



## ORIGINAL PAPER

# How Open Banking and AI Drive Financial Innovation: Evidence from the Romanian Banking Sector

Cristi Spulbar<sup>1)</sup>, Daniela Iulia Maria Carbune<sup>2)</sup>

### Abstract:

The paper examines the impact of Open Banking and Artificial Intelligence on financial innovation in the Romanian banking industry, underscoring their contribution in enhancing operational efficiency, customer experience, fraud prevention and overall financial performance. By using an analytical approach, the study integrates statistical analysis on digitalization trends within the Romanian banking system and case studies of AI-driven solutions implemented by leading financial institutions. The findings suggest that AI technologies and Open Banking ecosystems contribute significantly to improving banking operations, reducing transaction costs and optimizing resource allocation. Moreover, AI-enhanced user experience and real-time data analytics are expected to boost customer satisfaction, increase financial accessibility and security, while also strengthening fraud detection and risk management measures. From a financial perspective, the integration of AI and Open Banking is projected to optimize financial performance in the banking sector, advance digital transaction volumes and lower operational risks. This research contributes to existing literature by providing empirical insights on the impact of Open Banking and AI on a developing European market. It offers a comprehensive analysis of Romania's banking sector, serving as a reference for similar markets undergoing digital transformation and provides valuable insights for banking institutions, policymakers and fintech stakeholders, particularly in developing economies.

**Keywords:** *Open Banking, Artificial Intelligence, financial innovation, digitalization, Romanian banking sector*

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<sup>1)</sup> Professor, PhD, University of Craiova, Faculty of Economics and Business Administration, Romania, Email: cristi.spulbar@edu.ucv.ro

<sup>2)</sup> Ph.D. Student, University of Craiova, “Eugeniu Carada” Doctoral School of Economic Sciences, Finance specialization, Romania, Email: carbune.daniela.n9d@student.ucv.ro

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## Introduction

The advent of Open Banking and Artificial Intelligence (AI) has become a transformative force within the global banking industry. This phenomenon is particularly relevant to the Romanian banking sector, which is characterized by a dynamic shift towards digital financial services. Emerging from the foundational concepts of Open Banking, which empowers third-party providers to access customer financial data through APIs (Application Programming Interface), and the integration of AI technologies, this research seeks to elucidate how these paradigms are driving financial innovation. With the banking landscape of Romania increasingly oriented toward digitalization, understanding these developments is crucial for both practitioners and policymakers. Open Banking not only enhances customer engagement but also paves the way for innovative financial products that satisfy the consumer needs. At the same time, AI facilitates advanced data analytics, enabling banks to improve operational efficiencies and customer experiences through personalized services. The intersection of Open Banking and AI creates a synergistic effect that can lead to reduced transaction costs, enhanced security and superior customer satisfaction. This paper aims to provide an analytical approach into these developments within the evolving financial sector of Romania, setting a foundation for future research and practical applications.

According to Hermawan, S., Khoirunisa, Z., A. and Tejomurti, K. (2023), the Open Banking process enables third-party providers to access financial data of the consumers, with their explicit consent, through an API framework managed by financial institutions. This system involves three essential actors: the consumer, the third-party service provider and the bank. The consumer retains ownership over their financial information, the third-party service provider seeks access to offer tailored financial services and the bank acts as the API provider, facilitating secure data exchange and ensuring compliance with regulatory standards. The data-sharing process begins when the consumer requests a financial service from a third-party provider, such as a fintech company or a payment service. To deliver this service, the third party must access the banking data of the consumer, so it submits a request to the bank. Before granting access, the bank must obtain explicit consent from the consumer. Only after receiving approval does the bank authorize the third party to retrieve and use the necessary financial data. This system reflects the core principles of Open Banking, emphasizing transparency, security and user control over data.

The implementation of Open Banking in Europe is regulated by PSD2 (Payment Services Directive 2), which requires banks to allow third-party providers access to financial data under strict security conditions. This regulation encourages financial innovation while protecting consumer rights and ensuring data privacy.

