

**Globalization and Regionalization**

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**DIGITALIZATION PARADIGM
OF UKRAINIAN FINANCIAL MARKET****Abstract**

The article examines the key concepts and theories of modern digitalization paradigm of global financial market, its equilibrium, conditions of financial centres, e-commerce, and FinTech companies. It identifies positive and negative aspects of financial market digitalization and its transformation in global digitali-

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zation. Effective principles for the digitalization of Ukraine's economy are explored. The key ways of financial market digitalization are outlined. The article presents a framework of indicators for the digitalization of the financial market in Ukraine. Quantitative analysis is applied to the indicators grouped by type: general indicators of online financial activity of the population; indicators of online and offline accumulation of funds; indicators of credit activity. In addition, some ways to digitalize Ukrainian market are outlined and hierarchical model of Fin-Tech sectors in Ukraine is proposed. This allows us to identify the most promising areas for the future development of financial technologies in such areas as cash flow services, innovations and new standards of technological services, and application development. It is substantiated that in addition to the commonly used payment tools, the most promising areas in Ukraine are the development of IT solutions, financial asset analytics, marketplaces and neo-banking.

Key Words:

digitalization; financial market; financial centers; Fintech; digital economics; information technologies; digital market.

JEL: G10, M15.

4 figures, 1 table, 22 references.

Problem Statement and Literature Review

Information technology causes swift spread of digital technologies, which is a priority condition for building a competitive economy and one of the defining drivers of financial market. The degree of digitalization depends on the level of country development, the structure of its economy, the ability to quickly adapt to the global financial market changes. Digitalization creates a positive economic effect for society, as it helps reduce socially necessary time and saves resources.

According to the PWC criteria, Ukrainian economy is included into the third (middle) group, with the level of digitalization amounting to 40-50% (United Nations Conference on Trade and Development, 2019). This confirms the existence of a basis for expanding the potential of information and communication technologies (ICT). At the same time, the country ranks 133rd in terms of gross domestic product (GDP) per capita, and 84th in the HDI ranking, which indicates the ability to achieve effective business results, the basis for business strategy, the formation of a new business model and acceleration of economic growth and social development (Kolomiyets & Hlushach, 2017).

The processes of digitalization occur in all segments of the global financial market and influence the features of its development. First of all, it means accelerated growth of the information and communication technologies (ICT). ICT influences new trends in stock markets, securities markets, foreign exchange markets and other segments of financial markets related to the provision of fintech services. The rapid development of ICT has also enhanced the versatility and flexibility of the global financial market. Banking and non-banking financial institutions provide a wide range of international financial transactions in different combinations.

Furthermore, due to the intensification of digitalization and ICT there are no temporal boundaries in the international financial market, which provides optimal and flexible conditions for foreign exchange transactions (Suetin, 2008). In addition, the functioning of the international financial market is based on reserve currencies such as US dollars and euro, which occupy a key position in international trade and financing of major international infrastructure projects, giving the world financial market greater resilience to global threats if compared with national financial markets. As a result, the global financial market is less dependent on global challenges and threats than national financial markets.

Financial equilibrium is a key condition for the dynamic development of the economic environment. It is based on the interaction of the following factors: current and long-term liquidity, equilibrium capital structure (which determines the financial stability), profitability and efficiency of capital. Global financial technologies stimulate the production of new financial products which act as tools for capital management and risk reduction. Transnational financial corporations seek to establish their control over banking and non-banking financial institutions in local markets by applying global technologies. The policy of integration and «involvement» of the most valuable resources, pursued by global players in the financial services market, aims to transform the processes of globalization into «Americanization».

Emergence of financial centers is yet another current trend of world markets, which entails the concentration of banks and specialized credit and financial institutions engaged in international monetary, credit and commercial transactions, securities transactions, and gold (Krasavin, 2010). World monetary centers are established on the basis of national financial markets that have passed all

stages of development (from the local market to the global financial market), whose functioning affects both the development of the world economy as a whole and the economies of individual countries where they are located. Consequently, their capacity is determined by the Global Financial Centers Index (Morris et al., 2020).

