# Marketing of Development Banking Innovations in the Financial Market of Ukraine

NATALIA V. TRUSOVA[*], IRYNA A. CHKAN, NATALIIA G. RADCHENKO, INNA Y. YAKUSHEVA, NATALIA N. RUBTSOVA

Department of Finance, Banking and Insurance, DMYTRO MOTORNYI TAVRIA STATE AGROTECHNOLOGICAL UNIVERSITY, UKRAINE. *E-mail: nat-trusova@edu-knu.com

**ABSTRACT**

The purpose of the article is to implement a comprehensive approach to assessing the relationship between marketing of banking innovations and financial stability of banking institutions, which under the influence of digital technology determine the innovative capabilities of the banking system, activating the innovation potential of the financial market. The article presents a structural and functional model of the relationship between the priority areas of the "blue oceans" and the signs of evaluation of marketing of banking innovations. An integrated assessment of the relationship between the innovation components of the marketing complex of banking innovations and the financial stability of banking institutions of Ukraine is determined.

# Comercialización de Innovaciones de Banca de Desarrollo en el Mercado Financiero de Ucrania

NATALIA V. TRUSOVA[*], IRYNA A. CHKAN, NATALIIA G. RADCHENKO, INNA Y. YAKUSHEVA,
NATALIA N. RUBTSOVA

[1]Department of Finance, Banking and Insurance, DMYTRO MOTORNYI TAVRIA STATE AGROTECHNOLOGICAL
UNIVERSITY, UKRAINE. *E-mail: nat-trusova@edu-knu.com

**RESUMEN**

El propósito del artículo es implementar un enfoque integral para evaluar la relación entre el marketing de las innovaciones bancarias y la estabilidad financiera de las instituciones bancarias, que bajo la influencia de la tecnología digital determinan las capacidades innovadoras del sistema bancario, activando el potencial de innovación del sector financiero. mercado. El artículo presenta un modelo estructural y funcional de la relación entre las áreas prioritarias de los "océanos azules" y los signos de evaluación del marketing de innovaciones bancarias. Se determina una evaluación integrada de la relación entre los componentes de innovación del complejo de marketing de innovaciones bancarias y la estabilidad financiera de las instituciones bancarias de Ucrania.

**Palabras clave:** Innovaciones bancarias; Instituciones bancarias; Tecnologías digitales; Mercado financiero.

**Clasificación JEL:** M31, G10, G21

## 1. Introduction

In the conditions of transformational changes in the economy of the world with a vector for the development of digital innovations in the banking sector and overcoming the crisis of the banking system, an important role is played by effective organization of movement and redistribution of society's resources in monetary terms. Global economic trends demonstrate the objective need to ensure the innovative development of banking institutions as a prerequisite for their survival in a period of financial instability, increasing economic potential. Innovative development of banking institutions which need to increase the efficiency of marketing processes, its modern concepts and components, allows the formation of new approaches to ensuring their financial stability and requires the use of marketing approaches throughout the life cycle of innovation, from finding innovative ideas to product market.

Thus, the market of banking services can positively affect the level and rate of growth of gross domestic product and the development of financial innovations in the banking sector of the economy, forming a separate direction of marketing activities in the financial market, focused on quality satisfaction of current and future needs, services and marketing technologies; to take into account the interests of stakeholders in the innovative and profitable development of banks; to gain a competitive advantage in the face of increased competition between financial intermediaries, the impact of digitalization and financial instability (Shumpeter, 2008; Kozlovskyi et al., 2019). At the same time, the identification of risk factors for marketing banking innovations, in particular their systematization by determining the weighted average level of marketing risk of banking innovations allows to assess their impact on banking institutions, enabling the formation of an effective system of measures to minimize negative consequences of financial instability.

Planning and implementation of financial innovation products on the financial market should take place through a well-established system of communication with the target market, thus meeting the needs of existing and potential customers, taking into account market trends from the standpoint of determining structural components of banking marketing priorities (Batiz-Lazo & Woldesenbet, 2006; Burgelman, 1996; Canals, 1997; Chen, 2006; Mellow, 2019) and determining the level of influence of the latter on the competitive position and financial stability of banking institutions (Ciciretti et al., 2007; Frait & Komárková, 2011; Frame & White, 2009), reducing the influence of some elements and the emergence of others (Anguelov et al., 2004; Frait et al., 2011). The priority of our study is to implement a comprehensive approach to assessing the relationship between marketing of banking innovations and financial stability of banking institutions that under the influence of digital technology determine the innovative capabilities of the banking system, activating the innovation potential of the financial market.

## 2. Materials and Methods

Banking marketing of innovations as a socio-economic category increases the efficiency of the results of the introduction of new products and services, confirming this by increasing revenues and gross margins of banking institutions. But the assessment of the impact of marketing of banking innovations on the financial stability of banking institutions should be based on the conceptual model of "marketing mix 4P" and methods of its practical application (Borden, 2001) and supplemented by models "5P" and "7P", which according to the content load detail the model "4P" (McCarthy & Perreault, 1993; Kotler & Kaslione 2009). In addition, introduced a marketing complex "4C" (Lauterborn, 1990), which changes the emphasis of marketing technologies from product to consumer (Fig. 1).

The optimal complex "4P" in terms of digitalization forms a combination of marketing tools that ensure the rational use of available funds for the marketing budget of banking innovations. The relative importance of each individual element of the marketing complex depends on various factors influencing the activities of banking institutions. That is, under the influence of digitalization is the transformation of all components of "4P". In addition, digital technologies reduce banking

"information asymmetry", save financial resources by reducing the cost of renting and maintaining the premises, reducing the number of staff, covering a wide range of customers, not limited to geographical location (Melnychenko, 2013).

**Figure 1.** Transformation of the marketing complex "4P" into "4C"
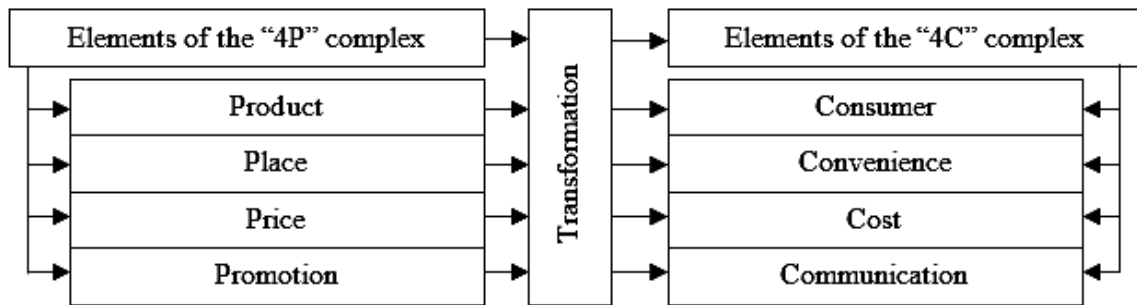


Source: developed by the authors according to (Lauterborn, 1990; Mishchenko & Mishchenko, 2018)

In our opinion, it is necessary to establish a functional interaction between the marketing of banking innovations and financial stability of banking institutions, highlighting the risk factors of financial instability that threaten the effective functioning of the banking system and the economy as a whole (Chant et al., 2003; Kotler et al., 2012; Yaroshenko et al., 2018; Doyl, 2003). It should be noted that the source of instability at the global and national levels are the processes of transformation of financial market actors and the reproduction of financial resources through intermediaries. These processes are dialectical in nature. On the one hand, under the influence of the digital economy, they are able to promote the formation of new powerful impulses for innovative development, and on the other due to the growth of types and volumes of digital financial technologies there are disparities that exacerbate critical contradictions in the economy (Table 1).

**Table 1.** Factors influencing the development of marketing of banking innovations in conditions of financial market instability

| Group of factors | Characteristic |
|---|---|
| Factors of globalization nature (metalevel) | The complexity of the functioning of international banking systems and the use of new financial instruments, the variety of operations and the speed of movement of financial capital, which increases the number of banking risks, their manifestations and possible consequences (the emergence of systemic risk). Requirements for new conditions for the functioning of banking institutions, through the creation of a foreign network of divisions, the introduction of common global standards of customer service. Reducing the share of traditional intermediation, reorienting cash flows to securities markets, which, thanks to new technologies, are able to provide liquidity of banking institutions, transparency, financial security and high profitability. Modification of banks' strategies due to the focus on changes in the economic situation in the world. Unification of the entire financial sector of the economy of different countries when working in both domestic and foreign markets. Lack of opportunities for the national economy to remain completely closed from foreign capital, which leads to increased competition. The growth of the share of knowledge-intensive industries in the economy leads to an increase in investment and credit resources that have low profitability and a longer period of their return and payback. Improving the level of information and computer support of banking institutions, expanding the range, improving the quality of services and competitiveness in the market. |

| | |
|---|---|
| Factors national character economic development (macro level) | The state of the economy, in which intelligence and innovative solutions determine the pace and prospects of economic development and man becomes the driving force of production, aimed at increasing his abilities and increasing the set of his needs. Development of information and communication technologies and formation on their basis of network economy in which joint projects acquire special value. Information and financial awareness of customers. Changes in the regulation of banking and the functioning of financial markets. Changing demand for banking products due to declining household incomes. |
| Intrabank factors (micro level) | The need to spread new communication and information technologies, global telecommunications. The level of innovation potential of banking institutions which is determined by the ability to generate, perceive and implement innovative ideas, using available and potential resources. Existence of an effective risk management system capable of objectively assessing and minimizing innovation risks together with other banking risks. The state of innovation culture which is manifested in the willingness of bank employees to innovate in all areas of the banking business and their ability to create innovative ideas. The nature of financial instability of banks, the need to implement tools and methods of macro-regulation, improvement of micro-regulatory methods. |

Source: systematized by the authors according to (Caccioli et al., 2009; Beck et al., 2012).

