Measuring Digital Transformation as an Indicator of the Effectiveness of a Bank's Corporate Strategy

Grigorieva Elena Mikhailovna[1]
Financial University under the Government of the Russian Federation, Moscow, Russia
aroooveo@yandex.ru

Keywords: digital transformation of banking business, indicators of digital transformation of the bank, digital factors, effectiveness of corporate strategy.

Abstract: Digitalization is an integral part of the efficiency of the banking business and ensures the availability of banking services. We believe that digitalization should be a measurable and manageable process in order to assess the effectiveness, efficiency and feasibility of its application. Banks, building their work, form a strategic horizon for their activities, must take into account digitalization as an integral part of their effective development. In this paper, we study the research of foreign authors on the impact of digitalization on the efficiency of the banking business and find quite ambiguous results. In Russian studies, there is also no unambiguous evidence that digitalization in the banking business is effective. We present the results of digital maturity ratings of Russian banks, which are based on open sources of information and do not reflect specific indicators of corporate strategies of the rated banks. In this paper, we rank the leading banks in the digital maturity rating by the return on assets indicator. This once again confirms that the relationship between digital maturity and the efficiency of banking activities is not clearly traced. In this article, the author proposes two groups of digitalization indicators that can be used in forming corporate strategies of banks and take into account the results of digitalization.

1 INTRODUCTION

Digital transformation (DT) is defined as organizational changes caused by digital technologies (Porfirio, Felicio, Carrilho, 2024). Research shows that the implementation of digital solutions in the banking business transforms the banking business model. Researchers highlight the most significant internal factors that determine the digital transformation of banks. Firstly, this is the understanding of the transformation process and its acceptance (Diener, Spacek, 2021; Porfirio, Felicio, Carrilho, 2024). Secondly, this is the readiness of the traditional banking system to implement digital solutions. Some studies show that business processes requiring digital solutions were often transferred to specialized companies in an outsourcing format (Vermeulen, 2004). Another important factor is the difficulty in communication between developers and bank managers. The difficulty in understanding when organizing communication lies primarily in explaining the requirements due to the different professional terminology used by financiers and IT specialists (Rodrigues, Oliveira, Rodrigues, 2023).

Thus, the literature review allows us to conclude that the impact of digitalization on the banking business is enormous and should be managed. Since the basis of management is corporate strategy (Karminsky, Rybalka, Shevchenko, 2018; Kedarya, Elaluf, 2023), it is necessary to say that digitalization indicators should be reflected in it. Our article presents the results of a study of the level of digital maturity of Russian banks as a result of corporate strategies. A study is conducted of the impact of such indicators on the financial results of the banking business.

2 RESEARCH METHODOLOGY

In our article, we use the method of systematically studying scientific literature and expert opinions to

[1] https://orcid.org/0000-0002-8345-5152

find evidence of the importance of digitalization of banks and its impact on their performance. Due to the limited data on the use of quantitative and qualitative indicators in corporate strategies of banks, we use the methodology and results of the digital maturity rating of the Digital Audit Agency SDI 360.

3 RESULTS

The significance of the banking sector's contribution to the development of the digital economy is evidenced by its inclusion in assessments of the level of development of the digital economy, both at the regional and global levels. Let us give an example of an index developed and used by the World Bank for a systematic analysis of the general level of development of the digital economy and comparative analysis by countries and regions. This is a country index for assessing the digital economy (Digital Economy Country Assessment, DECA). The index structure consists of five main components, including the component "Digital financial services". Thus, when measuring and analyzing the general level of development of the digital economy and comparing it across countries, significant attention is paid to the availability of financial services, such as making payments, placing savings, obtaining loans, investing and other financial-related activities. The World Bank suggests considering the maturity model of a country's digital economy in three configurations: "emerging", "growing" and "advanced". And for the component "Digital financial services", compliance with each model is determined by the presence of only P2P payments, the presence of B2C and G2C payments, and the presence of digital financial and insurance services (Figure 1).