This trend was also confirmed by an international study by Lyons et al. (2021). Its authors investigated the linkages between the development of FinTech and the demand for savings, loans and remittances for the largest developing countries. The research identified that the key role of digitalisation of the financial sector is to ensure financial inclusion.

The digital economy is making significant changes in more than 50% of different industries. Digital technologies and platforms are introducing new business models and increasing efficiency by optimizing business processes (Izmaylov, 2018). The implementation of these measures provides opportunity for Ukraine to reach the European countries in their level of development and GDP growth of 12-20% (Ryu & Ko, 2020).

Thus, the digitalization of the financial market is an important trigger for national development. Moreover, Abramova et al. (2020) have shown that the development of FinTech is associated with sustainable development, reductions of the digital divide, and global integration of IT technologies in the country.

The SWOT analysis performed by Vartsaba and Zaslavska (2020) showed significant prospects for the development of FinTech in Ukraine, and the core of such development was to be through access to the Internet and customer orientation. In addition, the study of Singh et al. (2021) substantiated that the favourable development of the FinTech industry is based on several factors. Among these are the level of public awareness in the field of finance and information technology, the level of innovative development of financial institutions, the degree of penetration of FinTech companies in the country's financial market, and completeness of the legal framework. Another notable analytical work was conducted by scientists, who used multifactor analysis to show that the trust, flexibility and usability are key factors that determine the choice of financial services by consumers and businesses (Dronyuk et al., 2019). Therefore, the digitalization of financial markets will only increase over time.

Methodology

The study is based on analytical reviews and statistical reports by global news agencies and international organizations on the dynamics of digital financial services in Ukraine and the world, e-commerce, digital economy trends, online activity, the volume of financial transactions, etc. The collected data are arranged and grouped by thematic blocks:

1. Deterrents for the development of e-commerce. Based on the results of a survey conducted by the international company UMG, which make it possible to calculate the rating of factors that eliminate people from online shopping.

2. Indicators of the financial market digitalization. Information reveals the level of experience with various financial services, such as using a smartphone for payment, online shopping, payment of utility bills, use of credit lines via banking applications, etc. Statistical analysis identifies groups of indicators, such as general online activities of the population, indicators of online savings, indicators of credit activity.

3. Activities of domestic business in FinTech. Based on the results of a survey of 80 companies working in FinTech since 2015 (the year of FinTech boom in Ukraine). Statistical analysis makes it possible to arrange the activities of FinTech in Ukraine into 3 major groups: money circulation; innovation and technological services; applications. Each of the areas shows its own framework of specific activities and the share of companies involved in it. Thus, there is a hypothesis about the possibility of building a tree-like hierarchical model that would substantiate which FinTech sectors are the most developed in Ukraine and most popular in terms of doing business.

Background

Concept of Ukrainian economy's digitalization under global trends

E-commerce holds an important place in the formation of the global digitalized financial market. It includes the following items (Izmaylov et al., 2018; Derkachova & Skybina, 2007):

- e-marketing, which entails marketing strategy that allows using digital tools (Internet marketing, mobile marketing, social networks, etc.) to achieve the company's goals;

- electronic movement of capital, implying electronic exchange or money transfer between accounts with no-cash payments, so all banking operations are carried out directly through e-transactions;
- electronic exchange of information, denoting the transfer of well-structured and arranged documentation and commercial information between suppliers and customers via digital communication tools;
- electronic banking, i.e., technology of remote banking, which allows managing personal bank account and performing different banking operations such as credit and deposit services in a virtual environment;
- e-commerce, meaning trade in goods and services using the Internet, which covers all stages of the process from selection to payment to delivery of the required goods.

E-commerce involves changes in the economy due to the use of new methods of doing business. The boundaries between traditional commerce and e-commerce are becoming more blurred with more and more companies and enterprises engaging in digital activities. E-business is certain to have both advantages and disadvantages, but, owing to the new prospects and opportunities it is becoming the basis for creating new market models and relationships.