Financial instability as a result of irrational optimism of investors encourages overvaluation of assets, causing a sharp increase in the risk of deterioration of the banking sector of the economy. The main causes of financial instability include increased volatility of financial markets and deteriorating solvency of financial intermediaries (Crockett, 1997). This causes credit risk which leads to a decrease in the income of borrowers and the loss of their ability opportunities to fulfill obligations on time to banking institutions. We propose to highlight the state of the banking system depending on the level of risks and external shocks, such as stability, instability, volatility and crisis (Table 2).

In the absence (weakness) of external shocks, the financial condition of the banking system can be defined as "financial stability"– the banking system is able to perform its functions (payments, transformation of savings into a resource of economic growth, etc.). With a small or minimal level of risk, the state of the banking system is characterized as "financial volatility", and in this case, the violation of the functions of banking institutions will be minimal and short-term. In some cases, financial stability can be restored without the intervention of the regulator (bank risk management) (Zveriakov et al., 2016).

**Table 2.** The state of the banking system depending on the accumulated risks and external shocks

| Criteria for determining the state of the banking system | | Accumulated risks | | | |
|---|---|---|---|---|---|
| | | minimal | insignificant | significant | critical |
| Level external shock | strong | Financial volatility | | Financial crisis | |
| | moderate | | | | |
| | weak | Financial stability | | Financial instability | |
| | absent | | | | |

Source: compiled by the authors according to (Frait & Komárková, 2011)

Among the factors of financial instability of the banking system are financial innovations in the form of complex financial instruments CDO (Collateralized Debt Obligations), ABS (Asset Backed Securities) and CDS (credit default swaps) (Dimsdale, 2009). In addition, the complexity of financial and banking innovation limits the ability of investors to adequately assess risks (Simkovic, 2013) and weakens banks' credit standards (Carbo-Valverde et al., 2015). The negative impact of excessive competition leads to aggression in the implementation of the marketing strategy of banking institutions (Tushaj & Sinaj, 2012), which leads to such sources of financial instability as the transformation of terms, financial leverage and credit expansion.

That is, banking institutions look for sources of increased lending activity in conditions of fierce competition, increase return on assets without adequate capital growth (expansion and reduction of leverage), as well as lending terms without changing the term of borrowing (transformation of terms), which increases credit risk and market share in the structure of the real sector of the state economy (Karmynskyi & Zhdanova, 2013).

The marketing of banking innovations can have a stabilizing and destabilizing effect on the financial condition of banking institutions or the banking services system as a whole. On the one hand, the introduction of banking innovations helps to minimize risks and increase profits; however, on the other hand, there is a destabilizing effect associated with information asymmetry, the emergence of credit risk and diversion of funds to innovation instead of increasing equity and its increase which is a necessary component in developing a marketing strategy for banking innovations. Summarizing the above, we propose to determine the interaction of marketing of banking innovations and financial stability to distinguish the destabilizing and stabilizing determinants of the banking system that are shown in Fig. 2.

**Figure 2.** Directions of mutual influence of marketing of banking innovations and stability of banking institutions
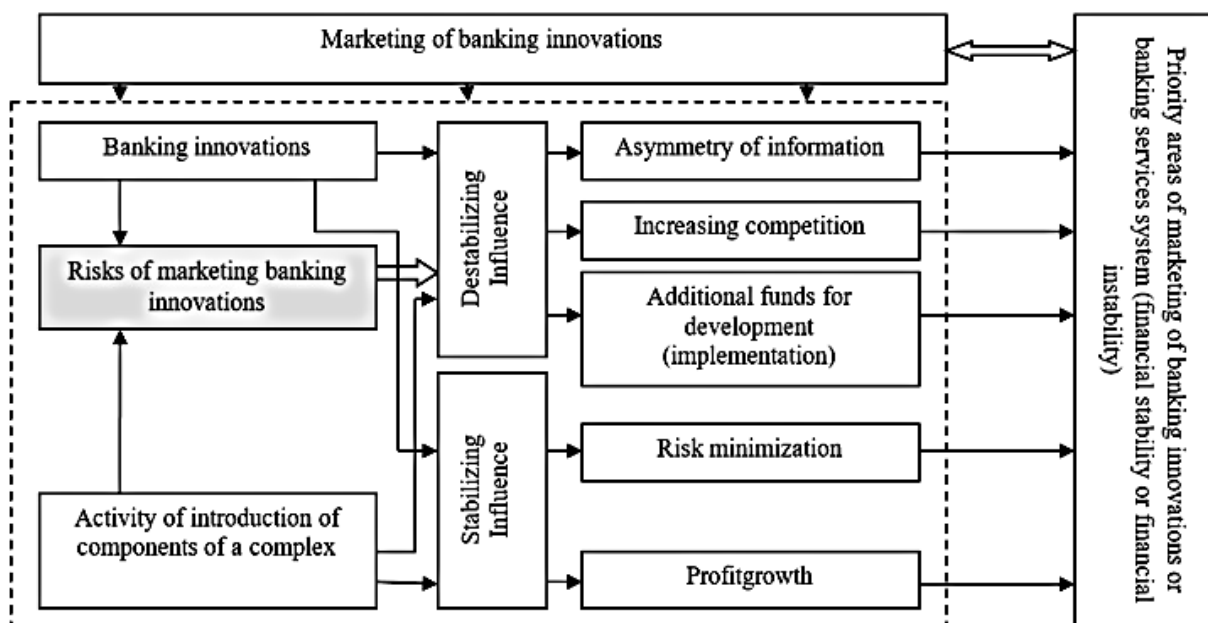


Source: developed by the authors

We propose a sequence structure of analysis of factors that affect the financial instability of banking institutions, this will allow for a qualitative assessment of the risks of financial instability in the marketing of banking innovations in the financial market and the introduction of the priority direction of the "blue ocean" (Kim & Moborn, 2019), which in the context of digital technology and increased competition between financial intermediaries is unique the process of modeling innovations in banking products. Most "blue oceans" based on functioning "red oceans". Quantitative assessment of effective areas of the "blue oceans" forms a modern methodological approach "Value-Based-Marketing" (VBM) which from the standpoint of improving the value of business allows you to identify the value chain of marketing banking innovations that are consistent with aggregate banking services formation of primary value for sale to their consumers (Lomochynska & Kunytsia, 2018; Martin & Petti, 2006).

Based on the method of T. Lepeiko and Yu. Kotelevska, (2012), we propose to determine the indicator of net income from the implementation of priority areas of the "blue oceans" and signs of evaluation of marketing of banking innovations by equation (1):

$$NPV = \sum_{n} \frac{P_k}{(1+r)^n} - \sum_{n} IC \tag{1}$$

where $NPV$, – net income from the sale of "blue oceans" for the development of marketing of banking innovations; – income of the banking institution from the implementation of the priority areas of the "blue oceans" for the development of marketing of banking innovations for a certain period; – discount rate of the national bank for a certain period; – the number of years for the implementation of priority areas of the "blue oceans" in the marketing of banking innovations; – costs for the development and implementation of priority areas of the "blue oceans" in the marketing of banking innovations.

The profitability index of innovation marketing measures in a banking institution is calculated by equation (2):

$$PI = \sum_{n} \frac{P_k}{(1+r)^n} : \sum_{n} IC \tag{2}$$

where, $PI$ – index of profitability of innovation marketing measures in a banking institution.

Net present income from the implementation of the priority areas of the "blue oceans" of marketing of banking innovations is defined as the value obtained based on discounting the difference between all costs of the bank for the introduction and sale of new banking products and net income (loss) from the implementation of innovations. Since net income is considered over several years, depending on the validity of the priority areas of the "blue oceans", it is discounted at the discount rate of the national bank, that is at the price on which depends the value of borrowed and placed funds of the banking institution in the financial market to promote marketing innovations and their maintenance. The profitability indicator, in contrast to net income, determines the profitability or unprofitability of the application of innovation marketing measures in a banking institution.

