

~ ФІНАНСИ, БАНКІВСЬКА СПРАВА ТА СТРАХУВАННЯ ~

УДК 336.71:330.341.1-028.63

DOI:10.32680/2409-9260-2022-9-10-298-299-56-69

**ADVANTAGES AND RISKS OF INTEGRATING FINANCIAL TECHNOLOGIES
INTO THE BANKING BUSINESS**

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Abstract. The paper is devoted to the features of the development of the financial innovations' market, since digitalization of the economy significantly influenced vectors of the formation of financial technologies and new innovative financial products and contributed to their transformation. The study confirmed: traditional approaches to the provision of banking services and activities do not satisfy the growing demand and expectations of customers, and do not meet high efficiency and profitability requirements. This paper defines FinTech-companies and FinTech-services as the newest instrument of the FinTech-services market, which meets the current requirements of the modern world. The study examines modern trends and characteristic features of financial innovations in such classes as radical and socially oriented, banking products and services, service channels, internal processes. The main principles of implementing financial innovations are identified, in particular: accessibility, growth point, targeting, diversity of mass media, openness and cooperation, standardization, confidence and security. It is systematized and classified FinTech-companies according to their spheres of activity and specialization, and 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 revealed; the current global trends in the development of the FinTech sphere, as well as the prospects for its use, are explored. The FinTech boom in late 2021 has proven to have quickly transformed into fears of a potential recession in the first half of 2022 as uncertainty surrounding Russia's full-scale military invasion in Ukraine, ongoing supply chain issues, rising inflation and interest rates, made a negative impression both at the state level and on private companies. The challenges and threats for the banking business, which are caused by the spread of digitalization of the economy and affect the emergence of new financial innovations, are identified. It was concluded that the current stage of digitalization of the economy determined the trends and directions of development of the financial services market and the banking sector in particular.

Key-words: innovations, financial innovations, digitalization of the economy, financial services sector, banks, FinTech-companies.

**ПЕРЕВАГИ ТА РИЗИКИ ІНТЕГРАЦІЇ ФІНАНСОВИХ ТЕХНОЛОГІЙ У
БАНКІВСЬКИЙ БІЗНЕС**

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Анотація. Стаття присвячена особливостям розвитку ринку фінансових інновацій, оскільки цифровізація економіки суттєво вплинула на визначення векторів формування фінансових технологій та нових інноваційних фінансових продуктів і сприяла їхній трансформації. Дослідження підтвердило, що традиційні підходи до надання банківських послуг та банківської діяльності не задовольняють зростаючий попит та очікування клієнтів, не відповідають високим вимогам ефективності та прибутковості. У цій статті визначено Фінтех-компанії та Фінтех-послуги як новітній інструмент ринку Фінтех послуг, що відповідає актуальним вимогам сучасного світу. У статті досліджено сучасні тенденції та характерні риси фінансових інновацій у таких класах, як радикальні та соціально орієнтовані, банківські продукти та послуги, канали обслуговування, внутрішні процеси. Визначено основні принципи впровадження фінансових інновацій, зокрема: доступність, точка зростання, цільове призначення, різноманітність засобів масової інформації, відкритість та співробітництво, стандартизація, довіра та безпека. Фінтех-компанії систематизовано та класифіковано за сферами

діяльності та їх спеціалізацією, розглянуто низку їхніх особливостей та потенційних можливостей у сфері фінансових послуг. Розкрито роль FinTech-компаній та FinTech-технологій в модернізації ринку фінансових послуг, досліджено сучасні світові тенденції розвитку FinTech-сфери, а також перспективи їх використання. Доведено, що стрімкий розвиток ринку фінансових технологій наприкінці 2021 р. швидко трансформувався в побоювання з приводу потенційної рецесії в першому півріччі 2022 р., оскільки невизначеність, пов'язана з повномасштабним військовим вторгненням Росії в Україну, поточними проблемами в ланцюжку поставок, зростанням інфляції та процентних ставок, зробили негативний відбиток як на державних рівнях, так і на приватних компаніях.

Визначено виклики та загрози банківського бізнесу, які зумовлені поширенням цифровізації економіки та впливають на появу нових фінансових інновацій. Зроблено висновок, що сучасний етап цифровізації економіки визначив тренди та напрямки розвитку ринку фінансових послуг та банківського сектору зокрема.

Ключові слова: інновації; фінансові інновації; цифровізація економіки; сектор фінансових послуг; банки; фінтех-компанії.

JEL Classification: G210, O310.

Formulation of the problem. National economies' orientation on digital ones requires the use of latest innovative technologies in the financial sector. The development of the financial market at the present stage is associated with the latest information technologies. This is especially noticeable in the financial market, where innovations in the field of informatization are introduced and used due to the capabilities and needs of financial institutions. The economic crisis' consequences and the intensification of global challenges caused by the spread of COVID-19 pandemic, have increased attention to the problem of financial inclusion and the wider use of instruments for remote and contactless services. The digitalization of the financial space not only reduces costs, speeds up transactions, makes them safer and more transparent, but at the same time allows to use financial products adapted to needs of the most vulnerable groups of consumers (Naumenkova, S., Mishchenko, S., 2020) [1].