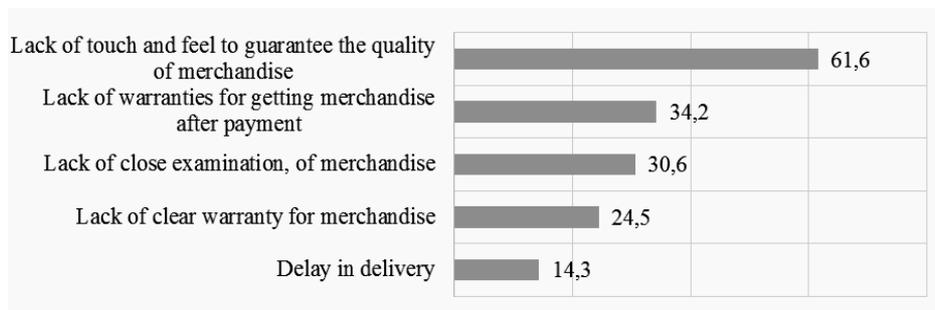
The e-commerce market, according to eMarketer, averages about 18-20% per year, which is about 10-12% of all retail sales (Polo, 2018). The level of Internet coverage in the world increased from 17% in 2005 to 53% in 2019, and in 2021 it is to achieve 4.9 trillion US dollars. The share of e-sales in the total global retail will increase from 10.2% in 2017 to 17.5% in 2021, the number of Internet users will grow by an average of 10% annually, which contributes to e-commerce expansion and is a positive development in terms of money, labour and other costs (United Nations Conference on Trade and Development, 2019).

As for the negative aspects, the examples are given in the study, conducted by UMG company. They provide the main reasons for refusing to buy online (Fig. 1).

It is clear that the major deterrent to online shopping is the risk of getting the wrong product, its poor quality and insufficient warranty.

The development of the «industrial» revolution in B2B sales has become a global trend in the e-commerce market. Since 2016, players in the global B2B market have moved from «personal sales» managers to a system of multifunctional personal accounts in B2B online stores (Plotnichenko, 2015). The B2B sector of online commerce has an extremely high capacity. For owners of online platforms, B2B is a high-margin and low-risk segment, promising in terms of long-term cooperation.

Figure 1

Online shopping constraints, %

Source: created by the authors based upon (Abramova, 2020).

According to our analysis, the main trends in international e-commerce include the increasing number of online stores, improvements in goods delivery (quick feedback), and growing consumer confidence. However, there are some problems which hinder the development of e-commerce as a tool for promoting goods, such as the confident position of leaders who block the entry of «young» online stores; high risks of goods non-compliance with descriptions resulting in loss of material resources, problems with constant access to high-speed Internet, the risk of cybercrime and cyber fraud, etc.

In March 2020, global retail website traffic reached 14.3 billion visits, indicating an unprecedented increase in e-commerce during the 2020 corona crisis. According to recent research, 29% of shoppers surveyed in the United States said they would never return to in-store shopping; in the UK, 43% of consumers said they hoped to continue shopping in the same way, even after the quarantine restrictions have expired (Clement, 2020).

In 2020, the e-commerce market was one of the fastest growing markets. The volume of Ukrainian market increased by 41% and reached about 4 billion US dollars, which is almost 9% of the total retail. The e-commerce market has almost tripled in the last five years. The reasons for such rapid growth were the following: high Internet penetration; increasing number of people with access to the Internet; growing number of smartphone users; growing public trust and loyalty to the digital payment systems, growing digital literacy; restrictions caused by the COVID-19 pandemic.

Sector of electronics and clothing brings the largest volume of e-trade. The volume of e-commerce increased by 26% and amounted to 291 million US dol-

lars in 2020 compared to 2016. One person's spending on e-commerce in total e-GDP is about 2.6% in Ukraine, which is the lowest level among the neighboring countries. Thus, the annual level of e-spending per capita is 104 USD in Ukraine. In comparison, this indicator is 841 USD in the Czech Republic and 222 USD in Latvia. Among the countries of Central and Eastern Europe, the Ukrainian e-commerce market shows the highest growth rates (Pleskach et al., 2018).