## 3. Results and Discussion

A significant amount of banking products is sold through information technology, which, in turn, plays a key role in product differentiation and customer engagement. In the banking system of Ukraine, the digital transformation has allowed to form Digital channels (networks of ATMs, Internet banks, mobile banks, chat bots) and create effective interaction between consumers and banking institutions at the most acceptable time for them. Digital products have been introduced is "Big Data", contactless payments, virtual cards, artificial intelligence, etc. With the help of advanced modern software, E2E (end to end) products have been created, which satisfy the demands of bank customers around the clock (Fig. 3).

The creation of artificial intelligence ("Digital Brain") which continuously automatically studies the data of all banking business segments, contribute to a broader understanding of their capabilities and customer needs. For example, in the USA pilot projects on use of artificial intelligence of automated consultants for interaction with clients are realized in system of artificial intelligence all procedures and mechanisms of rendering of necessary service are described, history of calls, history of use by bank services of bank etc. is formed. The peculiarity of the fifth stage is the introduction of "Digital DNA" is a new system for making priority decisions about the life cycle of a banking institution.

The development of marketing banking innovations has gained a wide range through online services (World Finance, 2020): "First National Bank" (FNB) (South Africa) is recognized as the most innovative financial institution in Africa, thanks in large part to customer-focused technologies: fingerprint recognition and live chat with private bankers. FNB also offers a full suite of digital tools for small business owners, including DocTrail, a document tracking service, automatic account replenishment and linking to payments; EVO Banco (Europe) offers the following innovative products:

smart mortgage, which varies depending on market conditions and has a free year of life insurance; an intellectual account that automatically transfers money from a current account to a savings account when it reaches a certain balance; use of artificial intelligence to interact with customers; Banking institutions that actively use the marketing of banking innovations offer a number of social and environmental initiatives: "New Zealand Banking Group" (ANZ) creates projects that help businesses reduce the risks of environmental impact; "Banco Popular Dominicano" seeks to improve both the domestic culture and the technological infrastructure through the introduction of the most advanced goods and services in the country; "National Commercial Bank" is the first bank in Saudi Arabia to receive an international certificate for leadership in social responsibility through women's financial inclusion; US Bank provides services to customers to obtain financial resources through its own training center.

**Figure 3.** Development of banking innovations in Ukraine
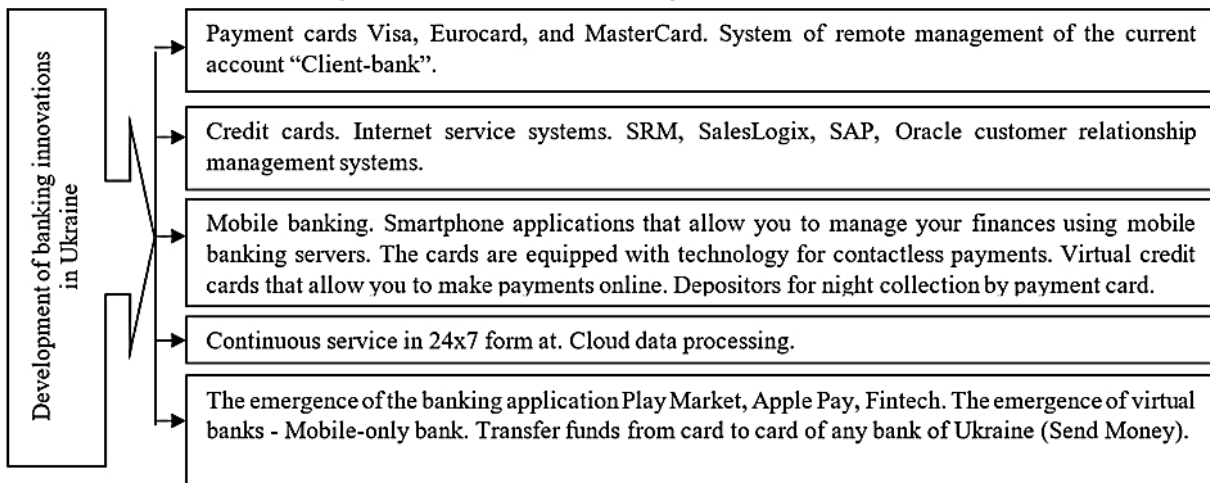


Source: compiled by the authors according to (Kuznietsova & Shmuratko, 2018)

Within the latter, competitive advantages are seen as the right choice between the direction of differentiation of innovation activities of banking institutions and reducing the cost of introducing new products. The priority areas of the "blue oceans" combine these two factors for the development of marketing of banking innovations (Fig. 4).

**Figure 4.** Structural and functional model of interrelation of priority directions of "blue oceans" and signs of estimation of marketing of bank innovations
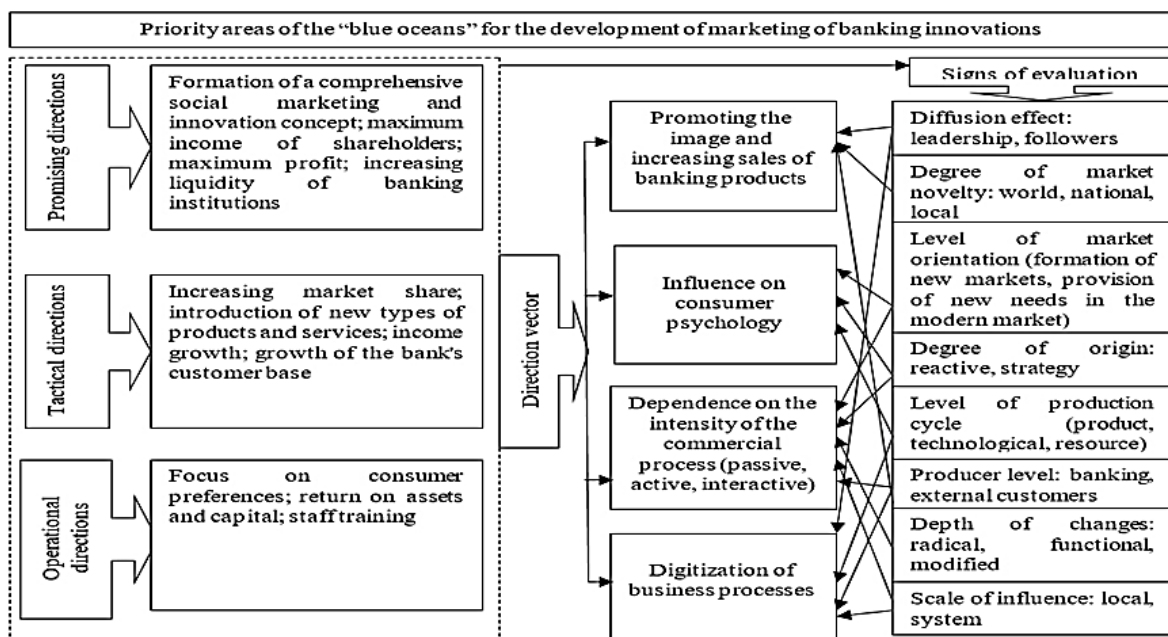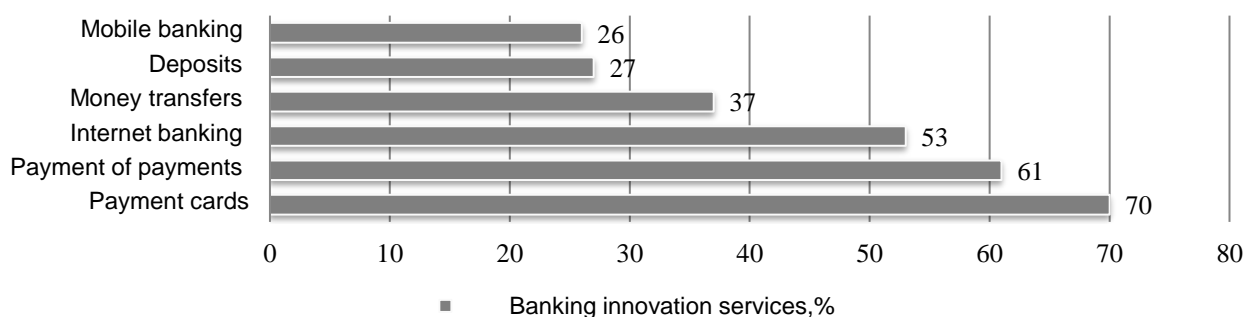


Source: developed by the authors according to (Kim & Moborn, 2019; Helm et al., 2014)

The threat to the competitiveness of banking institutions is not only financial technologies (Fintech) but also the so-called FinTech-firms which use a combination of technology with customer-centric service and flexible business structure to reduce costs, expand customer base and increase market share in the financial market (Zherdetska & Horodynskyi, 2017). In Ukraine, the greatest demand for banking services is shown in Fig. 5. The innovative development of banking institutions of Ukraine in 2020 has undergone changes in many areas. Thus, the level of introduction of Internet banking in the first group of surveyed institutions with a state share is 67%, in the second (foreign banks) is 86%, in the third (banking institutions with private capital) is 76.2%. It should be noted that only 43% of banking institutions offer their customers mobile applications for managing their own accounts making payments, managing deposits and paying for utilities, etc.

