SUSTAINABLE FINANCIAL ECOSYSTEMS IN TERMS OF DIGITALISATION

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Abstract. *The article is devoted to the transformation of financial sector in terms of digitalization and creating sustainable financial ecosystems. The global financial ecosystem includes global, regional and national associations of financial institutions, regulators and other stakeholders, as well as financial ecosystems of individual countries. Creating a sustainable financial ecosystem on the national level is an important task and requires participation of the central bank as a regulator. Digitalisation of the economy as a whole and the financial system in particular contributed to the emergence of fintech companies and their rapid development. Nowadays remote technologies are widespread all over the world and there is growing demand for fintech services. In terms of digitalisation central banks need to be up-to date to improve national financial ecosystems. They are responsible for creating an adequate regulatory framework for regulation of fintech activities and at the same time stimulation of their development. Modern tendencies of the financial sphere regulation are analysed in the article. There is a trend among regulators worldwide to prioritize the development of fintech and to implement a 'supportive' regulation as well as introducing central bank digital currencies. The author outlines the main tendencies of the investments in fintech in the world. The main principles of sustainable financial ecosystems functioning in terms of digitalization are highlighted. On the basis of conducted analysis the author provides recommendations for the development of the sustainable financial ecosystem in Ukraine in modern economic conditions*.

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Introduction. One of the current global trends in the circular economy is modernization of financial ecosystems. The global financial ecosystem includes global, regional and national associations of financial institutions, regulators and other stakeholders, as well as financial ecosystems of individual countries (fig.1). The issue of creating a sustainable financial ecosystem is of very importance nowadays. Lots of researchers (Frolov, S. et al., 2021; Maslii, N. et al., 2022; Somin, S. et al., 2020) pay attention to financial ecosystems and their transformations in modern economic conditions. Bose, S. et al. (2019) analyse global financial market players functions in the financial ecosystem and highlight their specific capacities to improve the sustainability of the broader ecosystem. Aldhanhani, N. and Nobanee, H. (2021) outline the need to build a sustainable financial ecosystem based on innovative strategies and provide the five-factor framework of such an ecosystem that include a deep pool of ESG investors, a strong pipeline of ESG fund raisers, a highly regarded and talented human capital pool, strong awareness of ESG by different stakeholders and robust mechanisms for ESG verification. It should be mentioned that the described approach concentrates on ESG factors but does not explain the essence of the ecosystem, its basic participants and key elements.

Fig. 1. Participants of the World Financial Ecosystem

Researchers also underline the importance of a sustainable financial ecosystem functioning on the national level in order to have progress in achieving sustainable development goals and creating finance ecosystems that systematically mobilize SDG-aligned investments at the required scale. The in-depth analysis of available financing instruments, in close collaboration with the public funding agencies as well as private funding actors is at the core of ecosystem process (Halonen, M. et al., 2022). According to the above mentioned approach sustainable financial ecosystem is considered as a part of other ecosystems that enables allocation of required resources and makes SDG-investments easier due to its instruments and innovations.

It worth noting that sustainable financial ecosystem aims to satisfy consumers' needs in terms of vulnerable environment, digital transformation and meet customers` demand, as well as support country`s progress towards sustainable development. At the same time sustainable financial ecosystem should take into consideration not only modern situation and customers demand but also needs of future generations. So the role and importance of creating a sustainable financial ecosystem is realized by economists and researchers but it worth mentioning that authors do not focus enough on the key actors, their interactions and processes within a sustainable financial ecosystem.

In terms of digitalization new technologies are implemented, financial services have to be constantly improved. The key role in creating a sustainable financial ecosystem in the state is played by the central bank as a regulator, which must ensure the necessary conditions for the functioning of all financial market players. Digitalization of the economy as a whole and the financial system in particular contributed to the emergence of new members of financial ecosystems - fintech companies and their rapid development. Due to the increasing spread of remote technologies and the growing demand for fintech services, the need to regulate fintech ecosystems has arisen.

An important role in building a sustainable fintech ecosystem at the national level is also played by regulators, who are responsible for creating an adequate regulatory framework for regulation of fintech activities and at the same time stimulation of their development. There is a trend among regulators worldwide to prioritize the development of fintech. It should be noted that the first countries where such 'supportive' regulation was introduced were Great Britain and Singapore. According to the KPMG Report 'Pulse of Fintech' (KPMG, 2021), the Monetary Regulatory Authority of Singapore issued the first two digital banking licenses to the Grab-Singtel consortium and the technology giant SEA in 2020, as well as two digital wholesale bank licenses for such market participants as Ant Group and the consortium, which includes Greenland Financial Holdings Group Co. Ltd, Linklogis Hong Kong Ltd and Beijing Co-operative Equity Investment Fund Management Co. Ltd.