The exploration of statistical data on the functioning of E-commerce and the main segments of the financial market, has led us to a conclusion about huge governmental impact on the digital economy. The role of the government in the implementation and promotion of the digital economy is twofold. First, the government acts as a regulator of the financial market, creates a legal framework adapted to new realities and conditions of doing business, monitors compliance with legislation. In addition, it initiates and implements technological changes that promote transparency and usability of public services. Second, the government acts as an ICT user in the financial market, using digital technologies in governmental activities (tender procurement, e-government, etc.).

Digital technologies are becoming more comprehensive in the domestic economy. In particular, according to the information society, about 65% of the population uses the Internet in Ukraine. According to a Universal McCann survey, 81% of Ukrainian users are currently registered in at least one social network. For comparison, this figure amounts to only 65% in the US (Universal McCann, 2018). Despite the leading positions of the national economy in the ratings of the World Wide Web use, only 17% of domestic industries use Internet innovation (Mietule et al., 2019).

The digital economy is one of the newest determinants for Ukraine's development, which impacts all spheres of life. There are several modern principles and trends of the digital economy that influence the development of financial markets.

First, in the digital economy, «influence» is becoming a new form of capital. For example, the rapid development of ICT has strengthened the role of social media. In addition, the influencers not only benefit from advertising, but also create the Internet content influencing large groups of people. Such impact could be directed to either enhance or damage a business or its reputation. Therefore, understanding the strength of network effects is an important issue of the global financial market.

Second, the role of digital assets would be enhanced. The concept of digital assets includes such items as unique digital content, contracts, email addresses, web domains, intellectual property, code, data etc. Due to the rising economic activities in the Internet, digital assets will become more and more valuable and important in the context of digital economy.

Third, wide and growing access to the Internet in developing countries, accompanied by the ICT development, increases their presence in the labour market in developed countries. As a result, companies become more global in their talent search as they can hire the most affordable and high-skilled workers around the world.

Fourth, most people will be able to create and receive value only in the context of a digital world. As a result, there will be a growing reluctance to pay taxes on digital income. This possible shift encourages digital citizenship, meaning a creation of private avatars. Avatars are unique digital identifiers that protect the individuals from being taxed by local governments (Cabinet of Ministers of Ukraine, 2018). It can be expected that such a separation of digital identity will also lead to increased falsification of tax benefits. On the other hand, it will be important to maintain resident status in strict tax conditions.

The digital market covers the provisions of the Association Agreement on e-commerce, telecommunications services, IT services, audiovisual media, copyright and related rights, protection of personal data. In recent years, the state authorities have taken a number of steps for regulatory approximation, but progress is insufficient and does not keep pace with the EU legislation updates. Ukraine has a strong IT sector, which makes up more than 3% of GDP, ranks third among all sectors of the economy in terms of exports (80-90% with major export markets in the US and EU countries). The industry is second only to the agro-industrial sector and metallurgy according to this indicator and volume of exports. The total revenue of IT industry in 2017 amounted to 3.6 billion US dollars. However, only 17% of Ukrainian industries use innovations, while the figure reaches about 49% in the EU (Pleskach et al., 2018).

The telecommunication market of Ukraine in 2016 was estimated at almost UAH 57 billion (about 2 billion euros, i.e., less than 1% of the EU market, which amounted to 220 billion euros in 2016). The most important participants in the telecommunication market are mobile, satellite, cable and Internet service providers. The largest market segment in terms of revenue is the mobile market (USAID, 2018).

One of the most dynamic areas of the world activity today is FinTech, with investments exceeding 111 billion US dollars in 2018. The products of FinTech companies and startups give you an opportunity to take a new look at usual things, such as money transfers or shopping in a supermarket.

