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THE PLACE OF FINANCIAL TECHNOLOGIES WITHIN INSTITUTIONAL ENVIRONMENT OF BANKS AND THEIR EVALUATION

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The article aims to clarify the place of financial technologies within institutional environment of banks and to consider approaches for their evaluation. For the purpose of the article, the authors use the experience presented in scientific literature. Financial technologies (widely called as Fintech) have great role for bank successful functioning and competing and can be considered as meaningful element of versatile nature of institutional environment of banks. In its sense, Fintech has not univocal definition. The main distinguishing feature between varied meanings for Fintech relates to understanding whether Fintech is innovative process or participant of financial market. However, all possible meanings devoted to the sense of Fintech relate to the core term – technologies. Thus, the place of Fintech within institutional environment of banks has to be clarified according to varied definitions, but related to technologies. As a result, according to the authors' supposition Fintech place within institutional environment of banks could be included in the technological conjuncture and considered in context of impact (from Fintech), interaction (with Fintech) and integration (of Fintech). Similarly, the question on evaluation of Fintech is analysed according to their impact, interaction and integration. It is noteworthy that indicators used for evaluation of Fintech relate not only particularly to financial market and financial institutions but also to general characteristics when most of them represent also other scientific disciplines than economics. Mix of indicators used for Fintech evaluation demonstrates transdisciplinary approach for solving the questions of financial nature. The results of the study offer a structured approach to understanding the place of financial technologies within institutional environment of banks and a classified set of thematic indicators for evaluation of financial technologies.

Key words: financial technologies (Fintech), banks, institutional environment, evaluation of financial technologies.

Finanšu tehnoloģiju vieta banku institucionālās vides ietvaros un to novērtēšana

Raksta mērķis ir noteikt finanšu tehnoloģiju vietu banku institucionālās vides ietvaros un apzināt pieejas to novērtēšanai. Mērķa sasniegšanai autori pēta pieredzi, kura ir atspoguļota zinātniskajā literatūrā. Finanšu tehnoloģijas ir nozīmīgas veiksmīgai banku funkcionēšanai un konkurēšanai un var tikt saprastas kā jēgpilns daudzpusīgas banku institucionālās vides elements. Finanšu tehnoloģijām nav vienotas definīcijas. Galvenā atšķirīga īpatnība starp dažādām finanšu tehnoloģiju definīcijām attiecas uz izpratni par finanšu tehnoloģijām kā inovatīvu procesu, vai kā finanšu tirgus dalībnieku. Jāatzīmē, ka visas iespējamās finanšu tehnoloģijām veltītas definīcijas saistās ar galveno terminu – tehnoloģijām. Tādā veidā finanšu tehnoloģiju vieta banku institucionālās vides ietvaros ir jānosaka gan saskaņā ar to definīciju dažādību, gan saistībā ar tehnoloģijām. Saskaņā ar autoru pieņēmumu finanšu tehnoloģijas banku institucionālajā vidē jāiekļauj tehnoloģiskajā konjunktūrā to ietekmes, mijiedarbības un integrācijas kontekstā. Līdzīgi jāskata arī jautājums par finanšu tehnoloģiju novērtēšanu, t.i., ņemot vērā to ietekmes, mijiedarbības un integrācijas procesus. Ir būtiski atzīmēt, ka finanšu tehnoloģiju novērtēšanā

izmantojamie rādītāji ir attiecināmi ne tikai uz finanšu tirgu un finanšu institūcijām, bet arī uz vispārēja raksturojuma rādītājiem, kuri pārstāv gan ekonomiku, gan arī citas zinātniskās disciplīnas. Finanšu tehnoloģiju novērtēšanā izmantojamie rādītāji parāda transdisciplināru pieeju finanšu dabas jautājumu risināšanā. Pētījuma rezultāti piedāvā strukturētu pieeju finanšu tehnoloģiju vietas izpratnei banku institucionālās vides ietvaros, kā arī klasificētu tematisko rādītāju izlasi finanšu tehnoloģiju novērtēšanai.

Atslēgas vārdi: finanšu tehnoloģijas, bankas, institucionālā vide, finanšu tehnoloģiju novērtēšana.