Ensuring a sufficient level of national economies' competitiveness as a prerequisite for increasing their position in the global space, actualizes the need for an in-depth approach to the problems of innovative development. As noted in the Digital Order for the EU, 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 [2]. According to "A Digital Agenda for Europe", the solution of common tasks is envisaged in such areas as: a unified digital market; compatibility and standards; confidence and security; fast Internet access; research and innovation; development of digital literacy, skills and inclusion [3]. By 2025, the target parameters for the digitalization in Europe have been set, namely: 15% of small and medium enterprises should sell abroad via the Internet; Europe should save 26 billion tons of CO₂ emissions by digitizing resource-intensive sectors; retrain most of its workforce; most European enterprises should have a transparent and straight cyber-security strategy; European states should spend 3% of their GDP on research and innovations; 75% of EU citizens should be using eGovernment application; 25% of the global-scale 'unicorns' should be hosted in Europe (as of January 2022, there are over 981 unicorns in the world for a total cumulative value of \$ 3'220 billion) [4; 5].

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 [6]. 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. For the past 20 years, Switzerland has been leading in the global innovation index, which characterizes the creation of favorable conditions for innovative performance, taking first place in the ranking [7].

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 using information technologies is becoming very relevant and important for the further development of economies. 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 digitalization of the economy 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.

Analysis of recent research and publications. 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 increase in the level of return on financial resources in the national economy as a whole (Mishchenko, S., 2010) [8].

The most acceptable concept of “financial innovation” is: “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, N., 2017). [9]. 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 [10].

The use of remote models requires ensuring the interoperability of schemes for such services, access to payment systems and communication infrastructure, as well as compliance with the requirements for the protection of customers' personal data and information of financial institutions. In this context, the principles of digital financial intermediation proposed by G20 should be considered (González-Páramo, José Manuel, 2018) [11]. 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 (Abbasov, A. et al , 2020) [12].

When introducing digital financial services, it is advisable to assess the opportunities and risks. The study (Itai, A. et al., 2020) [13] identified opportunities to expand digital financial services during COVID-19 crisis in five areas: payments and transfers of governments, businesses and households, and lending to enterprises and individuals. At the same time, the emphasis is placed on the fact that the development of financial technologies can enable governments to better supervise consumer spending patterns in real time; digital payroll and tax payments ensure social distancing, as well as being cost-effective and safer; digital financial computing can transform payments, securities settlement, and back-office functions by reducing costs and enabling direct business-to-business (B2B) transactions without intermediaries; contactless digital payments for P2P transfers and in-store purchases can help in maintaining social distancing and reduce the potential spread of COVID-19; digital forms of payment, including mobile money and digital currencies, can facilitate the processing of remittances during a crisis; digitization of P2G payments, in addition to the benefits of social distancing, can increase tax revenue; various technologies can be useful for business lending, especially during a crisis; P2P lending platforms can offer benefits and these can increase in times of crisis (Itai, A. et al., 2020) [13].

At the same time, the authors of the study highlight the risks present in the expansion of digital financial services during COVID-19 crisis, namely: encompassing transition to digital financial services, which can be stimulated during a pandemic, may initially exacerbate income and gender inequalities, as well as widen the gap between rural and urban areas and between young and old;

the exposure of digital financial services to cyberattacks, digital fraud and even raids could become more common; conflicts between rapidly facilitating access to mobile payments and maintaining proper 'Know-Your-Customer' procedures and anti-money laundering compliance; a massive shift to digital financial services could raise concerns about the “state of surveillance” – data privacy and monopoly (Itai, A. et al, 2020; Auer, R., et al., 2020) [13; 14].

The study (Istomina, A. et al., 2020) [15] argues the competitiveness strategy of countries and regions should be developed based on the leading role of digitalization of the economy in all its aspects. To confirm this hypothesis, the factors covered by the Global Competitiveness Index were used, namely: institutions, infrastructure, use of specific information and communication technologies, macroeconomic stability, health, skills, food market, labor market, financial system, market size, business dynamism and innovation. These indicators are grouped into four categories – Opportunity, Environment, Human Capital, Markets and Innovation Ecosystem. It is concluded that investments in digital infrastructure are considered as the main condition for maintaining and developing international competitiveness. The development of the digital economy can contribute to the process of convergence and overcoming development gaps between regions (Istomina, A. et al., 2020) [15].