Blockchain technology allows you to save and use the resources of the participants Fintech. That is, the transaction is carried out without the participation of the main counterparty (banking institution or payment system), while providing the conditions for the creation of crypto currency by recording information about transactions (KPMG, 2021).

**Figure 5.** Innovative banking services via the Internet in Ukraine, %



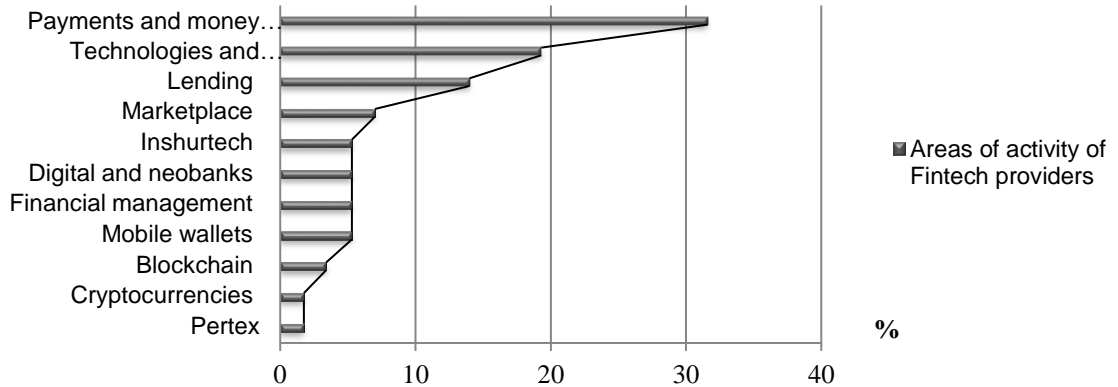Source: calculated by the authors according to (National Bank of Ukraine, 2020)

The best solution for most banking institutions is to create innovations in partnership based on business platforms that combine traditional banking and financial technologies. In Ukraine, Fintech is reflected in the financial sector, primarily in the field of P2P lending, as an alternative to retail lending. In the P2P lending model banking institutions perform only technical functions to provide services to potential creditors and borrowers for a certain amount of commission (Mishchenko & Mishchenko, 2018). In Ukraine, P2P lending services began to be provided by JSC CB "PrivatBank", offering high yields (on average + 5% per annum of base rates on deposits) (Zherdetska & Horodynskyi, 2017).

Among the non-bank digital payment services that prefer individual and customer-oriented approaches are the English electronic payment systems Skrill and Transfer Wise, as well as the American companies Venmo and Braintree, which are part of the international payment system PayPal and WePay. The partner of the Transfer Wise system is JSC CB "PrivatBank" of Ukraine (Mishchenko & Mishchenko, 2018). In addition, Fintech includes online loans through the use of electronic payment systems. For example, Monobank has appeared in Poland an online structure with a high-tech IT platform with more than 200 functions. The Hungarian group OTP Group has created a similar Touch Bank, which focuses on customers of the affluent segment is "middle class and above". There are six neo-banks registered in the Great Britain that receive significant investment resources to support innovation (Fintech 100: Leading Global Fintech Innovators, 2019).

In Ukraine, Neobank (digital bank – Monobank) provides services for payment, microcredit and deposits for individuals through a mobile application. Monobank works in partnership with JSC "UNIVERSALBANK" and actively forms its own customer base. According to the 2019 Fintech 100 rating, neo-banks have increased their representation to 10 companies, including such companies as Monzo, Number 26, SolarisBank, StarlingBank (KPMG, 2021). The TOP 10 includes such financial companies as Ant Financial (China), JDFinance (China), Grab (Singapore), Baidu (DuXiaoman Financial) (China), Sofi (USA), Oscar Health (USA), Nubank (Brazil), Robinhood (USA), AtomBank (Great Britain),

Lufax (China), (Novack & Kauflin, 2020). In 2020, in Ukraine Fintech providers are working in the areas (Fig. 6).

**Figure 6.** Areas of activity of Fintech providers in Ukraine in 2020



Source: calculated by the authors according to (National Bank of Ukraine, 2020)

**Figure 7.** Integral assessment of the relationship between innovation components of the innovation marketing complex and the financial stability of banking institutions of Ukraine in 2020
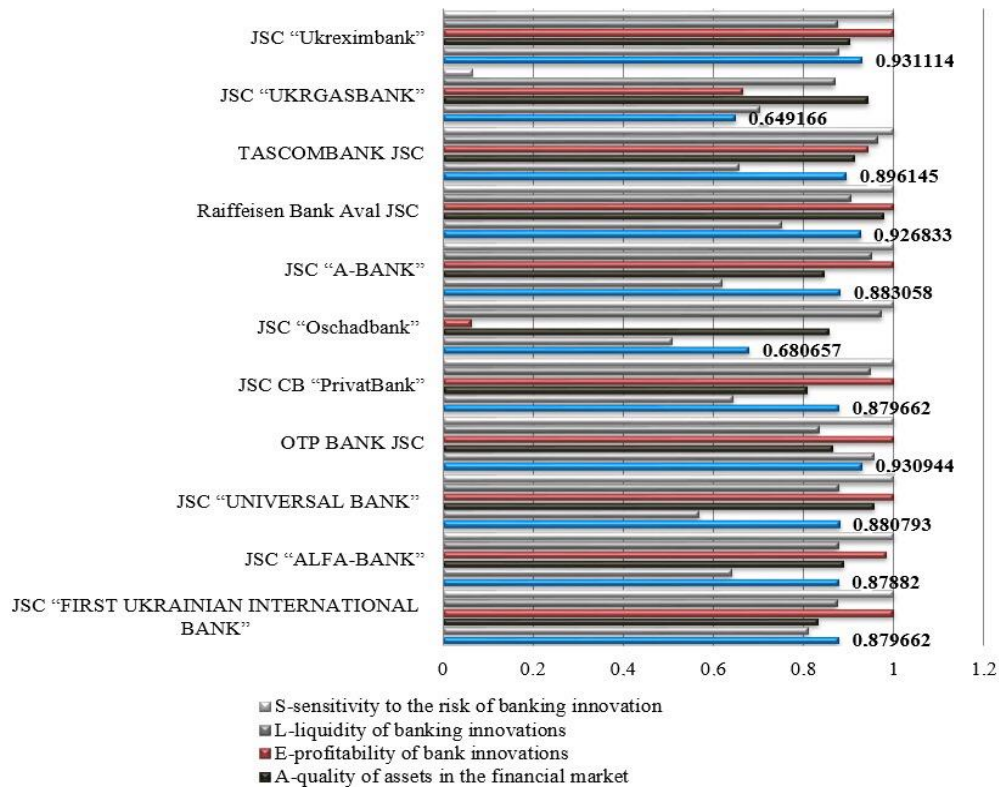


Source: calculated by the authors

Partnerships with banking institutions and international payment systems include platforms for P2P (card transactions, payment cards with logos of several companies and other payment services), which are introduced through JSC "FIRST UKRAINIAN INTERNATIONAL BANK" (9.4%), JSC "Oschadbank" (16%), JSC "ALFA-BANK" (14%), Raiffeisen Bank Aval JSC (11.6%), TASCOMBANK JSC (26%) and international payment systems (Visa / MasterCard is 23%). At the same time, the product range of innovations of banking institutions takes into account the components of the marketing complex based on the basic model "4P", which includes the product (product policy), price (pricing policy), point of sale (competitive position), promotion (sales policy). The components of the marketing complex allow

you to maximize profits, the growth of which depends, firstly, on the market share of the banking institution and the number of customers, and secondly, on liquidity, riskiness and profitability of operations. (Fig. 7).

The leaders in the use of marketing of banking innovations are the institutions presented in Figure 8. It should be noted that at the present stage of development of the banking sector of Ukraine, the innovation component contributes to the effective use of the components of the "4P" complex. This statement is supported by the high value of the correlation coefficient between the estimates of the "4P" complex in general and its innovative component in particular (89.03%).

The banking system is able to absorb the imbalance of marketing activities of banking institutions after short-term imbalances with a weak change in asset prices. At the same time, financial stability as a process should include a reliable assessment of financial risks and an effective management system, using an innovative approach to restoring the marketing activities of banking institutions after external shocks or increasing imbalances, any deviations from safe parameters caused by crises (Herrero & Simo, 2006). Note that the risks of marketing banking innovations (payment systems) by origin and the possibility of influencing the financial stability of banking institutions are more manageable. Risk assessment of marketing of banking innovations (payment systems) is presented in Table 3.

Thus, according to Table 3, the highest risks have the payment system Oschad 24, whose values during 2017-2020 ranged from 0.414 credit risk) in 2018 and 0.561 (level of innovation risk) in 2020, which is largely due to the low level of fulfillment of its financial obligations and the availability of financial assets in the financial market. The most secure payment systems currently in operation are Visa, Apple Pay and MasterCard.