Место финансовых технологий в рамках банковской институциональной среды и подходы к их оценке

Целью данной статьи является выявление места финансовых технологий в рамках банковской институциональной среды и рассмотрение подходов к их оценке. Для достижения цели авторы изучают опыт, нашедший отражение в научной литературе. Финансовые технологии имеют существенную роль для банков в процессах успешного функционирования и конкурирования и могут быть рассмотрены как значимый элемент многосторонней институциональной среды банков. Финансовые технологии не имеют единого определения. Главной отличительной чертой между разнообразными дефинициями финансовых технологий является их понимание как инновационного процесса или как участника финансового рынка. Однако, разнообразные подходы к пониманию финансовых технологий имеют общую основную черту — технологии. Таким образом, место финансовых технологий в рамках банковской институциональной среды необходимо определять с учётом разнообразных дефиниций, но общей чертой — технологиями. В результате анализа и в соответствии с предположением авторов место финансовых технологий в рамках банковской институциональной среды можно отнести к технологической конъюнктуре и рассматривать в контексте процессов влияния, взаимодействия и интеграции. Вопрос о подходах к оценке финансовых технологий также анализируется в контексте процессов влияния, взаимодействия и интеграции. Важно отметить, что показатели, используемые для оценки финансовых технологий относятся не только к финансовому рынку и финансовым институциям, а также к более общим характеристикам, представляющим как экономическую науку, так и другие научные дисциплины. Набор используемых показателей для оценки финансовых технологий демонстрирует междисциплинарный подход к решению вопросов финансового характера. Результаты исследования предлагают структурированный подход к пониманию места финансовых технологий в рамках банковской институциональной среды и классифицированный набор тематических показателей для оценки финансовых технологий.

Ключевые слова: финансовые технологии, банки, институциональная среда, оценка финансовых технологий.

Introduction

The article aims to clarify the place of financial technologies (widely called as Fintech) within institutional environment of banks and to consider approaches for their evaluation. For the purpose of the article, the authors analyse scientific literature on Fintech and combine the knowledge with previously offered characteristics of institutional environment of banks (e.g., for characteristics see Menshikov et al. 2019).

Discussions on Fintech in the context of institutional environment of banks are topical because of polar opinions concerning their possible beneficial or disruptive effects on financial market and particularly banks. Modern institutional environment of banks has to adapt and adopt challenging issues on new technologies, what in its sense means appropriate changes and development as well as dealing with Fintech.

Many-sided definitions of Fintech make the process of understanding the place of them within institutional environment of banks challenging. Particularly, it is possible to explain Fintech nature through different points of view. For example, Cheng and Qu (2020) in their research mention several definitions that relate to the terms of innovation, product, financial ecology, and company. Additional meaning, although seldom, is developed in context of exactly “bank Fintech”, i.e. “application of emerging technologies in the banking industry” (Cheng, Qu 2020, p. 2).

All possible meanings devoted to the sense of Fintech relate to the core term – technologies. Thus, taking into account the sense of Fintech and versatile nature of institutional environment of banks, which includes economical, societal, political, legislative, and even technological elements (Menshikov et al. 2019), the authors focus particularly on technological element. As offered by the authors previously, institutional environment of banks has technological conjuncture as significant factor among others (Menshikov et al. 2019).

Taking into account experience of scientific literature and varied meanings of Fintech, the search and understanding of the place of Fintech within institutional environment of banks is organized in context of *impact*, *interaction* and *integration*.

The next question for the analysis in the present article relates to approaches for evaluation of Fintech. The authors consider experience presented in scientific literature and organize the knowledge according to the mentioned processes of impact, interaction and integration. As a result, there is a set of thematic groups of indicators, which are topical for evaluation of Fintech within each process.

Finally, the article offers concluding remarks on Fintech as element of institutional environment of banks and its possible evaluation.