In confirmation of the above research, attention should be paid to the paper (Brunetti, F. et al, 2019) [16], which proves digital transformation is a pervasive problem of regional innovation. This evidence stems from the fact that digital transformation requires a multifaceted set of strategic actions, grouped by the researches into three main areas:

“Culture and Skills” includes three strategic areas of activity: digital education, talents and digital culture;

“Infrastructure and Technology” points to the need for information, interaction and artificial intelligence as key strategic fields of action

“Ecosystems” emphasizes the importance of investing in medium and longterm plans, partnerships and quality of life.

This study shows that individual measures are not enough for the transition from systemic digitalization to digital technologies.

A separate issue remains the role of a state in the era of digitalization, as well as the managerial and legal aspects of the symbiosis of banks and FinTech-companies (Nagy, H., 2018; Vovk, V. et al., 2021; Skrynnyk, O., 2020) [17-19]. Existing scientific research highlights the need to build new digital competencies of public administrations to create the necessary policies and platforms for facilitation of work; improvement of legislation in the field of cooperation between banks and FinTech-companies; security and data protection in the design of organizational development systems based on artificial intelligence.

The purpose of the article. The aim of this paper is to study the market of financial innovations, identify threats to the development of this market, as well as the formation of directions for further development.

To achieve the purpose the following tasks were defined: to substantiate of theoretical and methodological aspects of the development of the financial innovation market in the context of digitalization; to determine the modern classification of financial innovations in the financial sector; to analyze the current state of the financial innovation market on a global scale; to identify advantages and threats for the symbiosis of FinTech and banking business; to develop recommendations for the further development of the financial innovation market.

Methodology. The object of the study is the process of managing the development of financial innovations in the context of digitalization of the economy.

Achieving the goals of the paper is possible through the use of such research methods as:

□ systemic and dialectical approaches in studying the essence of financial innovations and their classification;

□ calculation and analytical, graphical methods, coefficient analysis in the study of the effectiveness' dynamics of the introduction of financial innovations;

□ comparison in assessing the level of implementation of financial innovations in the global and regional context;

□ method of expert assessments in determining the risks and benefits for the banking sector arising from FinTech;

□ comparative analysis in determining the main directions for improving the development of the financial innovation market.

The study is based on the following working hypothesis.

The methodological basis was that the development of financial innovations is associated with

the transformation of the financial market itself (Fig. 1).

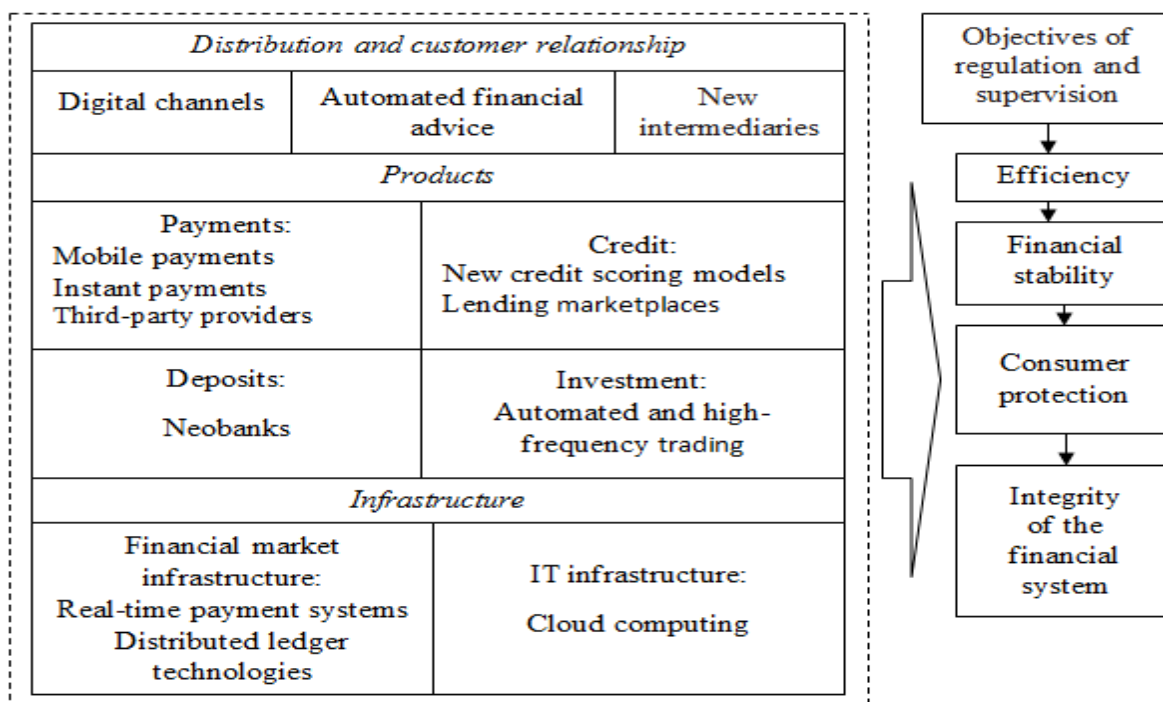


Fig. 1 Transformations in the financial sector

Source: González-Páramo, José Manuel, 2018 [10]

The current classification of financial innovations in non-banking financial institutions is presented in Tab. 1 (Abbasov, A. et al, 2020) [12].

