Assessing Bank Digital Maturity in the Age of Artificial Intelligence: A Review of Models

Tarkhanova Elena Aleksandrovna
Candidate of Economic Sciences,
Associate Professor
Department of Economics and Finance,
University of Tyumen, Tyumen,
E-mail: e.a.tarkhanova@utmn.ru
ORCID: 0000-0002-8292-4842

Tarkhanova Aleksandra Vladimirovna
4th year bachelor
Institute of State and Law,
University of Tyumen, Tyumen,
E-mail: a.v.tarkhanova@mail.ru
ORCID: 0009-0001-3379-6186

Pelkova Svetlana Vladimirovna
Candidate of Economic Sciences,
Associate Professor
Department of Economic Security,
System Analysis and Control,
University of Tyumen, Tyumen,
E-mail: s.v.pelkova@utmn.ru
ORCID: 0000-0001-5367-2861

Samopalnikova Julia Nikolaevna
Candidate of Economic Sciences,
Associate Professor
Department of Economic Security,
System Analysis and Control,
University of Tyumen, Tyumen,
E-mail: i.n.samopalnikova@utmn.ru
ORCID: 0009-0008-5788-1968

Koltsova Tatiana Aleksandrovna,
Candidate of Economic Sciences,
Associate Professor
Department of Economic Security,
System Analysis and Control,
University of Tyumen, Tyumen
t.a.kolcova@utmn.ru
ORCID: 0000-0002-7849-5010

Abstract:

The article presents a critical analysis of contemporary models for assessing the digital maturity of banks in the age of artificial intelligence, substantiating the need for their adaptation to a dynamically transforming financial environment. Key international models and local approaches are examined, including the regulatory requirements of the Bank of Russia and the SDI360 methodology, with a focus on their advantages and limitations in the context of the Russian banking sector. Particular attention is paid to the impact of breakthrough technologies—artificial intelligence, big data, and cloud computing—on the optimization of customer experience and internal business processes. The authors propose an Adaptive Model of Bank Digital Maturity (AMDMB), which integrates six dimensions (strategy, technologies, customer experience, data, culture, and risks) and a flexible system of weighting coefficients for the precise diagnosis of the state of the digital ecosystem. The empirical analysis identifies the main barriers to digital transformation, including cyber risks, demographic disproportions, and resistance to change among personnel. The results of the study highlight the critical importance of a systemic approach to assessing digital maturity as a foundation for strategic management and the competitiveness of banks in the digital economy. The theoretical significance of the study lies in expanding the understanding of mechanisms for assessing digital banking, while its practical value is associated with the possibility of applying the proposed model for the systematic monitoring and optimization of digital transformation processes in credit institutions. The article is intended for specialists in financial management, IT architecture, and regulatory policy, as well as researchers engaged in the study of banking digitalization.

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Keywords: Digital Banking; Digital Maturity; Digital Maturity Assessment Models; Artificial Intelligence; Adaptive Model of Bank Digital Maturity.

Introduction

In the context of the rapid digitalization of the global financial sector, the transformation of traditional business models is becoming a decisive factor in ensuring the long-term sustainability and competitiveness of credit institutions (Mavlutova et al., 2022; Tarkhanova, 2018). According to expert assessments, the systematic implementation of innovative technologies can increase the operational efficiency of banks by 20–30% through the deep automation of routine operations, the optimization of data management systems, and the use of advanced analytics tools for managerial decision-making (Bueno et al., 2024). A significant shift in consumer preferences, characterized by the transition of more than 70% of customers to the predominant use of remote interaction channels, necessitates a qualitative revision of approaches to banking services (Naeem & Ozuem, 2021). In Russia, this trend is particularly pronounced: according to sociological studies, the share of mobile banking users more than doubled between 2018 and 2024, exceeding 70% (Titovets et al., 2024). In this context, the application of specialized digital maturity assessment models acquires the status of a critically important tool of strategic management, enabling the identification of technological gaps and the determination of priority areas for investment in IT infrastructure (Aljowder et al., 2023).