	Emerging	Growing	Advanced
Digital infrastructure	Access to main, underwater communication channels	Backbone networks, data storage, traffic exchange points, privacy and security	4G/5G networks, rural internet, internet of things
Digital platforms	Shared digital services, digital identity, digital payments	Digital government, open data, e-commerce	Mobile applications, AI services, platforms
Digital financial services	P2P payments	B2C, G2C payments	Digital financial and insurance services
Digital entrepreneurship	Talent development and business mentoring	Seed and angel funding, innovation centers, regional hubs	Venture capital, M&A, IPO, BPO, local digital industries
Digital skills	Digital Skills Boot Camps and Trainings	Business Management Trainings	Digitally savvy staff

Figure 1: Digital maturity of the country's economy according to the DECA index methodology.

Thus, the development of financial and insurance services, according to the World Bank, is a significant factor in the "advanced" digital economy. In Russia, the banking sector of the financial market accounts for a large share of digital services, despite the fairly dynamic development of fin -tech companies.

A study of studies related to the digitalization of banks revealed the desire of the authors to measure the level of digital transformation by creating a comprehensive index with three levels of manifestation of digitalization of banks: strategic transformation, business transformation, and management transformation (Xie, Wang, 2023). This approach reflects the depth of digitalization penetration into the banking business and confirms the need to include digitalization and its elements in the bank's strategy. Studying the issue of the impact of digitalization on the banking business and performance, we examined a fairly extensive layer of scientific articles. Some studies demonstrate evidence of the inefficiency of digitalization in Chinese banks: profitability is decreasing under the influence of digitalization of the banking business (Xie, Wang, 2023). Earlier studies on this topic suggest the opposite. Thus, studies of US commercial banks from 1999 to 2001 revealed an increase in profitability due to non-interest income, which is obtained from additional paid services. Such studies can be found evidence that corporate governance has increased expenses on salaries of highly qualified personnel (DeYoung, Lang, Nolle, 2007). In addition, there is evidence that digital solutions in the banking business make it more resilient to crisis phenomena.

During a crisis, banks with a lower level of digitalization tighten credit requirements. Banks with

a high degree of digitalization expand their credit portfolios, maintaining profitability or even increasing it (DeYoung, Lang, Nolle, 2007). You can also find examples of studies where the authors talk about increasing corporate sustainability and stability of banking activities in connection with the development of IT solutions (Nyagadza, 2022).

Some scientific and expert articles on the digitalization of the banking business in Russia address the issue of reflecting and taking into account digitalization in corporate strategies as target qualitative and quantitative indicators. Depending on the stage of the volume of business digitalization, three groups of corporate strategies can be identified (Tsvyrko, Sukhorukova, Ivaschenko, 2022). The first group is digitalization as a project, when the bank does not prioritize scaling up banking through digital services. The second group is digitalization as a business, in which case it is assumed that banking will develop through digital services. The third group of corporate strategies is distinguished based on the value orientation of digitalization in the corporate culture of the bank.

A number of studies show that digitalization is the basis for transforming banks' business models into ecosystems (Petrova, Kuznetsova, 2020), which is reflected in their corporate strategies. However, in such cases, risks of regulatory violations may arise, and the question of the need for additional supervision of their activities arises (Grigorieva, 2024; Karminsky, Rybalka, Shevchenko, 2018).

Indicators characterizing the effectiveness of corporate financial strategies in the banking sector should take into account internal stability and uncertainty in the external environment. Some authors believe that indicators such as return on assets, net interest margin, cost structure indicator, financial balance ratio and shareholder participation ratio allow us to form two groups of banks implementing different corporate strategies (Kornukov, Domnikov, 2024). On the other hand, threats to banks are formed, consisting of an increase in operational risks, a decrease in margins, as well as threats in the form of competitive offers from the strongest banks in the field of digitalization (Popova, Ermakova, 2024).

The corporate strategy of the bank is a reflection of the chosen business model. Thus, by assessing the content of the corporate strategy, it is possible to assess the architecture of the business model. At present, significant efforts are being made in Russia to fill the statistical and information vacuum regarding the measurement of the significance of digitalization and its contribution to the development of the real economy and the financial sector, including banking. Such a direction of analytics and consulting as digital audit is developing. Digital audit agency SDI360 proposes to assess the digital maturity of banks, which, in our opinion, is a relevant reflection of the effectiveness of the corporate strategy of banks. Open data on the banking business allows us to conduct studies of the digital maturity of Russian banks in three complex blocks: presence in the digital space, promotion and communications, and online sales. Such data can be gleaned from the official websites of the banks themselves, online chats, and social networks. Key indicators of corporate strategies of banks are closed data and it is possible to assess the result of their effectiveness only based on indirect data. Based on the reports of the Digital Audit Agency SDI360, we analyzed the change in the digital maturity rating of banks operating in the Russian financial market. Comparing the reports for 2021 and 2023 for the three constituent blocks of the rating, it becomes obvious that the indicators under study are highly mobile. Based on the rating data, we compiled diagrams reflecting the contribution of each block to the final value of the rating place.