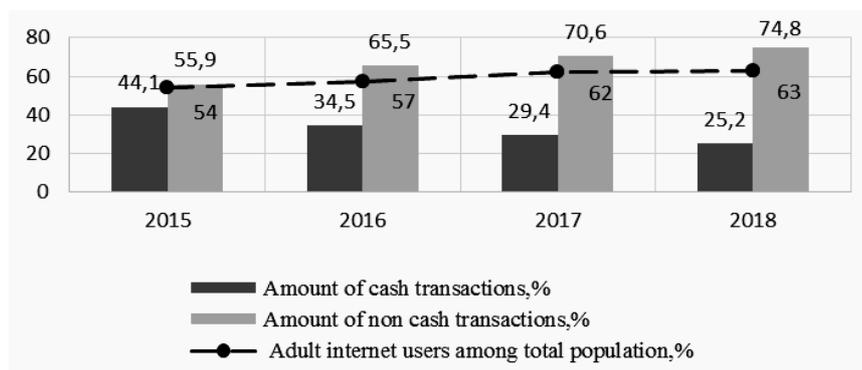
The development of the FinTech sector is facilitated by rapid dynamics of online financial undertakings of Ukrainian population (Fig. 2)

As evidenced, the number of non-cash online transactions is growing rapidly, by 6% annually on average, virtually «squeezing out» market cash transactions, which are becoming less popular among users. In addition, such developments indicate increase in quality, availability and reliability of online services for

financial transactions in Ukraine. The growth in quantity of non-cash transactions is partially caused by the trend of the increasing number of active Internet users by an average of 3.5% per year, which certainly contributes to the digitalization of the financial sector of the domestic economy.

Figure 2

Dynamics of non-cash transactions in Ukraine



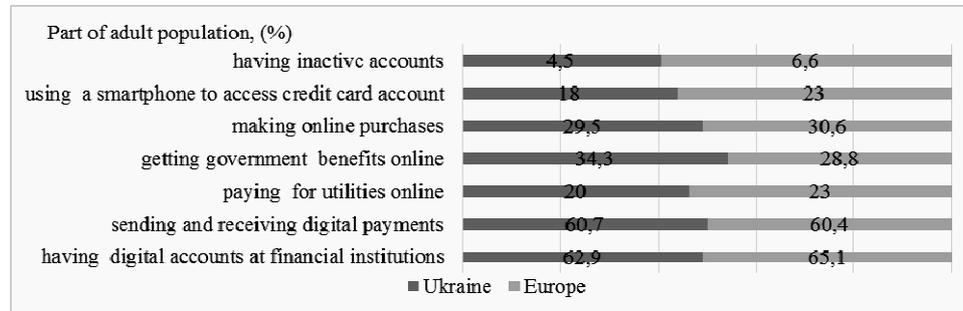
Source: compiled by the authors based upon (Dronyuk et al., 2019).

Indicators of digitalization of the financial services market in Ukraine

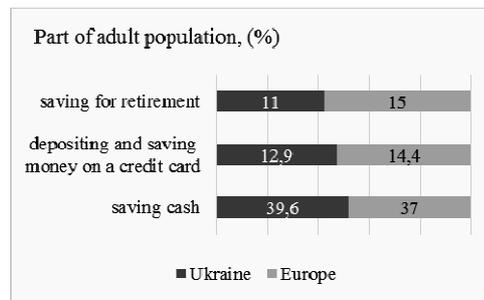
In general, the digitalization transformation of the Ukrainian financial market can be described by applying the system of indicators mentioned below. We propose to use the activity of key financial services in use and digital opportunities by population as the basic index for the assessment of the digitalization transformation. In fact, the degree of population's involvement in the use of digital financial tools is a criterion for the efficiency and convenience of FinTech, the result of technology development. Moreover, part of the population this is actively using online financial opportunities makes up a promising target market for the promotion of new digital products, which stimulates healthy competition and FinTech development. Taking into account these considerations, we have selected three groups of indicators to build the model.

Figure 3

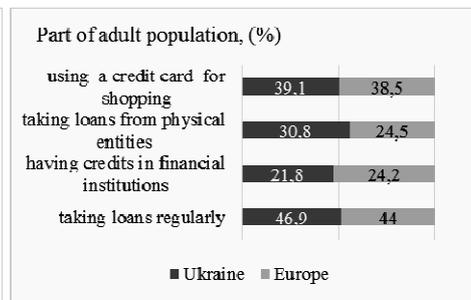
Indicators of digitalization of the financial services market in Ukraine



a) Group 1 – general indicators of online financial activity of the population



b) Group 2 – indicators of online and offline accumulation of funds



c) Group 3 – indicators of credit activity

Source: authors' calculations based upon statistics (Mietule et al., 2019; Plotnichenko, 2015).

