// *Research Policy*. - 1986. - №15(6) - P. 285-305.

⁵ Kano S. Technical innovations, standardization and regional comparison – A case study in mobile communications//*Telecommunications Policy*,- 2000. - №24(4), P.305-321.

⁶ Gopalakrishnan S., Bierly P. Analysing innovation adoption using a knowledgebased approach//*Journal of Engineering and Technology Management*. - 2001. №18(2), P.107-130.

⁷ Taylor J., Levitt R. Understanding and managing systemic innovation in projectbased industries//In, *Innovations: Project Management Research*. Slevin D, Cleland D and Pinto J (eds.) - Newton Square PA.: Project Management Institute, 2004. - P. 83-99.

⁸ TineshBhasin, "What do neo banks offer and should you try them?" dated June 01, 2020, Available at: <https://www.livemint.com/money/personal-finance/what-do-neo-banks-offer-and-should-you-try-them11591032340062.html>



Terry Bradford believes that traditional banks, digital banks and neobanks are essentially the same, but their service channels and means are different from each other⁹.

MAIN DISCUSSIONS

Today, the concept of “financial technologies”, which is of particular importance in their implementation, is also required to be described separately, as innovative banking, banking innovations and innovative digital banking products are mentioned.

Fintex first appeared in the early 1990s alongside the internet revolution. The Internet has been one of the main factors in ensuring the growth of the financial technology sector¹⁰.

Table 1. Definition of foreign scientists to "financial technologies"

No	Author	Given definition
1.	X.Baber ¹¹	financial technology (fintex) is defined as the application of technology in the provision of various financial services
2.	K.Leong and A.Sung ¹²	financial technology is an interdisciplinary subject that combines finance, technology management and innovative management
3.	B.Z.Jang, A.Ashta and M.E.Bartonlar ¹³	these are innovative financial intermediaries that use technological advances to support new business models, adjust operating procedures and provide improved goods and services
4.	R.Rupeika-Apoga, E.I. Thalassinos ¹⁴	Fintex is a new technology that offers new ways to provide financial services that cannot be provided through traditional channels.

⁹ Bradford T. Neobanks: Banks by Any Other Name?//Federal Reserve Bank Of Kansas City. – Kansas City, 2020. – August 12. – P.1-6.

¹⁰Hornuf, C.; Hornuf, L. The emergence of the global fintech market: Economic and technological determinants. Small Bus. Econ. 2019, 53, 81–105.

¹¹ Baber, H. FinTech, Crowdfunding and Customer Retention in Islamic Banks. Vision 2020, 24, 260–268.

¹²Leong, K. and Sung, A. (2018) ‘FinTech (Financial Technology): What is It and How to Use Technologies to Create Business Value in Fintech Way?’, International Journal of Innovation, Management and Technology, vol. 9, no. 2, pp. 74-78.

¹³ Zhang, B.Z.; Ashta, A.; Barton, M.E. Do FinTech and financial incumbents have different experiences and perspectives on the adoption of artificial intelligence? Strateg. Chang. 2021, 30, 223–234.

¹⁴Rupeika-Apoga, Ramona, and Eleftherios I. Thalassinos. 2020. Ideas for a Regulatory Definition of FinTech. International Journal of Economics and Business Administration VIII: 136–54.



In general, there are different definitions of financial technologies by different scientists (Table 1.). Most of them were viewed mainly from the point of view of the removable effect of financial technologies in one direction or another.

But it is G.Buchak, G.Matvos, T.Piskorski, A.Those who give a comprehensive definition of this differential of Seru say that “financial technologies make financing more transparent, convenient and cost-effective for consumers. In addition, it will revolutionize the financial landscape by combating existing financial service providers such as banking, insurance and existing investment companies. In addition to technological progress, fintex is spreading because it has a different regulatory power than existing financial service providers, which allows fintex companies to work more flexibly in the regulatory sand space to create innovative products”¹⁵.

For example, Findexable experts define the concept of “ financial technologies ” as follows – this is a technologically secured innovation in the field of financial services, which includes new business models, applications, processes and products that have a significant impact on the provision of financial services to financial institutions¹⁶.

In this regard, of course, not only researchers, but also financial market participants and international organizations have their own approach and vision.

Also, during the study, various international organization and definitions of financial market regulators were introduced into the concept of financial technologies.

¹⁵Buchak, G.; Matvos, G.; Piskorski, T.; Seru, A. Fintech, regulatory arbitrage, and the rise of shadow banks. J. Financ. Econ. 2018, 130, 453–483.

¹⁶Findexable Limited. The global fintech index city rankings report 2020. www.findexable.com



Table 2.Characteristics of international organizations and financial market regulators to “financial technologies

T/r	Organization	Characteristic content
1.	United Nations	Finance technologies cover everything from mobile payment platforms to high-frequency trading (HFT), crowdfunding and virtual currencies to blockchain ¹⁷
2.	Financial Stability Board	With the appropriate material impact on the provision of financial services, new business models, applications, processes or products can lead to the emergence of technological innovations in financial services ¹⁸
3.	Securities commissions international organization	Fintech tools: 1) (innovative) business model; 2) new technologies that can change the financial market ¹⁹
4.	Central Bank of Bahrain	Technology and innovation used in finance focused on competition with traditional financial methods ²⁰
5.	Central Bank of Hungary	Fintech is characterized by the use of the category of "innovative solution", which means new (previously unavailable in the market) Technologies, business models and (or) cheaper and "useful for customers" products (services) ²¹ .
6.	Central Bank of Kuwait	New technologies used in the financial market, their application is aimed at improving and developing it as a result of the use of advanced products, services and business models ²²
7.	UAE Central Bank	in the regulator's documents, financial technologies are used to define:– "enabling technologies"include: open interfaces; “cloud” calculations; biometry; big data analysis; artificial intelligence; distributed register technologies;-"innovative activities": "providing technologically supplied services in various forms and sectors of the financial market" ²³

¹⁷Castilla-Rubio, J.C., Zadek, S., and Robins, N., 2016. FinTech and sustainable development: Assessing the implications. [online] Available at: <http://unepinquiry.org/publication/fintech-and-sustainable-development-assessing-the-implications/> [Accessed August 28, 2017].