Modern digital maturity assessment models of banks perform a key function in the analysis and optimization of digital transformation processes in financial institutions (Tsindeliani et al., 2022; Tarkhanova et al., 2025). These models make it possible to comprehensively assess the current level of digital maturity of banks, identify vulnerable areas, and determine strategic directions for further improvement (Vaidya, 2022). Under conditions of intense competition, digital transformation is considered by most banking organizations as one of the fundamental factors ensuring competitiveness, which determines the critical importance of applying such models for effective functioning in the modern economic environment (Naimi-Sadigh et al., 2022; Tarkhanova et al., 2018).

The relevance of introducing innovative approaches to the assessment of digital maturity is driven by the need for banks to adapt to rapidly changing market conditions, especially in the age of artificial intelligence (Dutta S. et al., 2022). Such approaches contribute not only to improving operational efficiency but also to strengthening the competitive positions of financial institutions.

Among innovative methods for assessing digital banking, a special place is occupied by modern digital maturity models, as well as the integration of customer experience data (Al-lami et al., 2024). These methods enable multidimensional analysis that takes into account not only traditional financial indicators but also such criteria as the level of customer satisfaction, the degree of adaptability of banking systems to external changes, and the capacity for innovative development in the age of artificial intelligence (Amiri et al., 2023). This study is devoted to a comprehensive analysis of theoretical approaches and practical tools for assessing the level of digital transformation in the banking sector. The paper systematizes and critically reviews existing digital maturity assessment models developed by leading international consulting groups such as Deloitte, Boston Consulting Group (BCG), Forrester, Arthur D. Little, and KPMG. Particular attention is paid to the analysis of the Russian experience, including the regulatory requirements of the Bank of Russia and quantitative methodologies developed by independent rating agencies such as SDI360.

The study also examines the impact of breakthrough technologies—particularly artificial intelligence, neural networks, big data technologies, and cloud computing—on the effectiveness of customer interaction and the optimization of internal banking processes. The central element of the research is the development and justification of an Adaptive Model of Bank Digital Maturity, which integrates quantitative and qualitative indicators to diagnose the state of the digital ecosystem of a commercial bank.

The purpose of this study is, based on a review of existing digital maturity assessment models for commercial banks, to present the theoretical justification and methodological development of a comprehensive approach to assessing the digital maturity of banking organizations, adapted to the specific features of the Russian financial market in the

context of the active implementation of artificial intelligence technologies.

Literature Review

A review of the literature on the assessment of the digital maturity of banking organizations indicates that, in the context of the modern economy, digital transformation acts as a fundamental factor in ensuring the competitiveness of the financial sector. Researchers emphasize that the application of digital banking assessment models represents a critically important tool for systematic analysis, the identification of destructive development factors, and the determination of vectors for strategic improvement (Amiri et al., 2023; Wang et al., 2025; Waliullah et al., 2025).

Currently, the methodological basis for assessing digital transformation is represented by a wide range of maturity models developed by leading international consulting agencies. In particular, the Deloitte Digital Maturity Model (DMM) is based on a comprehensive analysis of five dimensions: strategy, technologies, operational processes, organizational culture, and customer interaction (Table 1). This approach is characterized by a high level of detail (28 elements) and includes 179 sub-elements assessed through expert evaluation. It also defines several stages of maturity—from the initial stage of digital exploration to the state of "being a digital company" (Tubis, 2023).

Table 1: Digital maturity assessment model: Deloitte Digital Maturity Model (DMM)

Criteria	Description
Assessment Dimensions	Customers (Channels and Experience), Strategy, Technology, Operations, Organization and Culture
Evaluation Principle	Each sub-element is scored from 0 to 5, where 0– absence of practice, 5 – optimized, systematic approach
Calculation of Overall Digital Maturity Score	$\text{DMM Score} = f\left(\sum_{i=1}^{5}(w_i \times D_i)\right)$

Source: compiled by the authors.