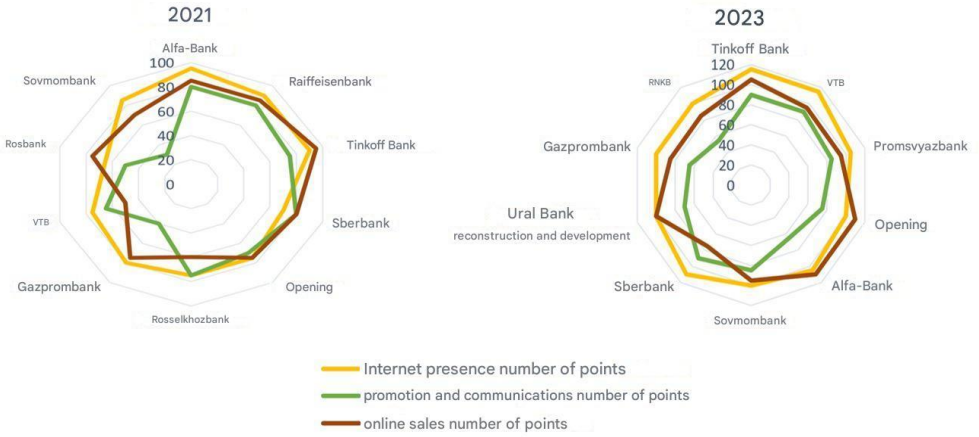

Figure 2: Leaders in the digital maturity rating of banks operating in the Russian financial market (Grigorieva, 2024).

The composition of the top ten of the rating has changed. If in 2021 the rating was headed by Alfa-Bank, then in 2023 it was replaced by Tinkoff. In addition, in 2023, Rosselkhozbank and Rosbank left the top ten. According to the methodology used in compiling the digital maturity rating, a maximum of one hundred points was assigned for each of the three blocks. The "Internet presence" block includes four components: website (optimization for mobile devices, year of the last global website update, website loading speed), mobile application (number of platforms, frequency of mobile application updates, average rating in stores), social networks (number of social networks used, number of subscribers, content production quality index) and content marketing (number of channels used, number of subscribers/traffic, content production quality index). The diagram (Fig. 1) shows that in 2023, VTB, Promsvyazbank, Otkritie improved these indicators.

The graph reflecting the “promotion and communications” block looks the most uneven on the diagram. According to the methodology, it includes the following indicators: traffic (number of site visits, session duration, bounce rate), promotion (number of paid traffic sources, search engine visibility index, media mention index), reputation (brand reputation in search engines, reputation on recommendation resources, loyalty in social media), and communications (number of communication options, average response time, availability and quality of a chatbot). If in 2021 the leading banks in this block were Alfa-Bank, Raiffeisen and Sberbank, then in 2023 the leaders here were Tinkoff, VTB and Sberbank.

The third block in the digital maturity rating "online sales" includes the following indicators: marketplaces (number of marketplaces used, number of products on marketplaces (b2c), methods of exchanging data with marketplaces), product pages (main page: design quality, product page: design quality for credit products, product page: design quality for non-credit products), online questionnaire (average number of clicks to the questionnaire, technology: credit products, technology: non-credit products) and online services (payment methods, the ability to become a client without visiting the office, consent to the processing of personal data). In 2021, Tinkoff was the leader in this block by a wide margin, and in 2023, Otkritie, Alfa-Bank and the Ural Bank for Reconstruction and Development caught up with it.

The effectiveness and efficiency of corporate strategies of banks should ultimately be reflected in the return on assets indicator. We compared the results of the digital maturity rating and the return on assets indicators for the leading banks in the studied rating. (Table 1 and Table 2).

Table 1: Ranking of leading banks in the digital maturity rating by ROA, 2021.