**Table 3.** Risk assessment of marketing of banking innovations (payment systems) in Ukraine

| Component risk assessments of payment cards | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| Google Pay | | | | |
| The level of credit risk | x | 0.304 | 0.297 | 0.220 |
| Level of liquidity risk | x | 0.208 | 0.203 | 0.150 |
| Level of business risk | x | 0.207 | 0,198 | 0.164 |
| Level of innovation risk | x | 0.112 | 0.101 | 0.106 |
| Level of operational risk | x | 0.310 | 0.288 | 0.271 |
| The level of risk of technological and information security | x | 0.344 | 0.311 | 0.329 |
| Monobank | | | | |
| The level of credit risk | 0.127 | 0.137 | 0.135 | 0.100 |
| Level of liquidity risk | 0.048 | 0.047 | 0.046 | 0.034 |
| Level of business risk | 0.069 | 0.068 | 0.066 | 0.049 |
| Level of innovation risk | 0.042 | 0.042 | 0.041 | 0.031 |
| Level of operational risk | 0.051 | 0.050 | 0.046 | 0.048 |
| The level of risk of technological and information security | 0.046 | 0.045 | 0.041 | 0.043 |
| MasterCard | | | | |
| The level of credit risk | 0.007 | 0.007 | 0.007 | 0.004 |
| Level of liquidity risk | 0.012 | 0.009 | 0.009 | 0.007 |
| Level of business risk | 0.003 | 0.003 | 0.003 | 0.002 |
| Level of innovation risk | 0.002 | 0.005 | 0.004 | 0.004 |
| Level of operational risk | 0.007 | 0.010 | 0.007 | 0.009 |
| The level of risk of technological and information security | 0.004 | 0.002 | 0.005 | 0.007 |
| Visa | | | | |
| The level of credit risk | 0.071 | 0.068 | 0.067 | 0.049 |
| Level of liquidity risk | 0.024 | 0.024 | 0.022 | 0.017 |
| Level of business risk | 0.041 | 0.033 | 0.032 | 0.024 |
| Level of innovation risk | 0.022 | 0.021 | 0.020 | 0.015 |

| Level of operational risk | 0.014 | 0.031 | 0.022 | 0.024 |
| The level of risk of technological and information security | 0.015 | 0.022 | 0.020 | 0.021 |
| PROSTIR | | | | |
| The level of credit risk | 0.267 | 0.101 | 0.094 | 0.031 |
| Level of liquidity risk | 0.126 | 0.148 | 0.150 | 0.111 |
| Level of business risk | 0.064 | 0.055 | 0.043 | 0.199 |
| Level of innovation risk | 0.025 | 0.01 | 0.039 | 0.039 |
| Level of operational risk | 0.052 | 0.026 | 0.014 | 0.013 |
| The level of risk of technological and information security | 0.293 | 0.421 | 0.204 | 0.301 |
| Privat24 | | | | |
| The level of credit risk | 0.010 | 0.065 | 0.058 | 0.004 |
| Level of liquidity risk | 0.282 | 0.116 | 0.183 | 0.006 |
| Level of business risk | 0.045 | 0.350 | 0.210 | 0.056 |
| Level of innovation risk | 0.011 | 0.024 | 0.034 | 0.290 |
| Level of operational risk | 0.065 | 0.062 | 0.060 | 0.029 |
| The level of risk of technological and information security | 0.054 | 0.186 | 0.053 | 0.073 |
| Oschad 24 | | | | |
| The level of credit risk | 0.180 | 0.358 | 0.414 | 0.001 |
| Level of liquidity risk | 0.063 | 0.258 | 0.310 | 0,. 88 |
| Level of business risk | 0.273 | 0.258 | 0.032 | 0.453 |
| Level of innovation risk | 0.519 | 0.235 | 0.060 | 0.561 |
| Level of operational risk | 0.002 | 0.001 | 0.006 | 0.001 |
| The level of risk of technological and information security | 0.005 | 0.005 | 0.006 | 0.006 |
| Apple Pay | | | | |
| The level of credit risk | x | 0.009 | 0.009 | 0.009 |
| Level of liquidity risk | x | 0.008 | 0.007 | 0.008 |
| Level of business risk | x | 0.009 | 0,009 | 0.008 |
| Level of innovation risk | x | 0.008 | 0.007 | 0.009 |
| Level of operational risk | x | 0.008 | 0.008 | 0.009 |
| The level of risk of technological and information security | x | 0.011 | 0.011 | 0.010 |

Source: calculated by the authors

### 3.1 Forecasts

In our opinion, the assessment of marketing risks of banking innovations should be carried out using the method of cost-effectiveness analysis, the method of expert assessments and the method of using analogues. The method of expert assessments combines logical and mathematical tools that allow you to assess the risks in determining the relative characteristics for complex formalized tasks. Given that, the risks of marketing banking innovations are informal and insufficiently studied. We selected five Ukrainian banks to conduct an expert assessment of the risk factors for marketing banking innovations, namely: JSC CB "PrivatBank", JSC "ALFA-BANK", JSC "Oschadbank", OTP BANK JSC and JSC "UNIVERSAL BANK". During the expert assessment of risks to build relationships between objects of the empirical system (risk factors), the method of assessing the significance of each of the factors within the group, ranking. The results of the expert survey in Table 4.

**Table 4.** Estimation of probability of occurrence and degree of influence of risks of marketing of innovations in banking institutions of Ukraine

| Risk factors for marketing banking innovations | JSC CB " PrivatBank" | | JSC " ALFA-BANK" | | JSC " Oschadbank" | | OTP BANK JSC | | JSC " UNIVERSAL BANK" | |
|---|---|---|---|---|---|---|---|---|---|---|
| | r | p | r | p | r | p | r | p | r | p |
| Group I. Risk of inappropriate management of banking innovations | | | | | | | | | | |
| Lack of developed marketing policy | 1 | 0.1 | 1 | 0.2 | 1 | 0.3 | 1 | 0.3 | 1 | 0.3 |
| Inconsistency of the developed marketing strategy with the measures of its practical implementation | 2 | 0.2 | 3 | 0.3 | 2 | 0.2 | 2 | 0.2 | 3 | 0.3 |
| Inconsistency of the developed product (service) of the bank's development strategy | 3 | 0.3 | 2 | 0.3 | 2 | 0.2 | 2 | 0.4 | 2 | 0.3 |
| Lack of support for innovation implementation by management | 2 | 0.4 | 2 | 0.2 | 2 | 0.3 | 1 | 0.1 | 1 | 0.1 |
| Group II. Risks of non-compliance of the quality of innovative products and services with consumer requirements | | | | | | | | | | |
| Lack of sufficient resources for product development | 1 | 0.1 | 1 | 0.1 | 1 | 0.1 | 1 | 0.1 | 1 | 0.1 |
| Lack of developed technological map of product implementation | 2 | 0.1 | 2 | 0.15 | 1 | 0.1 | 2 | 0.1 | 2 | 0.1 |
| Clearly defined product characteristics and service conditions have not been developed | 3 | 0.15 | 2 | 0.15 | 2 | 0.15 | 2 | 0.1 | 2 | 0.1 |
| The characteristics of the product are unclear to the end user | 2 | 0.25 | 3 | 0.2 | 2 | 0.2 | 3 | 0.15 | 3 | 0.15 |
| Product features are unclear to staff | 2 | 0.2 | 2 | 0.15 | 2 | 0.15 | 2 | 0.15 | 2 | 0.1 |
| Insufficient level of technological conditions for implementation | 1 | 0.1 | 2 | 0.1 | 1 | 0.15 | 1 | 0.2 | 2 | 0.25 |
| The technological capabilities of the bank and end users for the introduction of innovative products do not coincide | 2 | 0.1 | 1 | 0.15 | 1 | 0.15 | 2 | 0.2 | 2 | 0.2 |
| Group III. Risks of inefficiency of the banking institution's pricing policy for innovative products and services | | | | | | | | | | |
| Price conditions for innovative products and services are defined incorrectly | 2 | 0.2 | 2 | 0.3 | 3 | 0.4 | 3 | 0.35 | 3 | 0.3 |
| Projected revenues from the introduction of innovative products and services will not cover costs | 1 | 0.4 | 1 | 0.3 | 1 | 0.3 | 1 | 0.35 | 1 | 0.4 |
| Price conditions for innovative products and services make the latter unavailable to end consumers | 1 | 0.4 | 2 | 0.4 | 3 | 0.3 | 2 | 0.3 | 2 | 0.3 |
| Group IV. Risks of inefficiency of the sales system organization | | | | | | | | | | |
| The volume of the potential sales market has been incorrectly estimated | 1 | 0.35 | 1 | 0.3 | 1 | 0.3 | 2 | 0.2 | 1 | 0.2 |
| Availability of competitors for similar products | 2 | 0.05 | 2 | 0.1 | 3 | 0.2 | 2 | 0.3 | 2 | 0.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Customers admit dissatisfaction with their needs | 2 | 0.2 | 1 | 0.25 | 2 | 0.2 | 1 | 0.2 | 1 | 0.2 |
| Lack of competitive advantage | 1 | 0.05 | 2 | 0.15 | 2 | 0.2 | 1 | 0.2 | 2 | 0.2 |
| Improper organization of the regional sales distribution system | 3 | 0.35 | 3 | 0.3 | 1 | 0.1 | 3 | 0.1 | 3 | 0.1 |
| Group V. Risks of inefficiency of the system of promotion of innovative products on the market | | | | | | | | | |
| Lack of advertising | 3 | 0.2 | 2 | 0.25 | 1 | 0.3 | 1 | 0.35 | 2 | 0.3 |
| Negative perception of advertising by consumers | 1 | 0.2 | 1 | 0.25 | 2 | 0.2 | 1 | 0.25 | 2 | 0.2 |
| Characteristics of innovative products are reflected in advertising incorrectly and no emphasis is placed on competitive advantages | 2 | 0.3 | 2 | 0.25 | 3 | 0.3 | 2 | 0.2 | 1 | 0.35 |
| Advertising costs do not match its effectiveness | 2 | 0.3 | 2 | 0.25 | 2 | 0.2 | 2 | 0.2 | 1 | 0.15 |