An alternative approach is proposed by the consulting company Forrester. Its Forrester Digital Maturity Model (Forrester DMM) is described as a "fast and transparent" tool that is well suited for regular self-assessment and for evaluating the cultural readiness of an organization for digital transformation (Table 2) (Gökalp & Martinez, 2022). The model helps companies, including banks, determine their current level of digital maturity and develop a roadmap for moving to the next maturity levels. A key feature of the Forrester approach is its emphasis on the cultural readiness of the organization for digital transformation alongside technological capabilities.

Table 2: Digital maturity assessment model: Forrester Digital Maturity Model

Criteria	Description
Assessment Dimensions	Culture, Organization, Technology, Insights
Evaluation Principle	Completion of an online survey consisting of 50 questions, each with answer options corresponding to maturity levels (Skeptics? Followers ? Collaborators ? Differentiators) with a scaled score from 1 to 5
Calculation of Overall Digital Maturity Score	$\text{Forrester DMM Score} = \sum_{i=1}^{7} C_i + \sum_{i=1}^{7} O_i + \sum_{i=1}^{7} T_i + \sum_{i=1}^{7} I_i$

Source: compiled by the authors.

In turn, the Digital Acceleration Index (DAI) developed by BCG makes it possible not only to conduct an internal assessment of digital capabilities but also to perform benchmarking against industry competitors across components such as products, services, and human capital (Table 3) (Chaushi et al., 2025). BCG has also identified four factors (or "accelerators") that are most strongly correlated with high DAI scores and distinguish digital companies from others:

- Active investment in technology and data, particularly the allocation of a significant share of operating expenditures (more than 5–15%) to digital projects, the development of data infrastructure, and the improvement of employees' digital skills.
- Artificial intelligence (AI) as the core of transformation, specifically the integration of AI into key business processes and strategy rather than its use as a standalone technological solution.
- A platform-based operating model, implying a transition from isolated organizational structures to flexible, cross-functional teams operating on a unified platform.
- The integration of technology and human capabilities, meaning the creation of a culture in which employees continuously seek ways to enhance their tasks and decisions through the use of technology and data.

Thus, the DAI represents a dynamic tool that allows companies not only to measure their digital maturity but also to understand which factors can accelerate this process and help them achieve leading positions.

Table 3: Digital Maturity Assessment Model: BCG Digital Acceleration Index (DAI)

Criteria	Description
Assessment Dimensions (Components)	Strategy & Leadership, Technology & Infrastructure, Processes & Operations, People & Skills
Evaluation Principle	Determination of digital maturity across 36 categories (e.g., digital supply chain, marketing personalization, etc.). Each criterion is assessed on a scale from 1 to 4
Calculation of Overall Digital Maturity Score	$DAI = f\left(\frac{1}{n}\sum_{i=1}^{n} S_i\right)$

Source: compiled by the authors.

A number of researchers focus on specific aspects of transformation. In particular, the Arthur D. Little Digital Transformation Index (DTI) represents a seven-factor model for assessing digital maturity that employs a simple and transparent mathematical framework (Table 4). The final score is calculated as the arithmetic mean of the evaluations across seven dimensions: strategy, implementation management, product portfolio, customer interfaces, internal processes, IT, and corporate culture. A result ranging from 1 to 10 points allows the company to be positioned in one of three groups: digital laggards, followers, or transformation leaders.

At the same time, the KPMG Digital Quotient methodology represents a comprehensive six-factor digital maturity assessment model designed for an in-depth diagnosis of a company's readiness for digital transformation (Table 5). The model combines quantitative data analysis with qualitative expert assessments and enables benchmarking with industry leaders. Researchers note that for organizations with specific local characteristics (for example, banks), the complexity of the model and its focus on global strategies may create certain difficulties in implementation (Raj, 2025).

A common feature of most global frameworks is the use of multidimensional scales and weighting coefficients to construct composite indices.

