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CURRENT TRENDS IN THE INNOVATION PROCESS WITHIN THE GLOBAL BANKING INDUSTRY

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Abstract: The global banking industry has constantly evolved, undergoing processes such as internationalization, banking concentration, liberalization, diversification, universalization, and globalization of activities. The most recent changes include the modernization of banking technologies and the development of alternative communication methods, which have revolutionized the sector, creating real competitive advantages through the implementation of high-performance information systems and the personalization of the bank-client relationship. This gradual transformation, alongside the creation of the digital economy and the integration of innovations from the 5.0 and 6.0 technological revolutions (where 5.0 focuses on the integration of advanced technologies like AI and IoT into industries for smarter, more connected environments, and 6.0 envisions further advances toward human-centric innovations and automation), has led banks to adopt the Banking 4.0 concept (which emphasizes the use of IT and AI technologies to offer personalized, on-demand banking services anywhere, anytime). According to the Banking 4.0 concept, banking activities integrate IT and AI technologies, enabling the provision of banking products and services at any time, regardless of the client's location. The research conducted shows that, globally, there are several innovative types of banks: platform banks, digital banks, including virtual banks, and OEM banks. Moreover, with the implementation of the Banking 4.0 concept, complementary non-banking models have also emerged.

This article analyzes current trends in the global banking innovation process, based on a review of specialized publications in the field. It highlights the advantages and benefits these innovations offer, as well as the challenges encountered in promoting the innovation process. The study identifies key trends, including the digitization of banking activities, ensuring banking security, the rise of banking self-service, hyper-personalization, and the improvement of customer experience, among others. In the context of digitalization, coupled with pressures such as declining profits and changing customer preferences, experts argue that banks must address all aspects of the innovation process. This begins with a radical transformation of the business model and extends to the implementation of open banking and smart banking, which can take various forms. The global banking industry has adopted and integrated a wide range of new tools and technologies. Banks are increasingly implementing these innovations to bridge the existing gap and enhance their competitiveness in the financial sector.

Keywords: banking industry, trends, banking services, bank innovation
JEL Classification: E40, E44, G20

Introduction

Since the second half of the 20th century, the global banking sector has undergone profound transformations, including internationalization, concentration, liberalization, universalization, and diversification of banking activities, eventually leading to the trans- nationalization and globalization of operations. These changes were largely driven by the modernization of information technologies and communication methods, which significantly impacted the quality of banking services. As a result, there has been an increase in the volume of operations, an expansion of the range of services provided by banks, and the adoption of non-banking methods of raising funds. For example, banks increasingly act as intermediaries in the issuance of bonds and other securities. The present article aims to explore bibliographical sources and official documents of the global banking system, identifying the trends of banking innovation, as well as the advantages and challenges associated with its implementation.

Trends in the innovation process in the global banking industry

In the process of globalization, banks have undergone several phases: from domestic or national banks to international banks, then multinational banks, and finally global banks. Beginning in the 1960s, the process of internationalization has evolved into the globalization of banking activities, culminating in the emergence of the concept of the "**global bank**" – a financial institution that operates in all countries worldwide simultaneously, *offering universal products and services*.

American researcher Brett King (2013) identifies four stages in the metamorphosis of banks: Bank 1.0, which operates through traditional methods; Bank 2.0, which enhances operations by implementing information and communication technologies (ICT); and Bank 3.0, which adapts to market demands by focusing on four key areas: mobility, socialization, personalization, and proactivity. With the advent of the 4.0 industrial revolution (building the digital economy) and the technological advancements of revolutions 5.0 and 6.0, the banking industry, according to the opinion of experts from Huawei (2022), enters the era of Bank 4.0, characterized by full digitalization of banks. Bank 4.0 integrates IT and AI technologies, enabling the delivery of integrated banking products and services that are accessible to individual customers anytime and anywhere. The primary drivers of innovation at this stage include the digitization of banking activities, the enhancement of banking security, the introduction of banking self-service, hyper-personalization of services, and the overall improvement of the customer experience (Smartlockr, 2022).

The benefits brought by the digitization of the banking system are the following:

- more competent and faster data-driven decisions;
- attracting customers, their retention and raising the level of experience with customers by personalizing actions and customer loyalty;
- increasing efficiency as a result of automation and reducing operational costs;
- training the released staff in improving the relationship with customers.