In terms of digitalisation central banks need to be up-to date to improve national financial ecosystems. So they pay attention to innovative technologies and tools that can be used in monetary sphere, such as digital currencies. In October 2020, the Bank for International Settlements and seven central banks, including the Fed, the ECB and the Bank of England, published a report 'Central Bank Digital Currencies: Foundational Principles and Core Features' outlining the main requirements for central bank digital currencies (CBDC) (BIS, 2020). The document states that CBDC should complement the legal means of payment in the country, and not replace cash or non-cash forms of payment. In addition, they must maintain monetary and financial stability, as well as be safe and as cheap or free as possible. It is assumed that the CBDC will play a significant role for the private sector.

As it is mentioned in the KPMG report 'Pulse of Fintech' (KPMG, 2021) in 2020, China's central bank launched a project to use the central bank digital currency, introducing digital yuan into circulation in one of the country's regions. Many well-developed countries of the world, such as Singapore, Canada, Sweden, Norway, the Netherlands, Finland, Australia, etc., are working on the development of central bank digital currencies. As part of the partnership, the regulators of Singapore and Canada carried out the first cross-border operation using the CBDC.

The National Bank of Ukraine is also working towards the introduction of its own digital currency. In 2018, a pilot project was conducted (NBU, 2019). It included the introduction of the "Electronic Hryvnia" platform, the issuing of the e-hryvnia into circulation, and the testing of operations using it. The results of the project are highlighted in National Bank of Ukraine Analytical Report on the E-hryvnia Pilot Project (2019). During the period of the project, e-hryvnias were issued in the amount equivalent to UAH 5,443. The project participants carried out a number of operations with e-hryvnia:

- creation of e-wallets;
- installation of e-hryvnia wallets mobile applications on own devices with Android or iOS operating systems;
- cashless refilling of e-wallets using National Payment System "Prostir";
- P2P transfers of e-hryvnia between wallets;
- replenishment of mobile phone balance with e-hryvnias;
- making charitable contributions;
- exchange of e-hryvnias for cashless funds, using cards of National Payment System 'Prostir'.

Materials. Despite the assistance of regulatory authorities, business participation is also important in the development of the fintech ecosystem as a part of a financial ecosystem. The basis of fintech development is investments in innovations, and especially venture capital investments, which is one of the incentives for the creation of new companies and technologies. In recent years, the world has developed a tendency to grow investments in fintech (fig. 2).

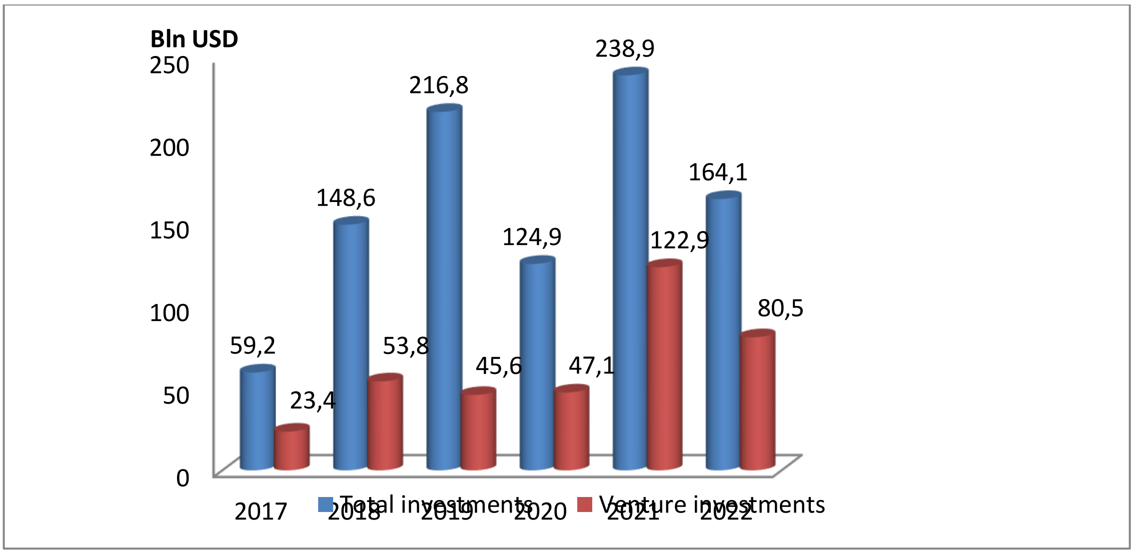

Fig. 2. Global Investments in Fintech from 2017 to 2022.