Table 4: Digital Maturity Assessment Model: Arthur D. Little Digital Transformation Index (DTI)

Criteria	Description
Assessment Dimensions (Categories)	Strategy, Implementation Management, Product Portfolio, Customer Interface, Internal Processes, Information Technology, Corporate Culture
Evaluation Principle	Use of a 10-point scale to assess the stage of digital maturity across seven categories, where: 1 point – minimal maturity (the company only recognizes challenges but has no strategy), 10 points – maximum maturity (the company is a digital leader and transformation frontrunner)
Calculation of Overall Digital Maturity Score	$\mathrm{DTI}_{\mathrm{ADL}} = \frac{1}{7}\sum_{i=1}^{7} S_i$

Source: compiled by the authors.

Table 5: Digital Maturity Assessment Model: KPMG Digital Quotient

Criteria	Description
Assessment Dimensions	Strategy, Organization, Customer Experience, Operations, Technology, Analytics
Evaluation Principle	Use of a combination of quantitative and qualitative methods to obtain an objective picture of digital maturity. Classification across multiple maturity levels: Initial, Developing, Growing, Mature, Leading
Calculation of Overall Digital Maturity Score	$DQ = \sum_{i=1}^{6}(w_i \times D_i)$

Source: compiled by the authors.

In the context of the Russian financial market, a combination of international practices and local methodologies for assessing the digital maturity of banks is observed (Abramov & Andreev, 2023). Of particular importance is the approach of the Bank of Russia, which is characterized by a qualitative binary principle for evaluating five key areas, including digital culture and information infrastructure. A distinctive feature of this regulatory approach is its orientation toward the minimum value among all evaluated areas, which minimizes the risks of technological gaps.

In addition, quantitative models are used to objectify the assessment of external manifestations of digitalization, such as the SDI360 Digital Audit, which is based on the automated collection and analysis of open data on banks' presence in the digital environment (Table 6). The main difference between this model and classical consulting approaches (such as those developed by KPMG, BCG, or Deloitte) lies in its focus on external digitalization. The model evaluates how a company appears to consumers in the digital environment without requiring access to its internal processes and data.

Table 6: Digital Maturity Assessment Model: SDI360

Criteria	Description
Assessment Dimensions	Digital Presence, Promotion and Communications, Online Sales, Digital Customer Experience Index
Evaluation Principle	Automatic data collection from official sources. Assessment based on 39 metrics, each with a specific weight. Each metric is scored 0, 5, or 10 points. Maximum total score: 390. Overall ranking is calculated as the weighted sum of all metrics
Calculation of Overall Digital Maturity Score	$\mathrm{SDI360\ Score} = \sum_{i=1}^{39} P_i$

Source: compiled by the authors.

Recent trends indicate a qualitative transformation in the content of digital strategies and an increase in the digital maturity of banks. In particular, leading systemically important Russian banks are moving from the selective implementation of digital technologies toward the creation of comprehensive banking ecosystems. The most important technological drivers include artificial intelligence, big data, cloud computing, and neural networks, which are integrated into online banking interfaces (Galazova, 2023).

Despite these achievements, researchers identify a number of barriers that limit the digital evolution and maturity of the banking sector (Diener & Špaček, 2021; Santos & Ponchio, 2021). These include increasing cyber risks and fraud threats in the context of the dominance of cashless payments, fragmentation of payment services, and resistance to organizational change among personnel (Ulrich-Diener et al., 2025; Rehman, 2021). In this regard, the academic literature substantiates the need to develop adaptive assessment models that combine flexibility in the configuration of weighting coefficients, consideration of regulatory requirements, and the possibility of operational monitoring of digital initiatives (Gökalp & Martinez, 2022).

Thus, the theoretical review confirms that the digital maturity of banks is determined not only by the level of technological development but also by the degree of integration of innovations into corporate culture, risk management systems, and mechanisms of interaction with customers.

Methodology

The research methodology is based on a comprehensive approach that combines methods of comparative analysis of existing theoretical models with the development of an author-designed tool for assessing the level of digital transformation in commercial banks. The study employs a synthesis of qualitative and quantitative methods for data collection and processing, which ensures a high level of accuracy in diagnosing the bank's digital ecosystem.