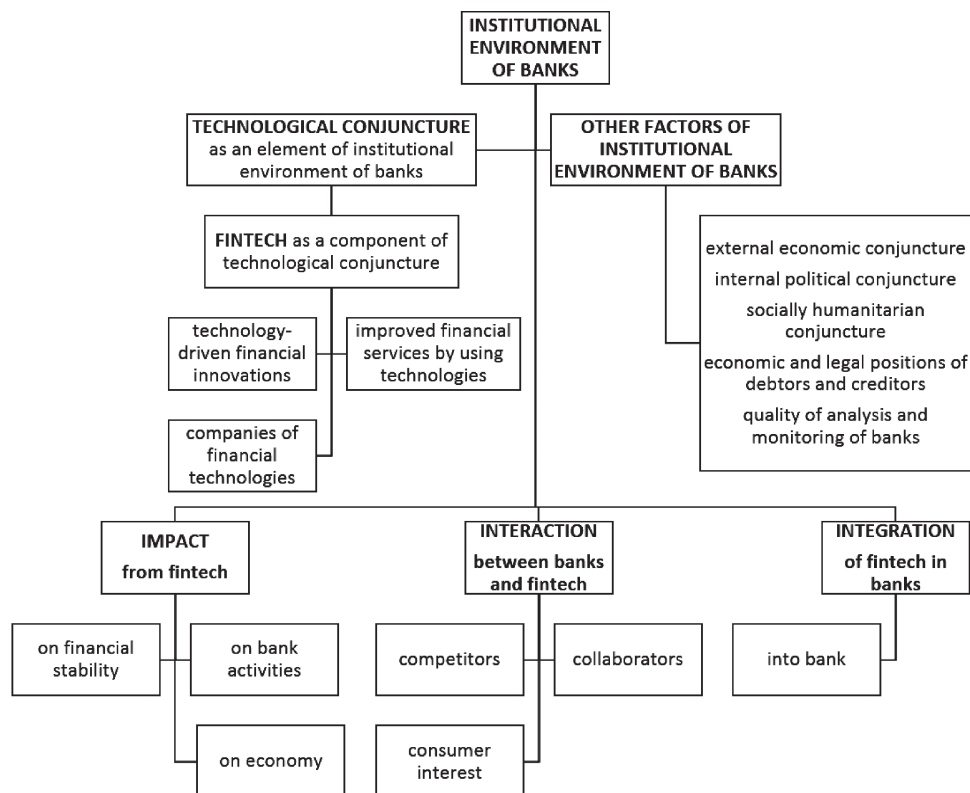
The place of financial technologies in the institutional environment of banks

Using previous research findings as a start point for further discussions (Menshikov et al. 2019) the article focuses on technologies because of their significance for successful functioning and competing of banks in nowadays. As Menshikov, Šipilova and Baltgailis (2019) conclude, using as example the world countries, technologies are significant for banks and particularly for their soundness.

It is possible to visualize the place of Fintech within institutional environment of banks as indicated at the Figure 1.

Figure 1

The place of Fintech within institutional environment of banks



Source: elaborated by the authors using previous research on institutional environment of banks Menshikov et al. 2019, as well as Abbasi et al. 2020; Acar, Citak 2019; Anagnostopoulos 2018; Cheng, Qu 2020; Drasch et al. 2018; Fung et al. 2020; Gai et al. 2018; Jiao et al. 2020; Junger, Mietzner 2020; Li et al. 2020; Liu et al. 2020; Milian et al. 2019; Pizzi et al. 2021; Salampasis, Mention 2018; Sheng 2020; Thakor 2020; Wang et al. 2021; Yao et al. 2020.

Clarifying the place of Fintech within institutional environment of banks depends on meaning included in varied definitions as far as the common definition of financial technologies still is absent (e.g., Cheng, Qu 2020). Definitions differ according to the scientists' suppositions whether Fintech is a tool for improving quality of financial services with reduced costs (i.e., financial innovation) or a participant of financial market (startups, companies) providing financial services. It is noteworthy to note that all mentioned approaches for defining Fintech are topical because of versatile nature and wide applicability of Fintech. For example, it is possible to mention some existing definitions for clearer understanding of Fintech:

- Financial innovation (including improvements in the existing services and development of completely new)
 - technology-driven financial innovation (e.g., Cheng, Qu 2020, p. 2);
 - the use of technology for providing new and improved financial services (e.g., Thakor 2020);
 - novel technologies adopted by the financial service institutions (Gai et al. 2018, p. 1);
 - technologically-enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services (Li et al. 2020, p. 1).
- Companies of financial technologies:
 - innovative companies active in the financial industry making use of the availability of communication, the ubiquity of the internet, and the automated processing of information (Milian et al. 2019);
 - financial services offered by non-bank high-tech startups (Junger, Mietzner 2020, p. 1);
 - FinTech companies classified according to the type of business – FinTech payment companies, FinTech lending companies (Cheng, Qu 2020, p. 2).