Source: KPMG (2021). Pulse of Fintech. H2 2020. 72 p. Available at https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2022/02/pulse-of-fintech-h2-21.pdf. Retrieved 28 May 2023; KPMG (2023). Pulse of Fintech. H2 2022. Available at https://veri-media.io/wp-content/uploads/2023/02/kpmg-pulse-of-fintech.pdf. Retrieved 28 May 2023.

According to fig. 2 the volume of total investments in fintech increases but, it dropped to $124.9 billion in 2020 compared to $216.8 billion in 2019. This was partly caused by a decrease in the number of mega M&A deals, such as the 2019 acquisition of WorldPay by FIS worth $42.5 billion (KPMG, 2021). At the same time, the volume of venture capital investments in fintech increased in 2020 compared to the previous year. Fintech funding increased by $1.4 billion in Europe and by $500 million in North America. At the same time, Asia showed a drop in financing volumes by $3 billion, despite the rapid recovery of the region from the negative impact of the pandemic. Funding of South American fintech companies increased by 64% from 2016 to 2020. About 40% of the deals during this period are financing deals for alternative lending and settlement companies (Janowski, 2020). 2021 was a remarkable year for investments in fintech. Total volume of investments was $238.9 billion, volume of venture investments in the fintech companies was also the highest in 2021 – $122.9 billion. Following 2021's record high level of total global fintech investment and deal volume 2022 saw both total investment fall — to $164.1 billion. While low by comparison, it was the third best year for fintech investment ever (KPMG, 2023).

Over the last 5 years 2020 was marked by a record number of mega funding rounds. The leader among countries was the USA, where more than 50% of megarounds took place (54 of 97). The second place was occupied by China, with 7 megarounds two years in a row. During 2020, there was a 13% year-over-year increase in the number of financing deals for fintech companies that provide services to small and medium-sized businesses, while other segments saw a decrease in the number of deals (Janowski, 2020). Deals fell 8% year-over-year to reached 5,048 in 2022. Africa was the only major region to see deals increase compared to 2021. Banking funding declined 63% YoY – the sharpest drop across fintech sectors analysed — to return to pre-Covid levels. Despite the drop, 2022 was the second-highest funding year for US fintechs on record. Africa-based fintechs saw a record 227 deals in 2022, a 25% increase YoY. Insurtech M&A exits reached a new high, rising 40% in 2022 to 81 deals (CBInsights, 2023).

There were no significant changes in the structure of financing agreements for fintech companies during 5 years (Fig. 3).

According to the data of fig. 3, a slight decrease in the share of seed deals was observed - by 5 pp. compared to 2019 due to an increase in the share of series B deals (by 3 pp.), series C (by 1 pp.) and megarounds (series E+ by 1 pp.).