The first stage of the research includes a comparative analysis of existing global and Russian digital maturity assessment models, such as those developed by Deloitte, Forrester, and BCG, as well as the methodologies of the Bank of Russia and the SDI360 agency. The analysis identifies the structural components of the models, the types of data used, and the specific features of calculating final indices. This makes it possible to determine the key dimensions of digital transformation that are common across the models: strategy, technologies, customer experience, data, and organizational culture.

The second stage of the methodology is devoted to the development of the Adaptive Model of Bank Digital Maturity (AMDMB). Unlike existing approaches, this model includes six dimensions: strategy and governance; customer experience and channels; technology and infrastructure; data and analytics; culture and talent; and risk, compliance, and security. To increase the level of detail in the assessment, the model employs a scale ranging from 0 to 10 points, which allows for a more flexible interpretation of intermediate results in the development of banking processes.

The data collection methodology for implementing the AMDMB model involves the use of three main channels:

1. Qualitative interviews with managers and business process owners to assess internal strategies and corporate culture.
2. Automated analysis of open data (websites, social networks, and APIs) to evaluate external digital activity, following an approach similar to the SDI360 methodology.
3. Analysis of internal operational analytics, including indicators such as system uptime and transaction processing speed.

The mathematical framework of the model is based on a multi-stage calculation procedure. At the first stage, for each subcategory a normalized percentage of criteria fulfillment is calculated using a formula that considers the ratio of actual scores to the maximum possible score. At the second stage, a system of weighting coefficients is applied, which can be adapted to the strategic priorities of a particular bank. The recommended distribution of weights assigns priority to customer experience and technology (0.20 each), while the remaining dimensions are assigned a

weight of 0.15. The final composite index is calculated as the weighted sum of all dimensions and is normalized to a scale from 0 to 100%.

The final stage of the methodology includes an algorithm for interpreting and visualizing the results. To ensure a clear representation of the organization's "digital profile," a radar chart is used. Depending on the value of the final index, banks are classified into four levels: "digital laggards" (0–40), "developing" (40–60), "advanced" (60–80), and "digital transformation champions" (80–100). This methodological approach makes it possible not only to capture the current state of digital maturity but also to identify bottlenecks for the subsequent adjustment of the bank's digital initiatives roadmap.

Research Results

A comparative analysis of leading global digital maturity assessment models, such as Deloitte DMM, Forrester DMM, BCG DAI, Arthur D. Little DTI, and KPMG Digital Quotient, shows that most assessment systems are based on the analysis of key dimensions such as strategy, technology, customer experience, operational processes, and organizational culture. At the same time, differences can be observed in the approaches used to construct final indicators. While the models developed by BCG and KPMG are primarily oriented toward quantitative indices and statistical data, the approach of the Bank of Russia relies to a greater extent on qualitative expert judgments and threshold values.

The regulatory model of the Bank of Russia, characterized by a qualitative binary assessment principle, plays a fundamental role in ensuring compliance; however, it demonstrates less flexibility compared to commercial models, since the final level of maturity is determined by the minimum value among all analyzed dimensions. In contrast to this regulatory approach, the methodology of the Russian agency SDI360 involves the daily automated collection of open data on banks based on 39 metrics, grouped into four blocks: presence in the digital space, promotion and communications, online sales, and the digital customer experience index.

The analysis of the technological component of digital maturity revealed that the key drivers of transformation in Russian banking are artificial intelligence (AI) and big data technologies.

In the context of global geopolitical challenges and sanctions pressure, the banking sector of the Russian Federation is undergoing a strategic transition to domestic technological solutions. This process encompasses the entire spectrum of information and technology infrastructure—from hardware to software platforms and cybersecurity systems. The primary goal is to create a resilient, independent, and secure ecosystem capable of ensuring the continuity of banking operations under conditions of limited access to foreign technologies.