Name of the leading bank	Place in the digital maturity ranking	ROA, % as of 12/31/2021
Tinkoff Bank	3	5.9
Sberbank	4	4.1
Alfa-Bank	1	3.3
Raiffeisenbank	2	3.2
Sovcombank	10	3.1
Opening	5	2.9
Rosbank	9	1.7

VTB	8	1.5
Gazprombank	7	1.4
Rosselkhozbank	6	0.3

Table 2: Ranking of leading banks in the digital maturity rating by ROA, 2023.

Name of the leading bank	Place in the digital maturity ranking	ROA,% as of 12/31/2023
Sovcombank	6	29.5
Sberbank	7	23.8
Tinkoff Bank	1	18.9
Promsvyazbank	3	18
Opening	4	15.7
RNKB	10	15
Gazprombank	9	14.5
Alfa-Bank	5	13.8
VTB	2	13.6
Ural Bank for Reconstruction and Development	8	-63.6

A comparative analysis of ranked data on the return on assets of banks-leaders of the digital maturity rating shows the absence of a direct connection between digital development and the efficiency of the banking business. For example, in 2021, Sovcombank , which closed the top ten in the digital maturity rating, showed a fairly good return on assets. And in 2023, the same Sovcombank achieved the best profitability among the banks-leaders of the digital maturity rating. The absence of an obvious connection between the level of digital maturity and the profitability of the banking business among banks operating in the Russian financial market requires a more detailed study of this issue. It is possible that there is a manifestation of a complex delayed effect, or a narrower impact of digitalization on individual specialized banks.

4 DISCUSSION

Digital transformation (DT) of the banking business is currently at the beginning of its development. In order for this process to be manageable and bring maximum efficiency, it is advisable to include specific indicators related to the digitalization of the banking business in corporate documents in the form of quantitative and qualitative key performance indicators. It is advisable to determine priorities, form resource provision to create the maximum effect from their implementation. To assess the level of digital transformation, the author proposes a checklist for the use of digitalization of business processes (Table 3).

Table 3: Checklist for using digital in banking business processes.

Digitalization of the external perimeter	Digitalization of the internal environment
Online and mobile banking, banking applications	Core banking
Voice technologies	Back office (financial and economic management, personnel management, procurement, intelligent document processing)
Chatbots	BPM & RPA
Processing, payment and settlement systems	
Information security	
Working with data	
ATMs and terminals	Corporate governance
Sales, Marketing, CRM	IT Service Management
Agency network, collection, partners	Risk management and reporting
Working with GIS	Digital Treasury

It is proposed to divide business processes into two groups when establishing quantitative indicators, characterizing the external perimeter and internal environment of the bank. It is possible to form a more detailed division, depending on the complexity of the bank's corporate management and the organizational and economic structure of the bank.

5 CONCLUSIONS

In the course of the conducted study of the impact of digitalization on the efficiency of the banking business, it becomes clear that at present there is no unambiguous evidence of its direct quantitative impact. Digitalization, as an integral process of the economic and financial work of banks, should be measured both at the corporate level and at the macro level. At the macro level, the measurement of digitalization is most successfully implemented on the basis of the rating approach. However, there is no generally accepted rating methodology yet. Digital ratings are still in their infancy. Undoubtedly, the development of such a direction as digital consulting and digital audit can significantly bring scientists and experts closer to conducting objective measurements of the effectiveness of digitalization in bank business models. Information support for such measurements

can be developed on the basis of non-financial reporting. Currently, banks generate non-financial reporting, from which one can obtain general information about digitalization processes and the results that, according to internal corporate administration, have influenced the efficiency of the banking business. In early 2024, the Ministry of Economic Development proposed a non-financial reporting standard to "improve its quality and achieve its comparability". Among the recommended indicators reflecting the organization's contribution to the implementation of national development goals, a whole section, "Digital Transformation", was proposed. This section proposes to provide information in absolute and relative terms on data related to the Internet of Things, cloud technologies, automation and robotization of processes, the use of domestic software, and more. In the most general terms, the four indicators recommended by the Ministry of Economic Development form the basis for the formation of a general approach to measuring corporate performance of organizations, including banks, and the contribution of digitalization to business efficiency.

In our opinion, internal assessment – measuring digital transformation in banks is a necessary condition for achieving the required efficiency of the banking business. The indicators reflected in corporate banking strategies should allow for a relevant assessment of the results achieved. It is advisable to form assessment indicators for two large groups characterizing the external perimeter and internal environment of the bank. The proposed indicators can be expanded and clarified depending on the complexity of the bank's corporate governance and the organizational and economic structure of the bank.