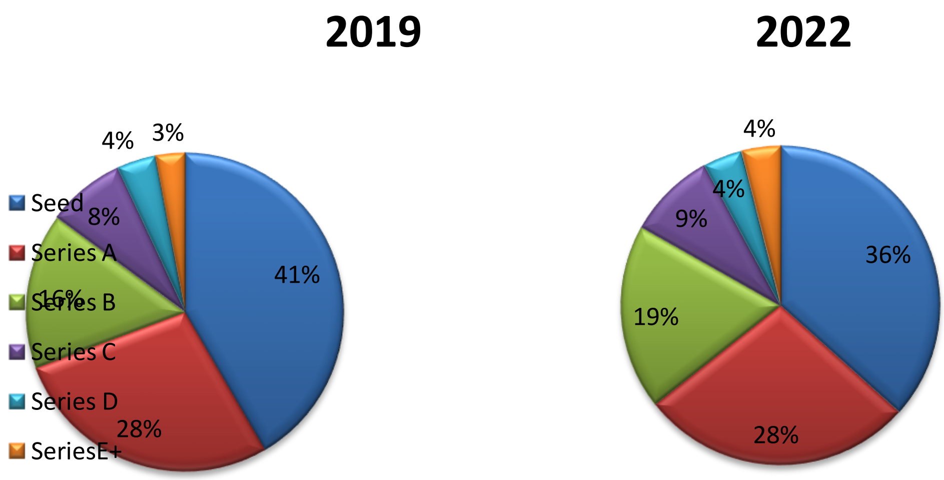

Fig. 3. The structure of deals for fintech companies during 2019-2022

Source: CBInsights (2021). The State Of Fintech Report: Investment & Sector Trends To Watch. Available at https://www.cbinsights.com/research/report/fintech-trends-q4-2020/. Retrieved 25 May 2023; CBInsights (2023). State of Fintech 2022 Report. Available at https://www.cbinsights.com/research/report/fintech-trends-2022/. Retrieved 28 May 2023.

Despite economic instability, influence of the pandemic, banks as major representatives of financial ecosystem continue investing in fintech. One of the key trends in the fintech sector over the past years is a growing focus on core banking systems as banks recognized how legacy infrastructure is holding them back from truly moving forward (KPMG, 2021). The largest US banks continue to make strategic investments in fintech companies operating in various niches (fig. 4).

As it is demonstrated on fig. 4, fintech companies operating on the capital market are the leaders among investment objects. In the 2nd and 3rd places are companies working in the area of asset management and companies serving SMEs (46 and 37 deals, respectively).

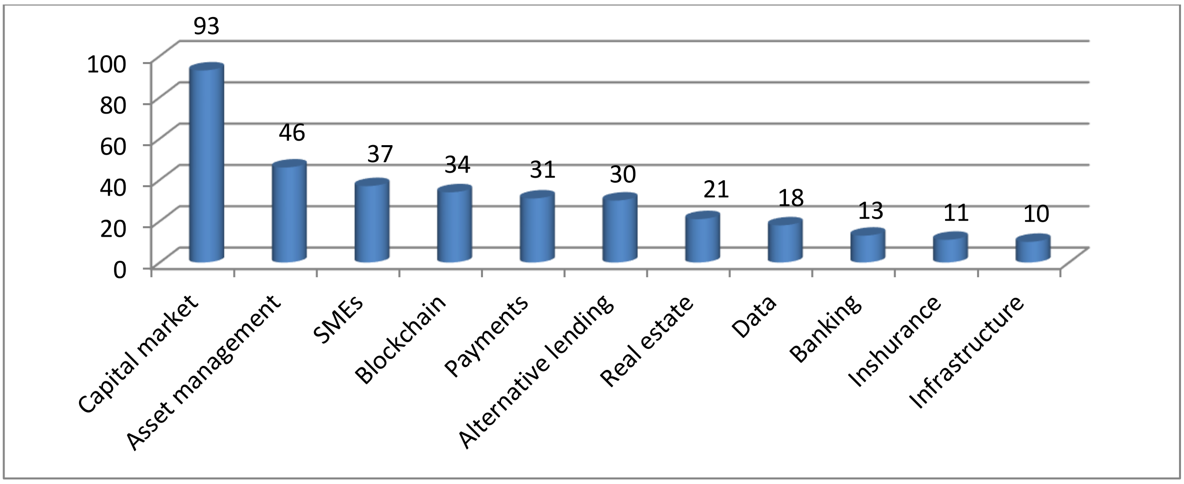

Fig. 4. Number of fintech start-up financing agreements by US banks during 2010-2020 by investment area

Source: CBInsights (2020). Here's Where Goldman Sachs, Morgan Stanley, And Other Top Banks Are Investing In Fintech – And Why. Available at https://www.cbinsights.com/research/top-us-banks-fintech-investments-graphics/. Retrieved 25 May 2023.

The pandemic has made digitization a top priority for any businesses, including financial ones. Period of pandemic is characterized by the following trends in the field of financial services:

- Growing demand for contactless banking services and e-payment solutions;
- Changing consumer behaviour towards increased use of e-commerce platforms, e-wallets and digital service channels;
- Strengthening the attention of regulators to the fintech by supporting and stimulating the development of fintech ecosystems;
- Growth of total volume of investments in fintech;
- Strengthening of partnerships between fintech companies and non-financial corporations;
- Mature fintech companies prefer mergers and acquisitions in order to expand their geographic presence in the market and increase the consumer value of their services.