Analysis of the indicators lead to the following important conclusions.

Foremost, the majority of Ukrainian population uses digital financial instruments on the same level as Europeans. There is no significant lag for any of the studied indicators, which opens wide prospects for rapid expansion of European digital financial products to the Ukrainian market, has a positive impact on international banking activity, intensifies and simplifies trade operations, and makes international capital turnover more transparent. To give an example, currently about 60% of residents of Ukraine and Europe make financial payments regularly, purchasing 30% of all goods and services online. In addition, the ma-

majority of the adult population of Ukraine has digital accounts in financial institutions (62.9%) and uses them actively. Only 4.5% of card accounts in Ukraine and 6.6% in Europe become inactive, which confirms relatively a low risk of losing customers for financial institutions offering digital services for account holders (instant loans, online banking, etc.).

Furthermore, promising areas of digitalization of financial services include convenient deposits and lending in the system of B2B, B2C, and P2P. Currently, about 40% of Ukrainians keep and accumulate funds, but only 12.9% entrust this procedure to financial institutions. At the same time, only 11% of the population of Ukraine seeks to save for retirement. The situation with credit instruments is more dynamic. About 47% of Ukrainians take loans regularly, 39% use a credit card for shopping, and every 5th Ukrainian has an outstanding loan. As a result, the market for digital financial services in the field of deposit servicing and mortgages remains unsaturated. This situation causes a relatively low entry threshold for new players, which was once used by Monobank, offering an easy and quick algorithm for obtaining a loan online entirely.

Finally, the evolution of the financial market urgently requires the rapid development and implementation of new financial technologies to service a variety of financial transactions of individuals and businesses, including mobile applications and special computer applications with a high level of personal data protection. Almost every 5th resident of Ukraine uses a smartphone to access their card account.

Under these conditions, FinTech remains an extremely attractive investment direction in terms of digitalization. It offers great opportunities for entrepreneurs who want to implement their own ideas, and Ukraine is no exception. Domestic FinTech companies create real products attractive to investors, which stimulates foreign investment and has a positive effect on the image of the state as a whole. There is an export of intellectual resources to other countries but, on the positive side, the infrastructure necessary for the development of the startup environment is being established in the form of accelerators and incubators. However, in order to stimulate the growth of new projects, it is necessary to take serious steps towards creating conditions for doing business in the country – from the regulatory environment and changes in legislation to tax policy for innovative companies, simplicity and transparency in creating startups.

Promising areas of digitalization of the Ukrainian financial sector

We propose a hierarchical model of promising areas of digitalization of the Ukrainian financial sector. In order to develop the model, we used the results of a survey, which covered 80 companies operating in FinTech since 2015 (USAID, 2018) and further grouped them in accordance with areas and fields of activity (Fig. 4).

Figure 4

Hierarchical Fintech model in Ukraine (%)

innovation and technological services				money circulation			convenient applications	
Infrastructure	Lending			Payments&Moneytransfers	S3*	Marketplaces	Insurance	
	Blockchain	S1*	S2+			Neobanking	Mobile Wallets	

Note: S1 – cryptocurrencies; S2 – regulating technologies; S3 – personal finance

Source: authors' calculations based upon statistics (Mietule et al., 2019).

All FinTech sectors represented on the domestic market have been grouped into 3 major areas: money circulation, innovation and technological services, and convenient applications. The presented tree-like hierarchical model (Fig. 4) allows us to assess clearly which of the FinTech sectors are the most developed and popular in terms of doing business in Ukraine. Each of the rectangles (Fig. 4) corresponds to a certain FinTech sector and its area is proportional to the share of this sector in the general FinTech market of Ukraine.