Varied meanings devoted to Fintech discover wide involvement of Fintech in financial market, because of which the authors present the place of Fintech within institutional environment of banks from three points of view:

- Impact (from Fintech),
- Interaction (with Fintech),
- Integration (of Fintech).

Impact. Fintech affects economy, particularly bank activities and financial stability as a whole. Scientists conclude that effect of Fintech on commercial banks is positive (e.g., Wang et al. 2021; Cheng, Qu 2020). For example, Wang et al. (2021) indicate that Fintech positively affects banks total factor productivity depending on degree of applying technologies. Using case study, scientists found out that Fintech improves risk control and reduces costs (Wang et al. 2021). Reduction of credit risks is additional positive effect as Cheng and Qu (2020) conclude. However, such effects depend on bank size, bank ownership, and relate to case studies (Cheng, Qu 2020).

Overall, Fintech affects bank ability to provide credits to small and medium enterprises, makes the process simpler, and provides support for banks (Sheng 2020). The case study demonstrates positive effect on credit supply. However, in such effect bank size matters (Sheng 2020).

Bank size, ownership, ability and readiness to adopt technologies are significant for effects from Fintech on bank activities. In case of effects from Fintech on overall financial stability, results differ depending on the level of development of economy. Effects are positive for emerging economies (Fung et al. 2020).

Interaction. Fintech is a part of complicated relationships between financial service market participants. In this context, focus has to be made on the processes of competition and collaboration between Fintech and banks, as well as attitude of consumers.

From the point of view on competition, it is noteworthy to mention some beneficial effects from Fintech as well as to indicate business models applied by Fintech companies. First, in a broader perspective scientists indicate that Fintech is able to cover necessities of financially excluded thus contributing to inclusive economic growth and equitable society (Salampasis, Mention 2018). Second, scientists mention that Fintech is more customer-centric services than banks (Acar, Citak 2019), what is positive for customers, but complicates business environment for banks. Third, Fintech decreases fragility of financial institutions in emerging markets (Fung et al. 2020).

It is noteworthy to highlight kinds of business models applied by Fintech companies. For example, Liu et al. (2020) have detected hot topics in Fintech business model using a huge amount of scientific research. According to the findings (Liu et al. 2020), mobile payment, microfinance, peer-to-peer lending platform and crowdfunding are the hot topics at the present. In turn, blockchain and crowdfunding will be the hot topics in the future (Liu et al. 2020).

However, banks also have positive prevailing features while competing with Fintech industry. For example, despite ability of Fintech to develop and offer innovative and cheap financial services, Fintech industry is connected to higher risks depending on development in the past and internal macroeconomic conditions (e.g., Yao et al. 2020). Additionally, despite existing costumers' interest to move from traditional service providers to Fintech, overall level of interest is not sufficient because of lower level of trust devoted to Fintech services. As Junger and Mietzner (2020) conclude using the case study, intention to replace traditional financial services by Fintech depends on trust, transparency, and financial literacy. Trust is the factor that distinguishes banks and Fintech. In general, scientific findings highlight that Fintech services may take a share of market not replace the banks (e.g., Thakor 2020). Additionally, in context of developed financial markets, Fintech increases fragility of financial institutions (Fung et al. 2020).

Banks and Fintech are competitors (Anagnostopoulos 2018). In terms of competition, it is clear that both banks and Fintech demonstrate prevailing features and weaknesses what could be a reason for strong competition or successful collaboration. One more reason for development of collaboration between Fintech and banks relates to activities of Techfin, i.e. companies that are able to overcome negative characteristics of banks and Fintech companies at the same time (Acar, Citak 2019). For example, scientific literature suggests that banks are sluggish in adopting new technologies (e.g., Acar, Citak 2019; Drasch et al. 2018). In turn, Fintech companies applying new technologies for consumer centred services, as scientists indicate (e.g., Acar, Citak 2019; Drasch et al. 2018), have moderate level of trust and recognition, insufficient capital and low capacity to meet regulatory issues comparing with banks (e.g., Acar, Citak 2019). Thus, both financial market participants may become more competitive through collaboration.