Artificial intelligence is becoming a central element in optimizing banking operations, enabling the automation of analytical and routine tasks. The use of AI agents significantly increases data processing speed, decision-making accuracy, and reduces operational costs. The implementation of machine learning and neural network technologies contributes to the transformation of traditional business processes, elevating them to a qualitatively new level of efficiency. Special attention is given to the application of AI for automating document workflows and contract analysis, recognizing and processing data on mobile devices, generating program code and decomposing complex tasks, and ensuring secure access to both client and corporate data.

In response to growing market demands and the need to diversify payment instruments, banking institutions are actively implementing innovative contactless transaction technologies. Promising directions include: Bluetooth Low Energy (BLE) – a technology enabling payments from devices without NFC modules; the Faster Payments System (FPS) – a platform for instant interbank transfers via QR codes; central bank digital currencies (CBDCs) – the introduction of the digital ruble as an alternative payment instrument; installment payments – expanding cashless payment options for individuals and legal entities; and automated payments – the integration of banking services into transport infrastructure (e.g., seamless payment for toll roads). The development of these technologies contributes to greater accessibility of banking services, faster

transaction processing, and reduced dependence on traditional payment systems.

One of the priority areas of digital transformation in the banking sector is the replacement of foreign technological solutions with domestic alternatives. This process includes: the modernization of data storage and processing systems using Russian hardware and software; the implementation of domestic certification and authentication platforms to protect information from cyber threats; the development of cyber intelligence and monitoring systems aimed at the prompt detection and neutralization of potential attacks; and the adaptation of banking services for operation on domestic browsers and operating systems, ensuring compatibility with Russian internet resources. The transition to domestic technologies not only reduces risks associated with sanctions but also strengthens the country's technological sovereignty.

Modern banks aim to create a unified digital environment for users by integrating their services into third-party platforms and ecosystems. This approach allows banks to expand the functionality of payment instruments by embedding them into commercial and service platforms, ensure interbank interoperability through unified standards (e.g., QR codes for transfers between clients of different banks), and integrate banking solutions into partner mobile applications, thereby simplifying access to financial services. Additionally, it facilitates the automation of loyalty processes (e.g., applying discount cards at the point of payment). Such a strategy contributes to the formation of a coherent digital infrastructure, enhancing the convenience and speed of financial transactions for end users.

Amid the growing threat of cyberattacks, the banking sector is actively developing mechanisms to protect client data and financial assets. Key initiatives include: cross-industry collaboration with telecommunications and insurance companies to mitigate fraudulent traffic; the implementation of biometric technologies (facial recognition, voice authentication) to strengthen the security of personal accounts; the exchange of risk indicators between banks, enabling the prompt detection of suspicious transactions; and the automation of data submission to credit bureaus, reducing delays and preventing fraudulent schemes associated with multiple credit applications. These measures aim to minimize financial losses and increase client trust in banking services.

Banks are implementing digital solutions to optimize client interactions with government institutions. Key initiatives include the automated search and payment of taxes, fines, and fees through unified payment services, as well as the introduction of auto payments for self-employed individuals and legal entities, simplifying the fulfillment of fiscal obligations. The automation of these processes reduces the administrative burden on clients and enhances the transparency of interactions with government authorities.

As part of the digital sovereignty strategy, banks are actively adopting domestic communication platforms (e.g., MAX) to facilitate business verification through integration with digital identification systems, enable prompt client engagement via official channels and chatbots, and disseminate financial-educational content, which contributes to improving users' financial literacy. The use of domestic messengers allows banks not only to comply with regulatory requirements but also to strengthen client trust through transparency and security of communications.

Despite high levels of digital maturity among market-leading banks, the study identified several significant challenges limiting sector development. First, geographic and demographic disparities in digital literacy persist: in rural areas and among individuals over 60 years old, the intensity of digital service usage remains low, necessitating the development of simplified interfaces and specialized educational programs. Second, the rapid growth of cashless payments (up to 85.8% of transaction turnover) and the introduction of biometric technologies are accompanied by escalating cyber risks and financial fraud threats. This underscores the need for the integration of advanced anti-fraud platforms and the regular conduct of independent information security audits.