Table 1

Modern classification of financial innovations in the financial sector

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

Highlighting unresolved parts of a common problem. The purpose of this study was to substantiate the importance of the development of the financial innovation market, to identify threats to the development of this market, as well as to form directions for further development. It is proved that in the context of the ongoing COVID-19 pandemic, as well as martial law in Ukraine, which has a great impact on the development of the global economy, the development of the financial innovation market acquires a different role of worldview and awareness to accept it.

In continuation of the discussed questions, it should be noted that when studying the FinTech market, banks always remain leaders. They are the most controlled and managed by the regulatory authorities. Therefore, the risk of conducting operations by neobanks is reduced to zero.

Looking back, H1 2022 can be summed up in one word: unexpected. Let's take a look at some of the key trends in the FinTech sector over the past 6 months:

- decline in investment in most jurisdictions, especially between the first and second quarters of 2022;
- the closing of IPO window due to turmoil in the public markets and rapidly falling valuations;
- continued strength of the payments sector in many jurisdictions;
- increased attention to automation in the field of cybersecurity, given the ever-increasing number of problems that need to be studied;
- a growing variety of jurisdictions attracting investments in FinTech, in particular venture capital rounds worth more than \$100 million.

The predicted data regarding the development of the FinTech market remain controversial issues, namely: more and more banks will offer embedded solutions; embedded finance proposals will be subject to increasingly stringent regulatory scrutiny; FinTech companies will focus on positioning themselves as data organizations; FinTech companies focused on ESG will have a large growth trajectory; more attention will be given to making deals in underdeveloped regions; 'unicorn' status will lose some of its glitters in mature markets, but will remain key in emerging markets.

All these questions are debatable and topical from the standpoint of maintaining stability and balance in the global market for financial innovations.

The basic material. 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, Kshitika Ramesh et al., 2019) [20].

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, P et. al, 2017) [21]. 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);
- safety and security of customer information (validation technology, 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 (Tab. 2).

Table 2

Technologies, transforming financial services

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				
		Digital Wallets				
			P2P, Microcredits		Factoring	
	Mobile access		Crowd-funding			

Source: Travkina, E., Molokanov, A., 2019 [22]

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, in particular 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 – data-mining 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 (Reinig, S.et. al, 2018) [23].

The TOP 10 leading FinTech companies in the world in the first half of 2022 include the companies presented in Tab. 3 [24].

Table 3

Top 10 global FinTech deals in H1 2022

FinTech-company	Volume of investments	Country	Financial services
Afterpay	\$27.9 B	Melbourne, Australia	Payments, M&A
Sia (Milan)	\$3.9B	Milan, Italy	Payments, M&A
Bottomline Technologies	\$2.6 B	Portsmouth, US	Institutional/B2B, Public-to-private buyout
Yayoi	\$2.1B	Tokyo, Japan	Institutional/B2B, Corporate divestiture
Interactive Investor	\$1.8B	Leeds, UK	Wealth/investment management, M&A
FNZ	\$1.4B	London, UK	Wealth/investment management, M&A
SimpleNexus	\$1.2B	Lehi, US	Lending, M&A
Trade Republic	\$1.15B	Berlin, Germany	Capital markets, Series C
Technisys	\$1.1B	Miami, US	Institutional/B2B, M&A
Superhero	\$1.06B	Sydney, Australia	Wealth/investment management, M&A

In 2021, the following nominees were noted in the field of introducing financial innovations in the financial services market:

Innovation in Consumer Goods or Services – Commonwealth Bank (Australia). It is a large-scale digital experience integrated into the CommBank banking app that leverages outreach, data assets, artificial intelligence, and a marketing engine. It aims to combat the stubborn global phenomenon of unclaimed benefits.

Innovations in Digital Transformation – Deutsche Bank (Germany) API Program “Embedded Finance Initiative”. With Embedded Finance, non-banks can seamlessly integrate complete financial products into their own offerings and IT systems through digital interfaces, also referred to as application programming interfaces or APIs. The Embedded Finance Initiative is based on the principle of "API first": whenever a new digital banking product is developed, existing APIs should be directly used or developed.

Innovation in Human Capital – Payactiv Livelihood Employee Experience Platform. Payactiv is leveling the playing field for millions of low-income hourly workers by not making them wait for a paycheck before accessing their wages. Payactiv offers a suite of financial services that includes access to earned wages, savings and budgeting instruments, bill payment, employee communication and shift planning tools, discount market, and financial health measurement.