Although, as is indicated in the "World Fintech Report 2020" (Capgemini Worldwide 2020), in practice nor banks, nor Fintech still does not have sufficient interest to collaboration and does not see sufficient results from it.

Integration. Fintech integration in banks is «step by step» process, which relates to the business experience of bank and contains internal and external environment analysis, involvement of all bank stakeholders, consultations with experts (Acar, Citak 2019). However, at the moment, there are little scientific studies on integration of Fintech in banks.

In the conclusion of this section, the authors highlight the following: a) Fintech relates to technological conjuncture of institutional environment of banks; b) Fintech presence within institutional environment of banks may be detected from the perspectives of impact, interaction and integration; c) Fintech for banks may be understood both as beneficial and as unfavourable depending on impact, interaction and integration results.

Such evaluation has to be made using certain indicators. The next section is devoted to the analysis of scientific experience on evaluation of Fintech. The authors classify this experience according to the offered place of Fintech within institutional environment of banks.

Approaches for evaluation of Fintech: Research experience

Fintech as phenomenon of financial market covers wide range of economic, legislative, societal, and technological spheres due to novelty and urgency of technological solutions for daily financial services. Such transdisciplinary nature of Fintech is mirrored in scientific research as well. Research experience demonstrates that transdisciplinary phenomenon of financial technologies is evaluated both quantitatively and qualitatively by using objective and subjective data. For example, there is opinion that “quantitative measurement of bank FinTech is seldom discussed” (e.g., Cheng, Qu 2020, p. 2). Other research experience highlight that “the relationship between FinTech, and traditional financial institutions based on qualitative analysis” (Li et al. 2020, p. 1).

This section considers approaches of evaluation of Fintech. The authors classify them according to the processes of impact, interaction, and integration as considered in the previous section (see Table 1).

Given scientific literature experience, it is noteworthy to highlight that indicators used for evaluation of Fintech relate not only particularly to financial market and financial institutions but also to general characteristics when most of them represent also other scientific disciplines than economics. For example, evaluation of Fintech employs indicators from sociology, demography, geography, culture, and law. Other significant note relates to objective and subjective evaluation of Fintech. In parallel with consideration of objective statistical data, scientists consider subjective data received from surveys and interviews. This indicates on both transdisciplinary nature of Fintech phenomenon and relative early stage of studies devoted to evaluation of Fintech. Case studies as separate approach for Fintech evaluation offer experience of good practices and local development trends of Fintech. Results based on case studies allow for setting new research questions and overall development of this theme. As a result, scientists devote significant attention to experience presented in academic literature. Mostly, for detecting hot topics, finding good practices and monitoring development of the theme.

Table 1

Thematic groups of indicators for evaluation of Fintech

Indicators	Impact (from Fintech)			Interaction (with Fintech)			Integration (of Fintech)
	<i>On financial stability</i>	<i>On bank activities</i>	<i>On economy and its agents</i>	<i>Competitors</i>	<i>Collaborators</i>	<i>Consumer interest</i>	<i>Into bank</i>
QUANTITATIVE RESEARCH							
General indicators							
Macroeconomic indicators	•	•		•			
Socio-demographic indicators				•		•	
National culture			•				
Geographical location / distribution		•	•	•			
Financial market and some its participants (characterising indicators)							
Financial market characteristics	•	•					
Bank characteristics	•	•		•			
Fintech industry characteristics		•	•				
QUALITATIVE RESEARCH							
Academic literature research, legislation research, interviews, surveys							
Academic literature research (including keywords)				•	•		•
Survey results or expert interviews			•		•	•	•
Fintech regulation	•						
CASE STUDIES							
Different indicators depending on research question. Main feature relates to research focus on parti- cular country, region, problem, etc.		•	•		•		•

Source: elaborated by the authors using Abbasi et al. 2020; Acar, Citak 2019; Anagnostopoulos 2018; Cheng, Qu 2020; Drasch et al. 2018; Fung et al. 2020; Gai et al. 2018; Jiao et al. 2020; Junger, Mietzner 2020; Li et al. 2020; Liu et al. 2020; Menshikov et al. 2019; Milian et al. 2019; Pizzi et al. 2021; Salampasis, Mention 2018; Sheng 2020; Thakor 2020; Wang et al. 2021; Yao et al. 2020.