An additional barrier is the fragmentation of payment services and the complexity of harmonizing different API standards, which hinders the creation of a seamless

customer experience. At the organizational level, resistance to digital initiatives is observed among personnel, who often perceive innovations as an additional burden, highlighting the importance of change management technologies.

In light of the identified challenges and trends, there emerged a need for the development of a proprietary assessment system capable of flexibly adapting to the strategic objectives and specific risks of the Russian banking market. Existing international and regulatory methodologies, despite their high level of detail, often do not fully account for the dynamics of the Russian market or the need to integrate internal technological capabilities with external activity indicators. In response, an Adaptive Model of Digital Maturity for Banks (AMDMB) was developed, representing a synthesis of quantitative and qualitative approaches to diagnosing the state of a commercial bank.

The methodological basis of the AMDMB model includes six key dimensions: strategy and management, customer experience and channels, technology and infrastructure, data and analytics, culture and talent, and risks, compliance, and security. Each of these dimensions is further decomposed into a series of subcategories and specific metrics. At the initial stage of assessment, data collection involves the integration of qualitative interviews with business process owners, automated analysis of external digital channels, and the evaluation of internal operational analytics.

A distinctive feature of the model is the use of a ten-point scoring scale for each metric k in subcategory j of dimension i, which provides higher diagnostic precision:

$$s_{j,i,k} \in [0; 10]$$

For each subcategory j within dimension i, the normalized percentage of criteria fulfillment is calculated using the following formula:

$$P_{i,j} = \frac{\sum_{k=1}^{n_{ij}} s_{i,j,k}}{10 \times n_{ij}} \times 100, \qquad \left(0 \le P_{i,j} \le 100\right)$$

Next, each subcategory is assigned a specific weight Wi,j(with the sum of weights of all subcategories within a dimension equal to 1), based on which the weighted subcategory score is calculated as follows:

$$W_{i,j} = w_{i,j} \times P_{i,j}$$

The final value for each of the six dimensions Di is calculated as the sum of the weighted scores of its constituent subcategories:

$$D_i = \sum_{j=1}^{m_i} w_{i,j}, \qquad (0 \le D_i \le 100)$$

The final stage of the assessment involves calculating the composite Digital Maturity Index, which represents the weighted sum of all six dimensions:

$$M_{AB} = \sum_{i=1}^{6} W_i D_i, \qquad (0 \le M_{AB} \le 100)$$

For practical implementation of the AMDMB model, recommended weight coefficients Wi have been established for each dimension. According to expert priorities, the dimensions "customer experience and channels" and "technology and infrastructure" are assigned the highest weights (0.20 each), whereas strategy, data, culture, and risks, compliance, and security are assigned weights of 0.15 each. The final results are visualized using a radar chart based on the values of Di, allowing the formation of an instant "digital profile" of the bank.

The interpretation of the resulting Digital Maturity Index is carried out within four maturity categories: "digital laggards" (0–40 points), "developing" (40–60 points), "advanced" (60–80 points), and "digital transformation champions" (80–100 points). This classification enables banking institutions not only to determine their current position relative to competitors but also to identify critical "bottlenecks" requiring priority managerial intervention and investment. The adaptability of the AMDMB model is ensured by the possibility of adjusting weight coefficients to the bank's specific strategic objectives, making it a transparent tool for planning digital initiatives.

The implementation of the presented Digital Maturity

Assessment model requires a systematic approach, comprising several sequential stages, each aimed at ensuring the objectivity, transparency, and adaptability of the process.

At the preparatory stage, an interdisciplinary working group is formed, consisting of representatives from IT, marketing, risk management, and human resources. Its main task is to define priority measurement parameters and agree on weight coefficients for each subcategory of the model. During this stage, a registry of metrics and data sources is also developed, allowing the automation of data collection and ensuring expert evaluation of both quantitative and qualitative indicators.

The next stage, data collection and validation, involves the use of comprehensive methods, including structured interviews with business process owners and the completion of online questionnaires to obtain qualitative assessments, as well as the automated collection of quantitative data through specialized scripts, such as web scraping, integration with APIs, and internal systems. To ensure the reliability of the collected data, it is cross-checked against business reports and subjected to selective expert audits, thereby minimizing the risk of information distortion.