Source: calculated by the authors

The risk factor that is assigned the rank (r) "1", has the greatest impact on the activities of the banking institution in the event of a risk event, with the rank (r) "2" is moderate, with the rank (r) "3" is least. The ranking of risk factors for marketing banking innovations is carried out within risk groups according to the probability of their occurrence (p) which allows us to focus on the study of those risk factors whose probability of occurrence is the highest. This methodological approach allows you to assess the risks of marketing banking innovations within individual groups by equation (3), (Yehorycheva, 2011):

$$P_{mbi} = \Sigma\, r_{ij} \times (p)_{ij} \qquad (3)$$

were, $r_{ij}$ – the rank set for the relevant risk factor (j) of the risk group (i); $(p_{ij})$ – the probability of occurrence of a risk event by risk factor (j) of the risk group (i).

**Figure 8.** Distribution of marketing risks of banking innovations between banking institutions of Ukraine
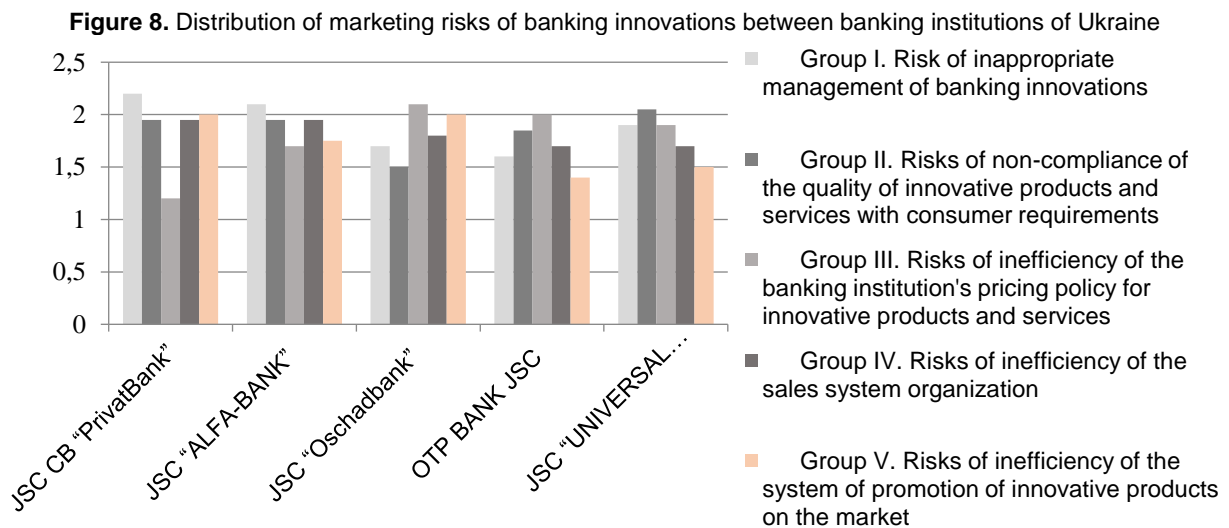


Source: calculated by the authors

At the next stage, we determine the sequence of the impact of marketing risks of banking innovations on the financial stability of banking institutions (Fig. 8). Thus, the most significant risks for such banking institutions as JSC CB "PrivatBank" and JSC "ALFA-BANK" are the risks of inefficiency of the pricing policy for banking innovations. For JSC "Oschadbank" the risks of non-compliance of the quality of banking innovations with consumer requirements. For OTP BANK JSC and JSC "UNIVERSAL BANK" risks of inefficient system of promotion of innovative products on the market. Assessing the impact of banking innovation risks, it should be noted that JSC CB "PrivatBank" and JSC "ALFA-BANK"

belong to the banks-innovators, which are characterized by a high level of corporate culture and an effective overall concept of development and implementation of banking innovations.

At the same time, depending on the combination of indicators of activity of implementation of the components of the marketing complex of banking innovations JSC CB "PrivatBank" belongs to the cluster of balanced leaders, JSC "ALFA-BANK"to the advertising leaders (Table 5).

**Table 5.** Sequence of influence of risks of marketing of innovations in banking institutions of Ukraine

| JSC CB "PrivatBank" (balanced leader) | JSC "ALFA-BANK" (advertising leader) | JSC "Oschadbank" (product leader) | OTPBANK JSC (sales leader) | JSC "UNIVERSAL BANK" (price leader) |
|---|---|---|---|---|
| GroupIII | Group III | Group II | Group V | Group V |
| Group II | Group V | Group I | Group I | Group IV |
| Group IV | Group IV | Group V | Group II | Group III |
| Group V | Group IV | Group V | Group II | Group III |
| Group I | Group I | Group II | Group II | GroupII |

Source: calculated by the authors

Therefore, for JSC CB "PrivatBank" more effective measures in the market of banking innovations will be measures related to the coordination of its pricing policy, for JSC "ALFA-BANK" re-evaluation of the policy of promoting innovative products to increase its efficiency. "Balanced leader" and "advertising leader" have the best values of all components of the marketing complex. Instead, "sales leader", "product leader" and "price leader" are inferior to the results of banking innovations compared to other clusters, but these components of the marketing mix are their strengths. Among banking institutions, the product leader is JSC "Oschadbank", sales OTPBANK JSC and price JSC "UNIVERSAL BANK". JSC "Oschadbank", as a state-owned bank with the most extensive branch network, should focus on improving the quality of banking innovations and bringing it closer to the needs of consumers, taking into account their regional specifics.
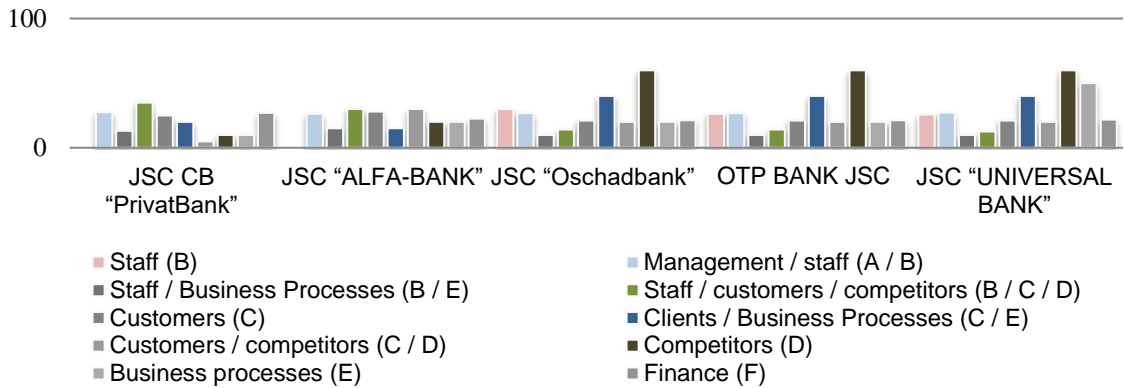
For OTPBANK JSC and JSC "UNIVERSAL BANK" the most relevant are the risks associated with the promotion of banking innovations is the risk of inconsistency of the bank's advertising policy with its product policy and service promotion policy; risk of incorrect addressing of advertising; the risk of a failed time horizon for advertising and other communication campaigns; the risk of insufficient coverage of the target audience; risk of errors in financing sales and advertising promotion measures; the risk of irrational budget allocation for communication activities; the risk of ineffectiveness of the banking brand policy; the risk of losing reputation, declining customer loyalty, etc. The problem of effective management of these risks is exacerbated by the lack of a clearly developed marketing strategy for banking innovations, which is confirmed by the impact of risks of inadequate management of banking innovations.

In our opinion the impact of marketing risks of banking innovations can be assessed not only directly from the standpoint of the impact of their individual types, but also by the sphere of manifestation. Thus, we propose to assess the marketing risks of banking innovations that arise at a certain level according to the equation (4), (Yehorycheva, 2011):

$$L = \frac{\sum r_{ij} \times (p_{ij})}{\sum r_{ij}} \tag{4}$$

were, $L$ – weighted average risk of marketing of banking innovations.