The analysis showed that area 1-innovation and technological services, being the largest one, amounts to 40.2% of the FinTech market. This is due to the rapid development of domestic startups providing IT infrastructure (19.3%) and lending (14%). Areas of development in the sectors of blockchain, regulatory

technologies and cryptocurrencies are much less popular. It is noteworthy that the latter are the smallest sectors of FinTech in the domestic market with a market share of less than 3.5%.

It is worth mentioning that quite powerful area 2, which covers the digitalization of money circulation and includes the most developed and investment-attractive FinTech sector, namely, payments and transfers, employs 31.6% of businesses. FinTech has become popular in the field of service and analysis of personal finance and assets in recent years, but its share in Ukraine still remains at only 5.3%. Such low rates are due to the relatively low level of financial literacy of the population, who practically do not use the tools to effectively accumulate and invest their own funds, except for bank deposits.

Area 3 – convenient applications – is the smallest one in the developed hierarchical model (22.9% of Ukrainian FinTech), but it has the most uniformed and stable structure. This area is formed by 4 promising sectors of FinTech with approximately the same weight: marketplaces (7%), insurance, neo-banking, and digital wallets (5.3% each).

Taking into consideration the results of the survey, area 3 plays a particularly important role in the development of FinTech in Ukraine, despite the lowest share in the overall hierarchical model. This is due to the fact that it employs companies, which create product for domestic business and promote its development. In contrast, companies in area 1, which cover FinTech maintenance processes, are the most numerous, but they process orders mostly for foreign business, and, therefore, the part of added value they create goes to the business results of customer countries.

Currently, the leading trends in the evolution of financial services are influenced by the technological changes, namely, development of digital technologies and innovations. A number of trends have emerged in developed countries, which determine the main vector of banking market development. In the context of digitalization, innovative banking service not only engages the use of up-to-date formats, but also involves a wide range of social media, telematics, mobile and video technologies. The spread of crowdfunding creates a highly competitive environment for banks, therefore, there is an urgent need to develop digital technologies in the relevant sector in order to maintain the competitive position of banks in financial markets.

A prerequisite for building a competitive banking system in Ukraine is the comprehensive development and use of the benefits of digital technology. Top management of banks should pay attention to innovative, mostly startup, technological projects in the field of financial services (FinTech). The largest banks use two main types of products based on FinTech, namely software and financial services (B2B market) and products aimed at the end user (B2C market) (Kraus et al., 2018).

In general, the transformation of the bank into a digital one involves consumer orientation towards the future, namely, activities following the principles of mobility, interactivity in the process of money movement, biometric control, support of crowdfunding technology (including P2P lending), and the combination of digital technologies with research.

Suggestions and Conclusions

In general, Ukrainian business has already joined the «digital race». Experts and company executives understand that they are not be able to compete successfully in the domestic and foreign markets without the application of digital technologies. At the same time, companies approach the proposed technologies very pragmatically, placing the main emphasis on urgent needs, as there is no rush to invest in fundamentally new areas of the digital financial market.

There are certain challenges in the implementation and use of digital technologies in the financial sector. First of all, there is a shortage of investment resources for project implementation and further development of the operational potential of IT systems. The problem of digital literacy and staffing for the «digital revolution» is equally important: there is a lack of both IT professionals and users who can use innovative technologies effectively. «Advanced solutions» do not always interact with «old school» suppliers and consumers who continue to work in out-of-date manner. In some places, the restraining factor lies in the underdeveloped infrastructure (low-bandwidth of communication channels, lack of access to mobile Internet, lack of data centers, etc.). Finally, a significant number of companies believe that they can count on some government support for the use of digital technologies.

Ukrainian digital economy has an applied, theoretical and legislative basis capable of strengthening its position among the world countries. However, digitalization is still a mostly innovative phenomenon in Ukraine. Therefore, a balanced combination of theoretical research with the current needs and abilities of stakeholders is a «must have» for the national economy.

It is of paramount importance that the successful result of financial market digitalization is ensured by the emergence of various initiatives and projects for digitization at all levels, starting with state and ending at individual companies. If such projects become effective, a number of technological indicators can change the quality of life, management systems, business models and ensure further transformation of the Ukrainian financial system and economy into digital ones.

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