The central stage involves the calculation and visualization of results, during which values are normalized, subcategories are weighted, and the final Digital Maturity Index is computed. For clear presentation of data, radar chartsare used to display the current maturity profile, while line graphs are applied to analyze trends over time. The development of an interactive dashboard enables continuous monitoring of key metrics, facilitating prompt responses to changes.

At the analysis and prioritization stage, "bottlenecks"—areas with minimal values requiring immediate attention—are identified. Recommendations generated by the model are compared with the current portfolio of digital initiatives, the transformation roadmap is adjusted, and KPIs are established for each strategic area based on the metrics. This process ensures a clear system of objectives focused on improving the bank's digital maturity.

The final stage is the integration of the model into the bank's management system. The AMDMB report is incorporated into governance processes such as quarterly digital transformation committees and the top-management KPI system. Regular review of results, conducted at least semi-annually, allows for monitoring the effectiveness of implemented changes and timely adjustment of strategy. Feedback from teams and the dynamic adaptation of weight coefficients or the set of metrics according to strategy evolution contribute to the sustainable development of the model.

Additionally, it is recommended to conduct training workshops for key personnel to explain the methodology and calculation algorithm of AMDMB. Incorporating assessment results into corporate training programs and incentive systems, for example, through bonuses or career progression for achieving target maturity levels, promotes employee engagement and supports successful implementation of the digital strategy.

The presented model enables banks to conduct self-assessment and prioritize digital projects based on strategic objectives and the specificities of the Russian market. Implementing AMDMB in management practice, including regular monitoring and visualization of results via radar charts, facilitates the creation of a transparent transformation roadmap and timely elimination of technological gaps.

Discussion and Conclusions

The conducted study confirms that, within the contemporary financial ecosystem, digital transformation has ceased to be an optional development area and has become a fundamental condition for the survival and competitiveness of banking organizations.

The review of existing digital maturity assessment methodologies revealed significant variability in approaches. Global models, such as Deloitte DMM, Forrester DMM, and BCG DAI, focus on comprehensive auditing of internal processes, strategy, and organizational culture, requiring substantial time and expert resources. At the same time, the Russian practice is characterized by a combination of strict regulatory control from the Bank of Russia and active use of independent monitoring tools,

such as SDI360. Comparative analysis demonstrated that the regulatory methodology, based on the "minimum principle", is critically important for risk management and compliance, yet it may limit flexibility for innovation. Conversely, the use of automated data structuring tools implemented in the SDI360 model allows for an objective assessment of external digital activity, but it does not account for internal technological readiness or the human capital maturity of the organization.

The proposed adaptive digital maturity model is designed to address the limitations of existing approaches. The integration of six key dimensions (strategy, experience, technology, data, culture, and risks) combined with a flexible 0–10 evaluation scale allows for more precise diagnostics of a bank's state. A notable advantage of the model is the ability to adjust weighting coefficients according to the strategic priorities of a particular organization, making it an effective tool for management decision support in a rapidly changing market environment.

The key conclusions of the study can be summarized as follows. First, a bank's digital maturity is determined not only by the volume of IT infrastructure investments but also by the quality of technology integration into corporate culture and risk management systems. Second, the adoption of artificial intelligence and neural networks represents a core development direction, contributing to enhanced information transparency and sector profitability. Third, an effective digital transformation strategy should be based on regular monitoring of digital initiatives and the timely elimination of technological gaps through the use of specialized assessment models, such as the proposed adaptive digital maturity model.

Future prospects for digital banking in Russia are associated with completing the transition to fully remote service formats, further optimizing branch networks, and expanding ecosystem-based solutions that include non-banking products. Success in this area will depend on banks' ability to balance technological expansion with the provision of high-level cybersecurity, as well as their readiness to continuously adapt internal processes to the challenges of the digital economy. Thus, systematic assessment and management of digital maturity become the foundation for the sustainable development of commercial banks in the long term.

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