Innovation in improving internal processes – Bank Polski has developed a path to paperless banking thanks to blockchain technology. It should be noted that Bank Polski developed the first and second generations of the service with Poland's leading trust service provider National Clearing House and technology partners start-up Coinfirm and IBM. The service is used by retail customers of Bank Polski (about 35% of the Polish market), as well as customers of other banks.

Small Business Product or Service Innovation – Santander Bank (North America). Santander Treasury Fusion, using the FISPAN platform, allows the bank to expand its treasury services by directly connecting the bank to its customers' ERP and accounting systems. Clients will use this two-way communication to streamline their payments, journal entries, and reconciliations, and to provide them with an up-to-date view of their accounts [25].

Global investment in FinTech fell from \$111,2 billion across 3,372 deals in H2'22 to \$107,8 billion across 2,980 deals in H1'21, mirroring the decline in investment experienced in the broader

technology sector. Total FinTech investment and deals volume declined in both the Americas and EMEA regions, while the AsiaPacific region attracted a new annual high of FinTech investment amidst a decline in the number of deals. The new Asia-Pacific record was driven almost entirely by three large M&A transactions: the \$27,9 billion acquisition of Australia-based Afterpay by Block, the \$2,1 billion buyout of Japan-based Yayoi by KKR, and the \$1 billion merger of Australia-based FinTechs Superhero and Swiftx (Fig. 2) [24].

It should be noted that the rapid development of the financial technology market at the end of 2021 quickly translated into fears of a potential recession in the first half of 2022, as the uncertainty associated with Russia’s full-scale military invasion in Ukraine, ongoing problems in the supply chain, rising inflation and interest rates, affected both the government levels and private companies.

FinTech investment declined in both Americas and EMEA, while the Asia-Pacific region reached a new record high, primarily as a result of several major M&A deals, including the acquisition of an Australian company by Block Afterpay for \$27.9 billion. The payment space accounted for the largest share of FinTech investment during the first half of 2022 (\$43.6 billion), followed by crypto-currencies (\$14.2 billion).