As indicated in the Table 1, indicators used for evaluation of Fintech may be considered in several directions:

- Quantitative, transdisciplinary and objective evaluation approach:
 - General indicators, which characterise economic, social, demographic and even cultural and geographic conditions;
 - Indicators characterising Financial market and some its participants – banks and Fintech industry.

- Qualitative objective and subjective evaluation approach:
 - Academic literature research, legislation research, interviews, surveys.
- Qualitative and quantitative, objective and subjective evaluation approach:
 - Case studies.

In general, from the perspective of impact from Fintech and interaction with Fintech, scientists apply both quantitative and qualitative evaluation, as well as objective and subjective data. In perspective of integration, scientists apply qualitative research mostly and case studies. However, it is significant that authors of the present study found little information on scientific research experience about integration of Fintech into banks (e.g., Acar, Citak 2019).

It is noteworthy that different indicators groups are used at the same time for solving concrete research question (for examples, see Table 2). However, each indicators group have particular significance for Fintech evaluation.

Table 2
Examples of Fintech evaluation results and indicators used

General research findings	Examples of indicators used	Research authors
1	2	3
Effect of Fintech on financial stability differs depending on the level of development of economy, financial markets. For emerging markets, effects are positive. For developed markets, Fintech increases fragility of financial institutions.	Descriptive statistics for firm characteristics, market characteristics, and macroeconomic factors.	Fung et al. (2020)
Fintech positively affects commercial banks total factor productivity depending on degree of applying technologies. Fintech improves risk control and reduces costs. Results relate to case study.	Fintech, bank size, capital adequacy ratio, bank return on assets, bank loan to deposit ratio, deposit ratio, macroeconomic indicators.	Wang et al. (2021)
Fintech affects bank ability to provide credits to small and medium enterprises (SME), makes the process simpler, provide support for banks. The case study demonstrates positive effect on credit supply. Bank size matters.	Credit supply of SMEs, the development level of Fintech, bank size, geographical location.	Sheng (2020)
Fintech may reduce credit risks. Effects depend on bank size, bank ownership, and relate to case studies.	Credit risks (relate to loans characteristics), bank Fintech index (e.g., cloud computing, big data, internet technology, artificial intelligence etc.).	Cheng, Qu (2020)

Sequel to Table 2 see on the next page

<i>Sequel to Table 2</i>		
1	2	3
Development of and collaboration within Fintech and Regtech ecosystems. Open, flexible bank architecture is significant. Risk evaluation and control are necessary. There is an attempt to connect research and practice in the research.	Academic literature, industry sources.	Anagnostopoulos (2018)
Fintech industry is connected to higher risks depending on past development and internal macroeconomic conditions.	Fintech stock index.	Yao et al. (2020)
There are several hot topics related to Fintech business model – mobile payment, microfinance, peer-to-peer lending platform and crowdfunding. There are future topics related to Fintech business model – Blockchain and crowdfunding.	Academic papers – topics, citations, authors, research areas, research institutions, growth trend etc.	Liu et al. (2020)
In the process of interaction between Fintech and banking, trust is the factor that distinguishes banks and Fintech. Fintech services may take a share of market not replace the banks.	Academic theoretical and empirical literature review.	Thakor (2020)
There are costumers, which are interested to move from traditional service providers to Fintech. Customers' intention depends on trust, transparency, and financial literacy. Results relate to the case study.	Survey results. Demographic data, education, employment, income, savings, financial literacy, knowledge about financial products etc.	Junger, Mietzner (2020)
Fintech integration in banks is “step by step” process, which contains internal and external environment analysis, involvement of all bank stakeholders, consultations with experts. Results relate to the case study.	Business experience of bank.	Acar, Citak (2019)
Fintech affects small and medium enterprises (SME) positively. Effects depend on national culture characteristics.	National culture characteristics, Fintech characteristics, SME characteristics.	Abbassi et al. (2020)
Fintech may encourage small and medium enterprises (SME) to practice more sustainable business models and to move towards circular economy.	Case studies.	Pizzi et al. (2021)

Source: elaborated by the authors using Abbasi et al. 2020; Acar, Citak 2019; Anagnostopoulos 2018; Cheng, Qu 2020; Fung et al. 2020; Junger, Mietzner 2020; Liu et al. 2020; Pizzi et al. 2021; Sheng 2020; Thakor 2020; Wang et al. 2021; Yao et al. 2020.