The results of the assessment of the weighted average risk of marketing of banking innovations are shown in Figure 9. Thus, there are difficulties in realizing the risks of marketing banking innovations for JSC CB "PrivatBank" and JSC "ALFA-BANK" because they are concentrated in the relationship of staff, customers and competitors (risk factors that arise during the organization of sales of banking innovations). For JSC "Oschadbank" there is a need to strengthen its own competitive advantages.

**Figure 9.** Weighted level of risk of marketing of innovations of banking institutions of Ukraine, %



- Staff (B)
- Management / staff (A / B)
- Staff / Business Processes (B / E)
- Staff / customers / competitors (B / C / D)
- Customers (C)
- Clients / Business Processes (C / E)
- Customers / competitors (C / D)
- Competitors (D)
- Business processes (E)
- Finance (F)

Source: calculated by the authors

For OTPBANK JSC and JSC "UNIVERSAL BANK" the probability of risks due to lower technological capabilities, as well as the level of innovative potential of business processes worsens their competitive position in the market, as evidenced by the results of the study. Assessing the risks of marketing banking innovations and their interpretation will allow banking institutions to avoid possible threats and eliminate the negative consequences, while ensuring the financial stability of the bank. The indicator of the effectiveness of the measures taken to ensure the financial stability of banking institutions, in particular through the marketing of banking innovations can be calculated by the formula (5), (Yehorycheva, 2011):

$$I_{fsMBI} = \frac{AD}{(C + LC)} \qquad (5)$$

were, $I_{fsMBI}$ – criterion for ensuring the financial stability of the bank, taking in to account the impact of marketing risks of banking innovations; $AD$ – averted loss in the field of marketing banking innovations; $C$ – incurred by the bank preventive costs in the field of marketing of banking innovations; $LC$ – liquidation costs incurred by the bank in the field of marketing of banking innovations.

It is determined that the reference bank, which has the best combination of indicators of financial stability and marketing "4P", best corresponds to the indicators of JSC CB "PrivatBank". The mathematical description of the components and functions of the model developed by us reflects the essential properties of the ideal bank and can be used as a tool for forecasting, planning and marketing management of banking innovations. We will find the correlation between the indicators of financial stability and marketing "4P" in JSC CB "PrivatBank" using the methodological provisions (Ayvazyan & Mhitaryan, 2001) and build graphs of the intensity of the relationship of individual indicators of financial stability and marketing of this banking institution. We construct an even linear regression, where the average value of the dependent variable is considered as a function of one independent variable (x). This is a model of the equation (Ayvazyan & Mhitaryan, 2001):

$$\hat{y}_x = f(x) \qquad (3)$$

The regression equation is reduced to estimating its parameters. To do this, we use the method of least squares, which allows to obtain parameters in which the sum of the squares of the deviations of the actual values of the resultant characteristic (y) from the theoretical ( $\hat{y}_x$ ) is minimal. The closeness of the connection of the studied phenomena is estimated by the linear pair wise correlation coefficient $r_{xy}$ for linear regression for linear regression (-1 ≤ 1), (Ayvazyan & Mhitaryan, 2001):

$$r_{xy} = \frac{\text{cov}(x, y)}{\sigma_x \sigma_y} \qquad (7)$$

were, $\text{cov}(x, y)$ – covariance of signs x and y, respectively; $\sigma_x \sigma_y$ – variance x and y.

The results of calculating the ratio and relationship between indicators of financial stability and "4P" marketing are shown in Figure 10.

**Figure 10.** Histograms of the ratio and relationship between indicators of financial stability and marketing "4P" in JSC CB "PrivatBank"[1]

*Figure 10.1. Histogram of the correlation of the ratio of the reliability indicator and "4P" marketing indicators in JSC CB "PrivatBank"*
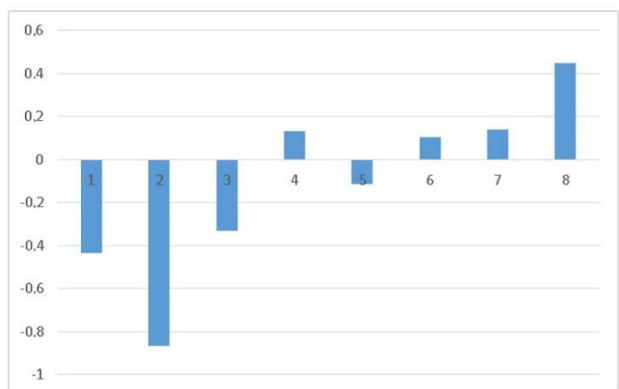


*Figure 10.2. Relationship correlation histogram solvency indicator and "4P' marketing indicators in JSC CB "PrivatBank"*
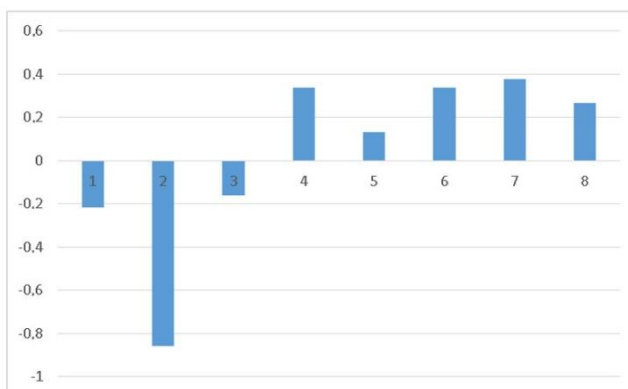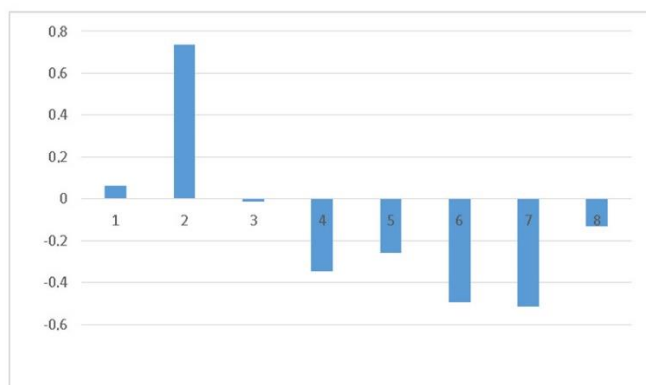


*Figure 10.3. Histogram of the correlation between the ratio of the indicator of the general level of profitability and marketing indicators "4P" in JSC CB "PrivatBank"*



---

[1] *Note*: marketing indicators: 1 – the average price of credit products, 2 – the average price of deposit products, 3 – the number of channels of communication with customers, 4 – the share of advertising costs, 5 – the number of payment terminals, 6 – the number of ATMs, 7 – the number active payment cards, 8 – number of branches

***Figure 10.4.*** *Correlation correlation histogram sales profitability indicator and marketing indicators "4P" JSC CB "PrivatBank"*
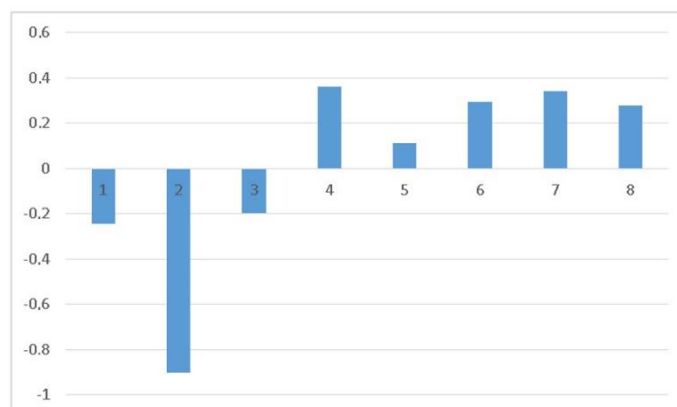


Source: calculated by the authors

Thus, according to figure 10 we conclude that in JSC CB "PrivatBank" on the growth of the reliability indicator a high degree of influence is exerted by the number of branches and the share of advertising costs. The results of the analysis prove the validity of the selected tools for the implementation of the priority areas of "blue oceans" marketing of banking innovations in JSC CB "PrivatBank" as a reference financial institution for the promotion of banking products and services.

## 4. Conclusions

Process of market transformation in the global space objectively stimulates the rapid development of banking institutions, which are central to the market system of economic relations and an integral part of modern world civilization, a powerful force for accumulating huge amounts of money redistributed to the economy, continuity of the reproductive resource base and, as a consequence, the increase of tangible and intangible benefits of society. Given the priority areas of formation and development of the world economy, the study of the transformation of banking in the digital economy in an unstable economy leads to the search for appropriate approaches to the organization of marketing activities with the use of banking innovations. In this case, it becomes extremely important to identify and assess the risks of marketing banking innovations. The analysis of risks of marketing of bank innovations is expedient if: the modern strategy does not correspond to new challenges and conditions of external environment (strengthening of aggressiveness of competitors); sales of banking products are sharply reduced, some sectors of banking products are lost; customers refuse to use traditional products and services.