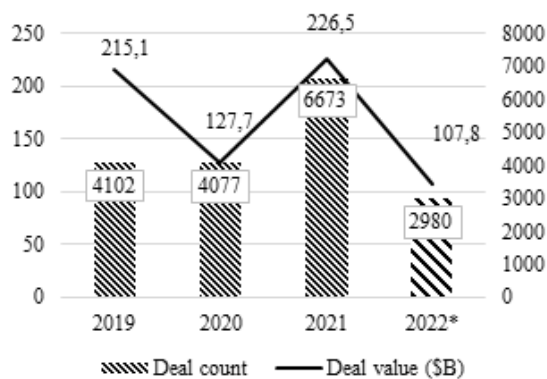


Fig. 2.1 Total global investment activity (VC, PE and M&A) in FinTech 2019–2022*

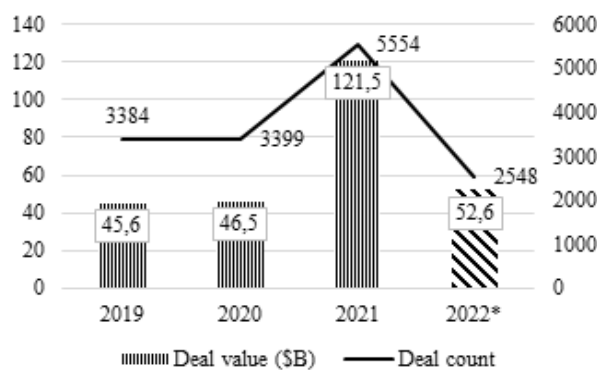


Fig. 2.2 Global venture activity in FinTech 2019–2022*

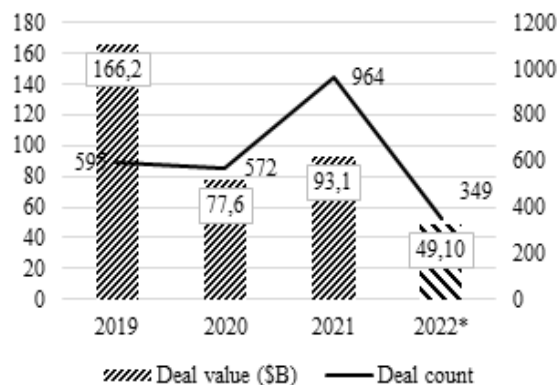


Fig. 2.3 Global M&A activity in FinTech 2019–2022*

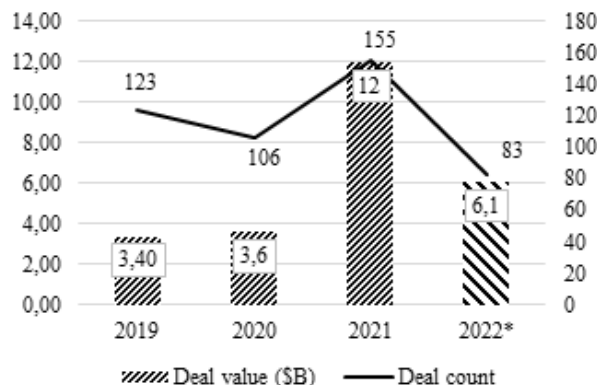


Fig. 2.4 Global PE growth activity in FinTech 2019–2022*

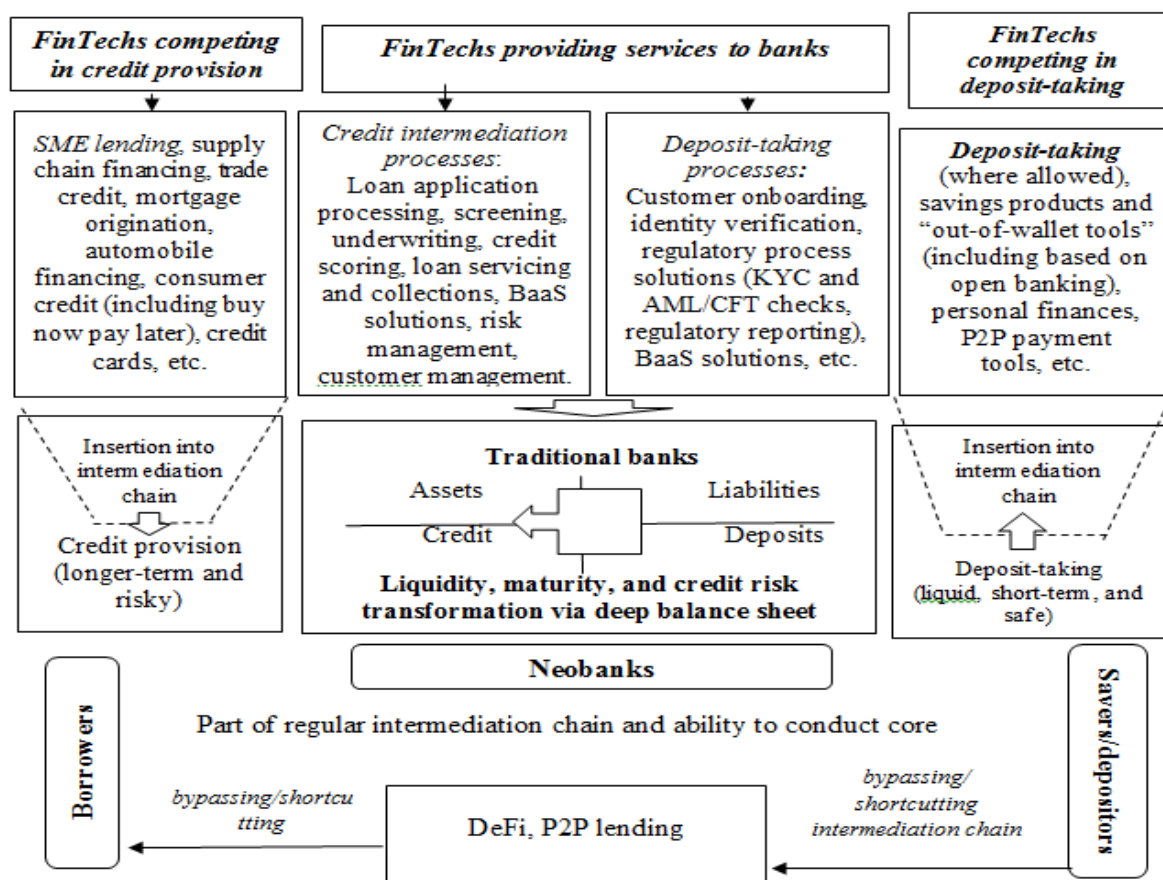
Source: Pulse of FinTech H1'22, Global Analysis of Investment in FinTech, KPMG International, *as of 30 June 2022

Fig. 2 Global analysis of investments in FinTech in 2019-2022

Development of the international banking business, the formation of its new paradigm in the context of globalization of the financial system and the intensification of global economic relations in recent years requires the innovative component. The combination of innovations, financial and external economic environment is one of the most important factors that characterize the phenomenon of the "new economy". Therefore, innovative processes should be considered in conjunction with the changes of the processes connected with the foreign trade banking (Murshudli, F, 2018) [26].

The authors of the paper (Zveryakov, M. et al., 2019) [27] 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).

The core business model of banks is both to collect deposits and extend credit. In doing so, they fulfill the key economic function of financial intermediaries: the transformation of deposits (savings) into credit (investments), which entails liquidity, maturity, and credit risk transformation. Fintechs insert themselves at various points along the financial intermediation chain, usually by providing specialized services (Fig. 3) [28].



Note: AMF/CLT = anti-money laundering/combating the financing of terrorism; BaaS = Banking as a Service; DeFi = decentralized finance; KYC = Know Your Customer; P2P = peer to peer; SME = small and medium enterprise.