Mix of indicators used for Fintech evaluation within the examples presented in the Table 2 demonstrates transdisciplinary approach for solving the questions of financial nature. Each thematic group of indicators contributes in evaluation of Fintech.

Macroeconomic indicators help to discover potential stability of financial markets (e.g., Fung et al. 2020). Socio-demographic indicators help to find characteristics of customers, which would be ready to use Fintech offered services in lesser or bigger degree (e.g., Junger, Mietzner 2020). National culture indicators contribute to evaluation of cross-border investments in the area and policy development (e.g., Abbasi et al. 2020). Geographical location and distribution factors help to answer the questions on distribution or concentration of Fintech (e.g., Jiao et al. 2020) and financial service availability and variety (e.g., Sheng 2020). Financial market characteristics help to discover potential relationships between Fintech and other participants of financial market (e.g., Sheng 2020; Wang et al. 2021). Bank characteristics help to understand readiness of financial market for faster or slower development of Fintech (e.g., Cheng, Qu 2020). Fintech industry characteristics allow for following peculiarities of development trends of Fintech (e.g., Yao et al. 2020). Academic literature research helps to summarize and classify the knowledge about Fintech and to find urgent topics for research (e.g., Liu et al. 2020). Survey results or expert interviews help to attract wider range of stakeholders for Fintech evaluation, for example, customers and practitioners (e.g., Junger, Mietzner 2020). Fintech regulation evaluation helps to detect fragility of financial markets and discover areas for improvements in regulatory measures (e.g., Fung et al. 2020). Additionally, regulation has to be timely and has to follow for changes in business models and innovation (e.g., Anagnostopoulos 2018). Finally, case studies are significant for experience exchange and knowledge collection in any scientific and practical theme.

Concluding remarks

The article aimed to clarify the place of financial technologies (Fintech) within institutional environment of banks and to consider approaches for their evaluation. The authors searched for the place of Fintech within institutional environment of banks depending on varied meanings devoted to Fintech in their definitions. The main distinguishing feature between differentiated meanings for Fintech relates to understanding whether Fintech is innovative process or participant of financial market. The differentiated meanings devoted to Fintech discover wide involvement of Fintech in financial market, because of which the authors presented the place of Fintech within institutional environment of banks from three points of view: impact (from Fintech), interaction (with Fintech), and integration (of Fintech). From the point of view of impact from Fintech, scientific experience indicates mostly on positive effects, however sometimes the level of development of economy and financial markets matters. Analysis of literature on interaction of banks with Fintech discovers that there are grounded reasons for collaboration, but this option still is not sufficiently developed and attractive for both banks and Fintech. Knowledge of integration of Fintech in banks is insufficient at this moment and mostly is presented through case study, where gradual process with involvement of all stakeholders are mentioned as necessary.

Analysis of evaluation approaches of Fintech allows concluding that research experience covers both quantitative and qualitative evaluation by using objective and

subjective data. This is caused by transdisciplinary nature of Fintech. Given experience presented in scientific literature, indicators used for evaluation of Fintech relate not only particularly to financial market and financial institutions but also to general characteristics when most of them represent also other scientific disciplines than economics. For example, evaluation of Fintech employs indicators from sociology, demography, geography, culture, and law.

In general, from the perspective of impact and interaction, scientists apply both quantitative and qualitative evaluation of Fintech, as well as objective and subjective data. In perspective of integration, scientists apply qualitative research mostly and case studies. It is noteworthy that different indicators groups are used at the same time for solving concrete research questions.

The present study has several limitations. First, the authors focused exactly on the experience presented in scientific literature. Second, the study covers only some, but more recent research examples. Third, this study does not consider particular case of Fintech – “bank Fintech”.

Because of analysis, it is possible to indicate novelty of this study – considering and evaluating Fintech not only as phenomenon of financial market, but also as element of institutional environment of banks. The results of the study offer a structured approach to understanding the place of financial technologies within institutional environment of banks and a classified set of thematic indicators for evaluation of financial technologies.

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