The global community has entered the era of digital banking, which challenges traditional banks to maintain their competitive positions. Digital banks are representatives of fintech that attract investors. In 2020, digital banks have seen a significant number of mega venture capital funding rounds. The Swedish digital bank Klarna attracted $650 million, Revolut – $580 million, and the US digital bank Chime – $533.8 million (KPMG, 2021). In the conditions of global digital transformation, an increasing share of the population prefers online services and raise a demand for innovative products and services, which stimulates banks to transform their business models with an emphasis on innovation and remote services. Most large banks have the necessary tools and advantages to push the boundaries of their business models. The main driver of transformation is the need to strengthen their positions and competitiveness in terms of uncertainty to ensure sustainable functioning. There are 6 key digital growth strategies for banks that will contribute to their further development (McKinsey, 2018):

1. Going beyond core banking activities into relevant ecosystems.
2. Creation of a financial supermarket.
3. Extend value across the customer journey.

4. Monetize data.
5. Become a product- or infrastructure-sourcing factory.
6. Transformation into a digital attacker.

Results. In order to create sustainable financial ecosystem in the country some changes of the financial services and key players of the ecosystem are required. First of all the banking business has to be transformed, expand the boundaries and reorient itself from the traditional banking services, which form the core of the banking business, to the introduction of digital banking services, the development of cooperation with fintech companies. So, according to the conducted research and analysis sustainable financial ecosystems should be created on the basis of such principles:

- Client orientation;
- Digital transformation of financial market players business models;
- Development of strategic partnership of financial institutions, especially banks, with fintech companies;
- Introduction of "supportive regulation" aimed at the development of fintech ecosystem as a part of sustainable financial ecosystem.

Ukraine follows global trends formed in the financial sphere. The National Bank of Ukraine positions itself as the architect of the financial ecosystem (NBU, 2021). According to the Strategy of Ukrainian Financial Sector Development until 2025, adopted by the National Bank of Ukraine (NBU, 2021), the Ukrainian financial ecosystem includes the following groups of participants:

• Expertise – market participants and state institutions, which create the basis for the professional development of ecosystem participants;

• Regulation and control – state institutions that create rules for the interaction of ecosystem participants and control compliance with these rules;

• Financial service providers – companies, state institutions that directly provide financial products and services to consumers.

• Infrastructure and technology – companies and government institutions that provide products, services and solutions for financial service providers and other participants of the financial sector.

Sustainable financial ecosystem aims to satisfy customers` needs by implementing innovative approaches and technological solutions. In order to achieve SDGs and foster progress of the particular country towards the sustainable development financial ecosystem should be up-to-date, innovative and produce new mechanisms of financing prioritised projects not only economic but also ecological and social ones. Thus it is required to create a sustainable financial ecosystem based on ESG approach that will take into account present and future needs of the all its actors. It has to be consumer-oriented as people welfare including welfare of next generations, the quality of life is a priority for sustainable development. During the previous decades financial system of Ukraine was banks-oriented, banking sector performed a vital role in it. In modern conditions of digitalisation banks have to change their business models and they are shifted from the central position. It is worth noting that in order to build a sustainable financial ecosystem in Ukraine, it is necessary to pay attention to the development of fintech companies as an important component that meets the dynamic consumer demand in modern conditions of digitalisation. On the basis of the conducted analysis it is important to conclude that fintech companies have the growing importance in the transformation of financial ecosystem into the sustainable one. So fintech companies should be considered as a separate part of the sustainable financial ecosystem (fig. 5).