In order to obtain these benefits, banks must solve the following problems they face in the digitization process (World Economic Forum, 2022):

- at the initial stage, digitization requires a large initial investment, which the bank must have;
- the clients' consent regarding having control over their personal data (GDPR);
- issues related to social inequities arising from digitization (the population's access to digital services - only 62.5% of the global population are Internet users);

- ensuring the synergistic effect of digitization in the banking field with sustainable development (circular economy, green economy), because in this way circular opportunities are created for the development of banking products/services and customer involvement (Filip, 2022).

Thus, in the context of digitization, as well as under the pressure of reducing profits and changing customer preferences, specialists in the field believe that banks must act on all dimensions of the innovative process, starting with the radical modification of the business model. According to the analysis of PwC and Strategy&, three models of innovative banking were identified (Belciu, 2018):

Platform banks: Banks that share access to their customers with fintechs and other competitors. This differs from traditional banking, where banks control the entire value chain, do not integrate offers from other providers, and do not allow third parties access to their customers. Platforms act as an interface between customers, products, and external specialized service providers.

Digital banks: Licensed financial institutions distinguished by the extensive digitization of services, as well as all front- and back-office processes. They offer users the ability to access financial data via the internet (desktop), mobile phone, or other devices and ATMs. Digital banking involves high levels of process automation and web-based services and may include application-programming interfaces (APIs), which enable cross-institutional service delivery (Digital Banking, n.a; Virtual Banking, n.a).

Banks OEM (Original Equipment Manufacturer) banks that tend to focus on doing what they do the best and use external suppliers for certain services, especially in back-office and middle-office processes.

In connection with the implementation of the Bank 4.0 concept, complementary models of neo-banks (also called challenger banks) were established, which operate exclusively using online banking services, without networks of traditional physical offices (Bensley, 2022; Neobank, n.d.). Neo-banks are fintech companies that provide apps, software, and other technologies to streamline mobile and online banking, often being more agile and transparent than the megabanks. Banks form joint ventures with such firms to underwrite their financial products (Walden & Strohm, 2021). These fintechs generally specialize in specific financial products, such as checking and savings accounts. The spectrum of services offered by non-banks is narrower than that of traditional banks, and the main part of the income of these banking institutions is made up of commissions obtained from customers' debit card transactions. Likewise, non-banks provide standard and non-traditional online banking services (peer-to-peer payments, financial advisory bots, cryptocurrency transactions, and crowdfunding platforms to raise funds for specific financial projects or their intangible equivalents that are directly related to the project) (Walden & Strohm, 2021).

A current banking practice that is becoming a major source of innovation and reshaping the banking industry is open banking ("open banking data") or (open banking). Open banking is a system that gives third-party financial service providers open access to banking data about consumers (with their consent), their transactions, and other financial data from banks and non-banking financial institutions, through the use of application programming interfaces (APIs) (Investopedia, n.d.). APIs of third-party providers (typically tech startups and online financial service providers) may subsequently use the customer's shared data (and data about their financial counterparties).

Another challenge for banks is smart banking. In providing smart banking services, banks use technology to collect, store, and analyze customer data, in order to facilitate the use and management of customers' financial means, increasing the accessibility of personalized banking services, allowing users to access their accounts from anywhere using phones or other devices (Muscad, 2023).

Depending on the technologies and tools applied, smart banking can have many forms, such as: automated payments; budgeting tools; personalized advice; mobile banking activity (mobile banking, video banking); fraud protection: password protection, updated digital certificates, firewalls, and anti-malware systems; cloud computing; improved customer service; customizing functions with automation and artificial intelligence tools; developing instant payments (mobile wallets, cryptocurrency, point of sale (POS), and blockchain) (Huawei, 2022; IDFC First Bank, n.d.).

It is evident that the global banking industry has developed and assimilated a vast array of new tools and technologies. According to expert Zuzanna Pajorska, the introduction of these new technologies is fundamentally changing the daily operations of financial institutions and the overall role of banks. She highlights that "transformational concepts such as AI, blockchain, NFT, AR, and VR are now central topics in discussions about the future of the banking sector" (Huawei, 2022). The adoption of technologies like 5G, AI, the Internet of Things (IoT), and blockchain opens up numerous opportunities for developing intelligent banking services (Intelligent Financial Network, n.d.), with the innovation gap influencing the competitiveness of financial institutions.