Fig. 3 FinTech in the Core Banking Intermediation Chain

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.

As of September 2022, there are 281 neobanks in the world, including Neobanks for Business (Biz) and Neobanks for Teens (Tab. 4) [29].

Table 4

Best Neobanks by some regions of the world in 2022

No.	Neobank name and country of origin
1.	The Top 15 Best Neobanks in the US in 2022: Chime; M1 Finance; Acorns; Wise (Transferwise); Bank Mobile; Revolut; JUNO, Varo; OnJuno; MoneyLion; Current; World Remit; Skrill; TransferGo; Monzo
2.	The 10 Best Neobanks and Mobile Banks in the UK in 2022: Bunq, Monese; Fineco Bank; Curve; Wise (Transferwise); Revolut; Starling Ban; Lydia, Suits Me, Tandem
3.	Neobanks in Europe in September 2022: Bankino (Iran); Bettr (South Africa); Dopay (Egypt); Go Solo (United-Kingdom); Hala (Saudi Arabia); ila (Bahrain -п (Saudi Arabia); Opay (Nigeria); Pepper (Israel); TransferGo (United-Kingdom); VBank (Nigeria); Wise (Transferwise) (United Kingdom); World Remit (United Kingdom); Xpence (United Arab Emirates)
4.	The 10 Best Neobanks and Mobile Banks in Germany in 2022: Bunq (Netherlands); Curve (United Kingdom); Wise (Transferwise) (United Kingdom); Sogexia (Luxembourg); Revolut(United Kingdom); Lydia (France); Vivid Money (Germany); World Remit (United Kingdom); Skrill (United Kingdom); TransferGo (United Kingdom)

In general, considering the number of neobanks in the world, it should be noted that in 2022 there were 89 of them in Europe; 71 – in North America; 47 – in Asia-Pacific region; 17 – in Africa & Middle East.

Neobanks target borrowers with a riskier credit profile. Neobanks tend to explicitly address financially underserved clients across the consumer/credit card and SME segments in the context of heavily skewed/concentrated – less diversified – loan portfolios. In practice, this means serving younger individuals⁴ with lower incomes and lower credit scores by granting them loans that are mostly unsecured or concentrated around risky sectors, such as commercial real estate (for example, SME loans by UK neobanks).

Based on the foregoing, it is possible to summarize the opportunities and threats that FinTech developing brings to the banking business (Tab. 5).

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, Ya. et al., 2019) [30].

Table 5

Risks and advantages for banking sector arising from FinTech

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

<p>Banks and the banking system</p>	<p>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</p>	<p>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</p>
<p>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</p>		

Source: compiled by the authors

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 parbank 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 those entities, which is preserving and further increasing the attractiveness of financial technologies for market subjects.

Conclusions. 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.

References

1. Naumenkova, S., Mishchenko, S. (2020). Digital financial inclusion: opportunities and limitations for Ukraine. *Naukovyy visnyk Odes'koho natsional'noho ekonomichnoho universytetu*, 1-2 (274-275), 133-149. DOI: <https://doi.org/10.32680/2409-9260-2020-1-2-274-275-133-149>. [in Ukrainian].
2. The Concept of a “Digital Economy” (2010). Retrieved from <http://odec.org.uk/theconcept-of-a-digital-economy>.
3. A Digital Agenda for Europe (2020). Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the