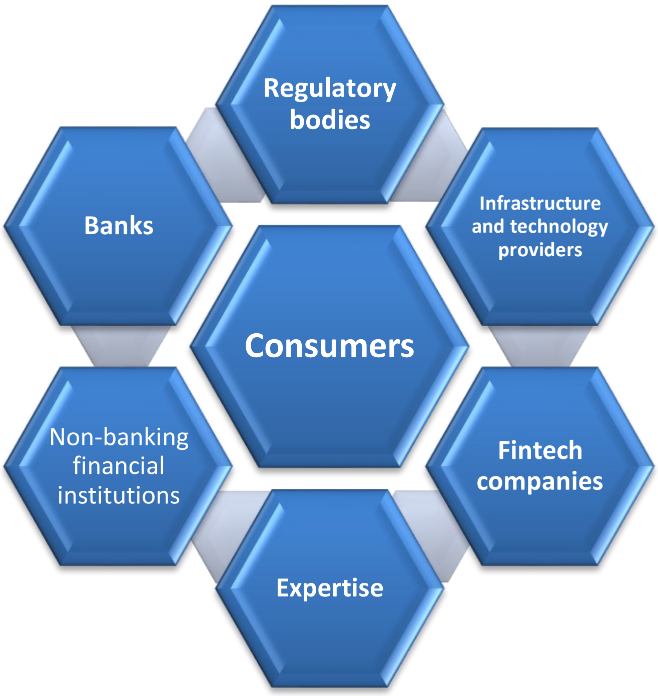

Fig. 5. Model of a Sustainable Financial Ecosystem in Ukraine

Source: Created by the author on the basis of Halonen M. at al. (2022) Recommendations for how Finland Can Develop Sustainable Finance at the National Level. Developing Finland's Sustainable Finance Ecosystems Reform/Sc2020/054 – Sustainable Finance Roadmap for Finland. May 2022. 43 P. Available at https://tem.fi/en/developing-finlands-sustainable-finance-ecosystems. Retrieved 05 October 2023; NBU (2021). Strategy of Ukrainian Financial Sector Development Until 2025. National Bank of Ukraine. Available at https://bank.gov.ua/admin_uploads/article/Strategy_FS_2025_eng.pdf?v=4. Retrieved 28 May 2023; Frolov, S.,Orlov, V., Lozynska, O. and Shukairi, F. (2021). Strategic and tactical benchmarks for restructuring the financial system of Ukraine. Economics of Development, 20(1), 11-22. doi:10.21511/ed.20(1).2021.02 .

An important role in the financial ecosystem is played by the expert environment, which includes educational institutions, researchers, experts, the international professional community, industry associations, business associations, which form the basis for the sustainable functioning of the ecosystem. It is necessary to pay governmental attention to the development of education, to the growth of state expenditures on R&D, which will contribute to the growth of the number of qualified personnel and, accordingly, to strengthen the financial ecosystem in Ukraine. It should be noted that a key role in the development of a sustainable financial ecosystem is played by the availability of financial products and services for users, an extensive network of banks and other financial intermediaries. The leading place is occupied by the development of the corresponding infrastructure, as well as access to the Internet. The creation of a stable, client-oriented financial ecosystem will contribute to the formation of inclusive economic growth of Ukraine and its sustainable development. In order to increase the efficiency of the national financial ecosystem functioning, it is necessary to continue working towards further integration into the global financial ecosystem, to strengthen harmonization of the legislative framework.

The level of financial inclusion plays an important role in building a sustainable financial ecosystem. An inclusive financial sector contributes to the economic growth of the state and the achievement of sustainable development. The issue of financial inclusion is on the agenda in many countries of the world, including Ukraine. The basis for achieving financial inclusion is financial literacy, free access of economic entities to a wide range of financial products and services, as well as the development of innovations, in particular in the banking sector. The index of financial literacy for Ukrainians is 12.3 points out of a possible 21 (USAID, 2021). The study was conducted for the second time in Ukraine according to the OECD methodology, which made it possible to compare indicators with other countries. Ukraine's result is slightly lower than the average (12.7). This indicates the need for further work on the formation of financial literacy of the population at the national level. National financial literacy strategies are already being implemented in more than 50 countries around the world. There is no doubt about the effectiveness of the national approach: among the countries that were the first to organize their measures on the basis of the strategy, there are the most leading countries in terms of financial literacy. To achieve a large-scale effect, it is necessary to ensure the coordinated actions of financial market participants under the guidance of the regulator. Improvement of the level of financial literacy of the population at the macro level will contribute to the expansion of the range of consumers of banking and financial services.

An important step on the way to strengthening financial inclusion is not only educational work among different segments of the population, but also measures designed to ensure the growth of public trust in banking institutions and the banking system as a whole.

Conclusions. It should be mentioned that a necessary condition for financial inclusion and the creation of a sustainable financial ecosystem in Ukraine is the stimulation of the development of financial and banking innovations, which involves the introduction of new products and technologies, the development of remote customer services, which contribute to the formation of loyalty to the provider of financial services, as well as the growth of demand in the relevant market. It is worth noting that the implementation of innovations depends precisely on the providers of financial services, their initiative, creativity and readiness not only to satisfy the dynamic needs of consumers, but also to anticipate them. Ukraine has already made some progress on the way to creating a sustainable financial ecosystem. An important role in this is played by the National Bank of Ukraine, which adheres to global regulatory trends. At the same time, in the conditions of global digital transformation, the domestic banking system faces new challenges that require further work from both the regulator and financial service providers, including banks, to transform their business models in accordance with the needs of a digital society.

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