A key driver in promoting innovation within the banking sector is the 5th generation mobile network, or 5G. 5G is a new global wireless standard designed to deliver low latency, reliable, and high-capacity data connections. Currently, mobile operators in over 125 countries are investing in 5G technology (Binesh, n.d.). The implementation of 5G will empower banks to leverage AI, including machine learning, thereby offering new possibilities for the banking sector (Binesh, n.d.), such as enhancing availability across all devices, enabling hyper-personalization, and integrating augmented and virtual reality experiences.

Artificial Intelligence (AI) refers to a wide range of technologies, such as machine learning, natural language processing, expert systems, computer vision, speech recognition, planning, robotics, and more (Dumasia, 2021). An expert in the field of technology, with a focus on AI, Joy Dumasia outlines five key applications of AI in the banking sector (Dumasia, 2021):

1. Customer Service/Engagement (Chatbots) – Chatbots offer a high return on investment, making them one of the most widely used AI applications. They efficiently handle commonly requested tasks, such as balance inquiries, accessing mini-statements, and transferring funds, which helps alleviate the pressure on other channels like contact centers and internet banking platforms.
2. Robotic Consultation (Robo-Advisors) – A robo-advisor evaluates a client's financial situation by analyzing shared data and their financial history. Based on this analysis and the client's objectives, the robo-advisor provides tailored recommendations for suitable investments, selecting both product classes and specific financial products or equities.
3. General Purpose/Predictive Analytics – AI is commonly applied in general-purpose natural language processing and predictive analytics. It can detect specific patterns and correlations in data that may uncover untapped sales opportunities, cross-selling possibilities, or important operational insights, all of which can have a direct positive impact on revenue.
4. Cybersecurity – AI significantly enhances the effectiveness of cybersecurity systems by analyzing data from previous threats and identifying patterns that, while seemingly unrelated, may predict potential internal or external attacks. This predictive capability allows for more proactive prevention of security breaches.
5. Credit Scoring/Direct Lending – AI assists alternative lenders in evaluating the creditworthiness of clients by analyzing both traditional and non-traditional data sources. This enables the development

of innovative lending systems, supported by robust credit scoring models, even for individuals or entities with limited credit histories. Prominent companies in this field include Affirm and GiniMachine.

Artificial intelligence is characterized in the following forms:

Machine learning (ML) consists of extracting meaningful information from raw data sets and provides accurate results for prediction. This information is used in solving complex and data-intensive problems that are critical to the banking sector. In addition, machine-learning algorithms are equipped to learn from data, processes, and techniques used to find different insights (Medium, n.d.). The areas of application of ML are:

- fraud detection based on the use of the machine learning algorithm;
- determining the customer's creditworthiness;
- improving the customer experience, for example, offering rewards based on transaction analysis etc.

Deep learning (DL) - consists of processing a wider range of information – including raw, unstructured data such as photos, news and handwritten notes. With enough data, DL can often produce more accurate results for certain products than traditional ML approaches (e.g. random forecast classifier). Interconnected layers of software-based computers known as "neurons" form a neural network that can ingest and process large amounts of data through multiple layers that extract increasingly complex features from the data. The network can then use what it has learned to determine new data.

The fields of application of DL, according to the opinion of experts in the field, are conducting marketing studies, customer relationship management (CRM), customer experience management (CXM or CEM) and risk management.

Data mining (data mining, DM) - is the process of extracting interesting, non-trivial, implicit, previously unknown and potentially useful patterns or knowledge from huge amounts of data. The data can be spatial data, multimedia data, time series data, text data, and web data. Data mining is used for (eCapital Advisors, n.d.):

1. - determine the probability that a loan will be repaid by the borrower;
2. - in the detection of bank fraud;
3. - detection of suspicious transactions.

Conclusion

As the global banking industry continues to evolve, banks face numerous challenges in driving the innovation process while maintaining competitiveness and customer loyalty. In order to ensure that banks remain operationally sound and competitive in this rapidly changing environment, banking regulators must play a pivotal role. They need to establish and enforce a robust supervisory system that not only addresses immediate risks but also anticipates future challenges. An effective regulatory framework is essential for overseeing the safe integration of new technologies, ensuring compliance with evolving financial regulations, and fostering innovation without compromising financial stability. Through proactive regulation, banking authorities can support the growth of the sector while safeguarding against potential risks that could undermine the integrity of the financial system.

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