- Regions. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245&from=en>.
4. A stronger Digital Europe: Our Call to Action towards 2025 (2019). Retrieved from <https://www.digitaleurope.org/wp/wp-content/uploads/2019/02/DIGITALEUROPE-%E2%80%93-Our-Call-to-Action-for-A-STRONGER-DIGITAL-EUROPE.pdf>.
 5. The Complete List Of Unicorn Companies (2022). Retrieved from <https://www.cbinsights.com/research-unicorn-companies>.
 6. Bloomberg. Republican Platform Under Trump Backs Glass-Steagall's Return (2020). Retrieved from <https://www.bloomberg.com/politics/articles/2016-07-18/republican-platform-under-trump-backs-glasssteagall-s-return>.
 7. The Global Innovation Index (2021). Retrieved from <http://www.globalinnovationindex.org>.
 8. Mishchenko, S. (2010). Problems of estimation of influence of stability of functioning of monetary sphere on economic security of the country. *Finansy Ukrainy*, 7, 35–49. [in Ukrainian].
 9. Pantieliieva, N. (2017). Financial innovations in the conditions of digitalization of the economics: trends, challenges and threats. *Pryazovsky Economic Bulletin*, 3 (03), 68-73. [in Ukrainian].
 10. González-Páramo, José Manuel. (2018). Financial markets, insurance and private pensions: digitalisation and finance. OECD. Retrieved from <http://www.oecd.org/finance/Financial-markets-insurance-pensions-digitalisation-and-finance.pdf>.
 11. G20 Principles for Innovative Financial Inclusion / The Global Partnership for Financial Inclusion (GPFI) platform : website. Retrieved from <https://www.gpfi.org/publications/g20-principles-innovative-financial-inclusion-executive-brief>.
 12. Abbasov, A., Mamedov, Z., Kovalenko V. (2020). Financial innovation in the conditions of digitalization of the economy. *Economic and Social Development: 55th International Scientific Conference on Economic and Social Development*. Baku: UNEK, 1 (4), 515-524. Retrieved from https://www.esd-conference.com/upload/book_of_proceedings/Book_of_Proceedings_esdBaku2020_Vol1_Online.pdf.
 13. Itai, A., Soledad, M.P., Celine, R. (2020). Digital Financial Services and the Pandemic: Opportunities and Risks for Emerging and Developing Economies. IMF. Research July, 1, 13. Retrieved from <https://www.imf.org>.
 14. Auer, R., Cornelli, G., Frost, J. (2020). Covid-19, cash, and the future of payments. *BIS Bulletin*, 3, 7. Retrieved from <https://www.bis.org/publ/bisbull03.pdf>.
 15. Istomina, A., Vinogradova, M., Lukyanova, A., Dobrovolska, O., & Prodonova, N. (2020). Leadership in the digital age: a new strategy for the competitiveness of countries and macro regions. *Revista ESPACIOS*, 41 (07), 21. Retrieved from <http://www.revistaespacios.com/a20v41n07/a20v41n07p21.pdf>.
 16. Brunetti, F., Matt Dominik, T., Pedrini, G., Orzes G. (2019). Digital transformation challenges: strategies emerging from a multi-stakeholder approach. *TQM journal*, 32 (4), 697-724. DOI: <https://doi.org/10.1108/TQM-12-2019-0309>.
 17. Nagy, H. (2018). A role for the state in the digital age. *Journal of Innovation and Entrepreneurship*, 7:5. Retrieved from <https://doi.org/10.1186/s13731-018-0086-3>.
 18. Vovk, V., Denysova, F., Rudoi, K., Kyrychenko, T. (2021). Aspectos Jurídicos y de Gestión de la Simbiosis de las Entidades Bancarias y las Empresas Fintech en el Mercado de los Servicios de Crédito en el Contexto de la Digitalización. *Studies of Applied Economics. Special Issue: Impact of Current Trends in Social Commerce, Economics, and Business Analytics*, 39,7. Retrieved from <https://doi.org/10.25115/eea.v39i7.5013>.
 19. Skrynnyk, O. (2020). Some Aspects of Information Security in Digital Organizational Management System. *Marketing and Management of Innovations*, 4, 279-289. DOI: <http://doi.org/10.21272/mmi.2020.4-23>.
 20. Kshitika Ramesh Desai, Meena V., Vinutha V., Dr. Kavitha Jayakumar. Desai, K. Ramesh, K. (2019). Fintech innovations and its impact on the profitability of selected banks. *International Journal of Business and Management Invention*, 8, 1, 41–45.
 21. Gomber, Peter, Koch, Jascha-Alexander, Siering, Michael. (2017). Digital finance and FinTech: current research and future research directions. *Journal of Business Economics*, 87, 5, 537-580. Retrieved from [https://www.ijbmi.org/papers/Vol\(8\)1/Version-5/G0801054145.pdf](https://www.ijbmi.org/papers/Vol(8)1/Version-5/G0801054145.pdf).
 22. 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.
 23. Reinig, S., Eibner, K., Smolnik, S. (2018). “FinTechs – An analysis of the market and its potential threat for established financial service providers”. Springer, 1-4.

24. KPMG. (2022). Pulse of Fintech H1'22. Retrieved from <https://assets.kpmg/content/dam/kpmg/xx/pdf/2022/08/pulse-of-fintech-h1-22.pdf>
25. The BAI Global Innovation Awards. (2022). Retrieved from <https://www.bai.org/globalinnovations/awards/2021-winners/>.
26. Murshudli, F. (2018). Innovation trends of international banking business (case of Azerbaijan). Vestnik MGIMO-Universiteta, 1 (58), pp. 186-212 [in Russian].
27. 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.
28. Global financial stability report (2022). Shockwaves from the War in Ukraine Test the Financial System's Resilience. International monetary fund. Retrieved from <https://www.imf.org/-/media/Files/Publications/GFSR/2022/April/English/text.ashx>
29. The list of neobanks and digital banks in the world in 2022. (2022). NeoBanks.app. Retrieved from <https://neobanks.app/>.
30. Shmuratko, Ya., Sheludko, S. (2019). Financial technologies' impact on the development of banking. Finansovo-kreditnaya deyatelnost': problemy teorii i praktiki, 4, 31, 52-60.

Стаття надійшла до редакції 27.10.2022

Прийнята до публікації 9.11.2022