REFERENCES

Grigorieva, E.M., 2024. On the issue of the need to regulate ecosystems in the banking sector. *Economic sciences*. 7 (236). P. 325-331.

Karminsky, A. M., Rybalka, A. I., Shevchenko, E. A., 2018. Factors of change of heads of Russian banks. *Russian Management Journal.* Vol. 16, No. 1. - P. 95-108.

Kedarya, T., Elaluf, A., 2023. Emerging Risk Management in the Banking Sector. *Foresight.* Vol. 17, No. 3. P. 68-76.

Kornukov, I. I., Domnikov, A. Yu., 2024. Adaptation of the system for monitoring the competitiveness of Russian commercial banks and the mechanism for generating management decisions to the new realities of uncertainty in the era of digitalization. *Management accounting*. No. 2. P. 87-93.

Tsvyrko, A. A., Sukhorukova, N. V., Ivaschenko, T. N., 2022. Adaptation of the banking business to modern digital trends. *Natural Sciences and Humanities Research.* No. 41 (3). P. 372-381.

Petrova, L. A., Kuznetsova, T. E., 2020. Digitalization of the banking system: digital transformation of the environment and business processes. *Financial Journal.* Vol. 12, No. 3. P. 91-101.

Popova, M. E., Ermakova, L. V., 2024. Digitalization as one of the ways to improve the efficiency of banking activities. Trends and prospects for the development of the banking system in modern economic conditions: Proceedings of the V All-Russian scientific and practical conference with international participation, Bryansk, December 20, 2023. - Bryansk: Bryansk State University named after academician I.G. Petrovsky, P. 68-72.

Nyagadza, B., 2022. Sustainable digital transformation for ambidextrous digital firms: A systematic literature review and future research directions Sustainable Technology and Entrepreneurship, 1 (3). Article 100020.

Diener, F., Spacek, M., 2021. Digital transformation in banking: A managerial perspective on barriers to change Sustainability, 13, pp. 20-32

Rodrigues, L. F., Oliveira, A., Rodrigues, H., 2023. Technology management has a significant impact on digital transformation in the banking sector International Review of Economics and Finance, 88 (2023), pp. 1375-1388

Pierri, N., Timmer, Ya., 2022. The importance of technology in banking during a crisis. *Journal of Monetary Economics*, Volume 128, Pages 88-104

Porfirio, J.A., Felicio, J.A., Carrilho, T., 2024. Factors affecting digital transformation in banking. *Journal of Business Research*, Volume 171, 114393.

Vermeulen, P., 2004. Managing product innovation in financial services firms European Management Journal, 22 (1) pp. 43-50

DeYoung, R., Lang, W.W., Nolle, D.L., 2007. How the Internet affects output and performance at community banks. *Journal of Banking & Finance* . Volume 31, Issue 4 , April 2007, Pages 1033-1060.

Xie, X., Wang, Sh., 2023. Digital transformation of commercial banks in China: Measurement, progress and impact. *China Economic Quarterly International.* Volume 3, Issue 1, Pages 35-45

Official website of the DIGITAL AUDIT AGENCY SDI 360 https :// sdi 360. ru /

https :// www . usaid . gov / digital - strategy / implementation - tracks / track 1- adopt - ecosystem / digital - ecosystem - country - assessments.

Rating of the largest Russian banks by profitability by the RIA Rating agency. https://riarating.ru/files/ratings/b_profit_0122.pdf , https://riarating.ru/images/63025/71/630257194.pdf .

Project of the sustainability reporting standard https://www.economy.gov.ru/material/file/42eaf2dd5f

8bc9bf6d2cf51df9a46ae7/%D0%A1%D1%82%D0%B0%D0%BD%D0%B4%D0%B0%D1%80%D1%82%20%D0%BE%D1%82%D1%87%D0%B5%D1%82%D0%BD%D0%BE%D1%81%D1%82%D0%B8%20%D0%BE%D0%B1%20%D1%83%D1%81%D1%82%D0%BE%D0%B9%D1%87%D0%B8%D0%B2%D0%BE%D0%BC%20%D1%80%D0%B0%D0%B7%D0%B2%D0%B8%D1%82%D0%B8%D0%B8.pdf.