¹⁸ Financial Stability Board, 'FinTech and Market Structure in Financial Services: Market Developments and Potential Financial Stability Implications', 2019.

¹⁹ IOSCO Research Report on Financial Technologies(Fintech). February 2017

²⁰https://www.bahrain.bh/new/en/techspacefintech_en.html.

²¹ MNB Decree 47/2018 (XII.17.) on diverging rules of compliance with obligations under certain MNB Decrees (unofficial translation) [Электронныйресурс]. URL: [https:// www.mnb.hu/letoltes/mnb-regulatory-sandbox-decree.pdf](https://www.mnb.hu/letoltes/mnb-regulatory-sandbox-decree.pdf)

²² Central Bank of Kuwait: Regulatory Sandbox Framework Document. <https://www.cbk.gov.kw/en/legislation-andregulation/regulatory-sandbox/general-framework>

²³Guidelines for Financial Institutions adopting Enabling Technologies Central Bank of the UAE Securities and Commodities Authority Dubai Financial Services Authority Financial Services Regulatory Authority



The definitions of the central banks of different states, one of the main ones of the regulators of the financial market of the International Organization, presented in Table 2, brought to the concept of “financial technologies”, are also reminiscent of the definitions given by scientific researchers. For example, in the definition given by the Central Bank of the United Arab Emirates, it is defined as those services that are created precisely in the case when technologies in the creation of financial technologies are used. The same can be seen in the UN definition. But in most definitions, it is precisely the effect that is obtained from financial technologies. In particular, they were given such characteristics as” innovative business model“, ” innovative solution“, ” useful products for customers”.

There are different views on the development of Fintex , but in our opinion it is the development sequence brought by Chinese researchers Leong and sung that is very close to the current one²⁴.

The Fintex ecosystem includes financial technology startups, technology developers, governments, clients, and traditional or existing financial institutions. In addition, the Fintex business model may include payments, money management, crowdfunding, P2P lending, capital market and insurance business models (inshurtech)²⁵.

Fintex innovations affect commercial banks and change their business practices. To better adapt to Fintex innovation trends, commercial banks are accelerating digital transformation²⁶.

But, as far as the ecosystem is concerned, all of the above examples also include strategies of technology companies, although Hatto also offers some hollarja banking services. Of course there are also banking systems that choose strategies like this. For example, the vast

²⁴Beck R., Smits M. T. FinTech and the transformation of the financial industry //Electronic markets. – 2018. – T. 28. – C. 235-243.; Leong K., Sung A. FinTech (Financial Technology): what is it and how to use technologies to create business value in fintech way? //International Journal of Innovation, Management and Technology. – 2018. – T. 9. – №. 2. – C. 74-78.

²⁵ Lee, I.; Shin, Y.J. Fintech: Ecosystem, business models, investment decisions, and challenges. Bus. Horiz. 2018, 61, 35–46.

²⁶Li C. et al. Does the bank’s FinTech innovation reduce its risk-taking? Evidence from China’s banking industry //Journal of Innovation & Knowledge. – 2022. – T. 7. – №. 3. – C. 100219.



majority of German banks. But it is precisely the bank ecosystems themselves that have an hos structure (Table 3).

Table 3. Key elements of the banking ecosystem

B2C markets	B2B markets
Insurance	
Mobileoperator	
Choosing real estate (buying, renting, selling)	
Registration of real estate transactions	
Cybersecurity	
Internetstores	
Legalaids	
Taxadvice	
Identification	
Cloudservices	
Telemedicine, online education, taxi and other non-financial services	Individual transactions (financial and non-financial)
Electronic funds, transfers, loans and other banking services	Onlinecashdesks
Distribution and transmission system (ticket, goods, food)	Promotion of banking services through advertising

The structure presented in Table 4 it covers the activities of almost all banking fintex ecosystems. In this case, the main grouping is determined based on who the bank is operating with. In this case, goods and services are allocated to destinations based on their activities in the manufacturers market and in the markets of consumers of banking and non-banking services. This borala includes General Services and electronic wallets, transfers, loans, deposits and other banking services for each market, such as legal aid, tax advice, insurance activities, while today's banks provide nonlinear services such as online education, taxi, telemedicine, distribution services to raw consumers. In this regard, nonlinear types of services, delivery, online education, project development, advertising services, etc. are also offered for manufacturers of goods and services.



CONCLUSION

Through this study, we have contributed, first, to research by showcasing which industry-specific instruments have been either established or adapted by regulators and researchers, and, second, to the financial innovation and FinTech literature streams by unifying existing contributions and mapping the contemporary state of knowledge on the activities and implications associated with innovation facilitators in the banking industry. Additionally, the findings derived contribute to debates on the role of new players in the entrepreneurial finance literature stream by confirming the positive impact of regulations on raising capital.

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