The use of digital technologies in banking today is an objective necessity and is important in the development and implementation of its own strategy for the development of financial technologies that provides financing for high-tech digitization projects and contributes to high performance in both financial and socio-economic activities at the global level. Therefore, providing support for the functioning and digital transformation of the banking system in the formation and development of the digital economy at the state level will create a system of marketing regulators to accelerate changes in the current business model and marketing strategies to select the banking sector, promising service segment and customer satisfaction banking innovative products.

## References

1. Anguelov, C.E., Hilgert, M.A., & Hogarth, J.M. (2004). U.S. consumers and electronic banking, 1995-2003, *Federal Reserve Bulletin, 90*(1), 1-18.

2. Ayvazyan, S.A., & Mhitaryan, V. S. (2001). *Fundamentals of econometrics. Probability theory and applied statistics.* Moscow: Unity-Dana.

3.  Batiz-Lazo, B., & Woldesenbet, K. (2006). The dynamics of product and process innovations in UK banking. *International Journal of Financial Services Management, 1*(4), 400-421.

4.  Beck, Th., Chen, T., Lin, Ch., & Song, F.M. (2012). Financial innovation: The bright and the dark sides. *In Working Papers 052012*. Hong Kong: Hong Kong Institute for Monetary Research.

5.  Borden, N. (2001). *Concept of marketing mix. Marketing classics: a compilation of works that have the most marketing impact.* Saint Petersburg: Peter.

6.  Burgelman, R. (1996). *Strategic management of technology and innovation.* Chicago: Free Press.

7.  Caccioli, F., Marsili, M., & Vivo, P. (2009). Eroding market stability by proliferation of financial instruments. *The European Physical Journal B: Condensed Matter and Complex Systems, 71*(4), 467-479. https://doi.org/10.1140/epjb/e2009-00316-y

8.  Canals, J. (1997). *Universal banking. International comparisons and theoretical perspectives. Great Britain.* Oxford: Oxford University Press.

9.  Carbo-Valverde, S., Degryse, H., & Rodríguez-Fernández, F. (2015). The impact of securitization on credit rationing: empirical evidence. *Journal of Financial Stability, 20,* 36–50. https://doi.org/10.1016/j.jfs.2015.06.004.

10. Chant, J., Lai, A., Illing, M., & Daniel, F. (2003). *Essays on financial stability. Technical report No. 95.* Canada: Bank of Canada. Retrieved from https://www.banqueducanada.ca/wp-content/uploads/2010/01/tr95.pdf

11. Chen, Y. (2006). Marketing innovation. *Journal of Economics and Management Strategy, 15*(1), 101-123.

12. Ciciretti, R., Hasan, I., & Zazzara, C. (2007). Do internet activities add value? Evidence from traditional banks, *Journal of Financial Services Research, 35*(1), 81-98.

13. Crockett, A. (1997). *The theory and practice of financial stability*. Princeton: Princeton University.

14. Dimsdale, N.H. (2009). The financial crisis of 2007-2009 and the British experience. *Oxonomics, 4*(1), 1-9.

15. Doyl, P. (2003). *Marketing management and strategies.* Saint Petersburg: Peter.

16. Frait, J., & Komárková, Z. (2011). Financial stability, systemic risk and macroprudential policy. *Czech National Bank*, 96-111. Retrieved from https://www.researchgate.net/publication/254399357_Financial_Stability_Systemic_Risk_and_Macroprudential_Polic

17. Frait, J., Komárková, Z., & Komárek, L. (2011). Monetary policy in a small economy after the Tsunami: A new consensus on the Horizon? *Czech Journal of Economics and Finance, 61*(1), 5-33.

18. Frame, W.S., & White, L.J. (2009). Technological change, financial innovation and diffusion in banking. Working Paper 2009-10. *Federal Reserve Bank of Atlanta*. Retrieved from https://www.atlantafed.org/-/media/documents/research/publications/wp/2009/%20wp0910.pdf.

19. Helm, R., Krinner, S., & Schmalfub, M. (2014). Conceptualization and integration of marketing intelligence: The case of an industrial manufacturer. *Journal of Business-to-Business Marketing, 21*(4), 237-57.

20. Herrero, G., & Simo, N. (2006). Foreign banks and financial stability in new Europe. *Banks and Banking Systems, 1,* 50-59.

21. Karmynskyi, A., & Zhdanova, O. (2013). Current trends in bank innovations. *Marketing and Management Innovation, 2,* 106-118.

22. Kim, Ch.V., & Moborn, R. (2019). *Blue ocean strategies. How to find or create a market free from other players.* Moscow: Ivanov and Farber Publishing House.

23. Kotler, F., & Kaslione, Dzh.A. (2009). *Chaotics: management and marketing in the era of turbulence.* Kyiv: Himgest, PLASKE.

24. Kotler, F., Armstrong, G., Vong, V., & Sonders, Dzh. (2012). *Fundamentals of marketing.* Moscow: Williams.

25. Kozlovskyi, S., Butyrskyi, A., Poliakov, B., Bobkova, A., Lavrov, R., & Ivanyuta, N. (2019). Management and comprehensive assessment of the probability of bankruptcy of Ukrainian enterprises based on the methods of fuzzy sets theory. *Problems and Perspectives in Management, 17*(3), 370-381. doi:10.21511/ppm.17(3).2019.30

26. KPMG (2021). Fintech 100: Leading Global Fintech Innovators. Top 50 and Emerging 50 Fintechs that are transforming financial services. Retrieved from

    https://home.kpmg/xx/en/home/insights/2019/11/2019-fintech100-leading-global-fintech-innovators-fs.html

27. Kuznietsova, L.V., & Shmuratko, Ya.A. (2018). *Regulation of the market of derivative financial instruments in the conditions of global economic instability.* Kharkiv: Disa Plus.

28. Lauterborn, B. (1990). New marketing litany: Four Ps Passé: C-words take over. *Advertising Age, 41,* 26-34.

29. Lepeiko, T., & Kotelevska, Yu. (2012). Analysis of the effectiveness of marketing strategies for the promotion of banking products. *Problems of the Economy, 1,* 96-100.

30. Lomochynska, I.A., & Kunytsia, V.S. (2018). FinTeh in the modernization of banking in the context of globalization. *Bulletin of I.I. Mechnikov Odessa National University, 5*(70), 190-195.

31. Martin, Dzh. D., & Petti, U. Dzh. (2006). *Value based management. Corporate response to the shareholder revolution.* Dnipro: Balance Business Book.

32. McCarthy, E. Je., & Perreault, W. D. Jr. (1993). *Basic marketing: A global-managerial approach.* Homewood, IL: Irwin.

33. Mellow, C. (2019). World's Best Private Banks. Global Finance: Global news and insight for corporate financial professionals. https://www.gfmag.com/magazine/december-2019/worlds-best-private-banks-2020-tough-get-going.

34. Melnychenko, O. (2013). Analysis of the use of alternative sales channels and new technologies in the activities of banks. *Bulletin of the National Bank of Ukraine, 12*(19), 68-85.

35. Mishchenko, V.I., & Mishchenko, S.V. (2018). Marketing of digital innovations in the market of banking services. *Financial Space, 1*(29), 75-79.

36. National Bank of Ukraine. (2020). Supervisory statistics. Retrieved from https://bank.gov.ua/ua/statistic/supervision-statist

37. Novack, J., & Kauflin, J. (2020). The Forbes Fintech 50: the most innovative Fintech companies in 2020, Forbes billionaires. from https://www.forbes.com/fintech/2020/#41384e5e4acd

38. Shumpeter, Y.A. (2008). *Theory of economic development. Capitalism, socialism and democracy.* Moscow: Eksmo.

39. Simkovic, M. (2013). Competition and crisis in mortgage securitization. *Indiana Law Journal, 88*(1), 214-271. Retrieved from

    https://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=11040&context=ilj

40. Tushaj, A., & Sinaj, V. (2012). What about the relationship between banking competition and financial stability? Case of Albania. *Center for Economic Analyses, 1,* 25-32. Retrieved from https://ideas.repec.org/a/cmk/journl/y2012p25-32.html

41. World Finance. (2020). Most innovative banks. Retrieved from https://www.worldfinance.com/banking-guide-2020/most-innovative-banks.

42. Yaroshenko, O. M., Moskalenko, O. V., Sliusar, A. M., & Vapnyarchuk, N. M. (2018). Commercial secret as an object of labour relations: Foreign and international experience. *Journal of Legal, Ethical and Regulatory Issues, 21*(Special Issue 1).

43. Yehorycheva, S.B. (2011). Methodological principles of organization of innovation process in commercial banks. *Bulletin of the National Bank of Ukraine, 1,* 53-57.

44. Zherdetska, L.V., & Horodynskyi, D.I. (2017). Development of banking technologies: threats and opportunities for banks. *Economy and Society, 10,* 583-588.

45. Zveriakov, M.I., Kovalenko, V.V., & Serhieieva, O.S. (2016). *Management of financial stability of banks: textbook.* Kyiv: Center for Educational Literature.