## Literature review

The literature surrounding Open Banking and AI highlights their role in driving innovation within financial services. As outlined by Zeynalova (2024), Open Banking promotes a customer-centric approach by allowing clients to control their data. This shift is crucial for increasing market competition and financial inclusion, as emphasized in Xie and Hu's (2024) comprehensive review, which discusses the potential effects of Open Banking initiatives on the financial landscape. Moreover, research indicates that

integrating AI technologies enhances risk management and enables real-time analytics, further propelling financial institutions to optimize their resources (Broby, 2021).

Additional studies complement this perspective. Babina et al. (2024) provide early empirical evidence that Open Banking facilitates fintech entry into traditional banking markets by reducing information asymmetries and transaction frictions. Similarly, Casolaro et al. (2024) offer a systematic review of the Open Banking literature and conclude that it contributes to better consumer outcomes and improved financial literacy when integrated with intelligent digital platforms.

A deeper examination of the ethical implications of AI in finance reveals challenges such as data privacy and algorithmic bias (Thakur and Sharma, 2024; Cath, 2018). This ethical landscape must be navigated carefully to foster trust among customers and regulatory bodies. Mehdiabadi et al. (2020, 2022) emphasize that AI and Open Banking must be implemented within a strategic digital roadmap, especially in countries with moderate digital maturity, such as Romania, to ensure alignment with regulatory frameworks and technological infrastructure.

Other study indicates that AI applications have demonstrated their potential to analyze user data dynamically, leading to personalized banking services that enhance customer retention (Pham et al., 2024; Gaies, 2023). Furthermore, the reduction in transaction costs attributed to Open Banking practices allows institutions to reallocate resources effectively, fostering further innovation (Shalihin and Safuan, 2021). Moreover, fraud detection mechanisms enhanced by AI technologies have shown significant improvements in identifying suspicious transactions. As financial institutions embrace these technologies, the ability to adapt to customer needs and mitigate risks has become increasingly critical (Hermawan et al., 2023). This responsiveness is essential for maintaining consumer trust and satisfaction, especially in a market where digital transactions are becoming the norm.

Moreover, the dematerialization of banking products enabled by digital transformation is discussed by Hadad and Brătianu (2019), emphasizing that the rise of digital services asks to modern consumer expectations. As banks integrate AI technologies into their operational frameworks, there is considerable evidence pointing towards improved efficiency and service delivery. For instance, AI applications, such as chatbots and automated customer interfaces, have been shown to enhance service accessibility, as discussed by Okeke et al. (2024). In the context of Romania, the banking sector has undergone significant transformation. Ionașcu et al. (2023) emphasize that financial institutions are increasingly embracing digital strategies to maintain their competitiveness in a rapidly evolving market environment.

In the context of Central and Eastern Europe, Wolska (2024) discusses how collaboration between traditional banks and fintechs through Open Banking APIs is accelerating innovation and digital service adoption. This is particularly relevant in Romania, where some banks are already integrating third-party fintech solutions to extend their digital offerings.

Fang and Zhu (2023) analyze the BRICS economies (Brazil, Russia, India, China, and South Africa) and provide evidence that Open Banking contributes to a decline in traditional consumer lending by enabling the growth of alternative credit platforms. These fintech services, powered by API-driven access to financial data, offer personalized lending solutions and challenge incumbent banks. Their findings highlight a shift in consumer behavior and a structural transformation in credit markets, emphasizing the need

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for traditional banks to adopt data-driven strategies and collaborate with fintechs to remain competitive.

Complementing this global perspective, the study conducted by Spulbar et al. (2022) provides valuable insights from the Indian private banking sector, revealing that AI implementation significantly improves operational efficiency and customer satisfaction. Their findings highlight that AI-powered mobile applications, chatbots and personalized recommendation systems are perceived as safe, fast and convenient. Despite the high costs and technical complexity of adoption, both customers and bankers recognize the ability of AI to reduce errors, save time and deliver more transparent banking services. However, the study also notes that digital literacy and staff training remain essential for successful AI integration. These findings from a major emerging market offer important parallels to the Romanian context, where banks are undergoing a similar digital evolution.

The study conducted by Alt et al. (2021) highlights a clear and consistent shift toward personalized banking experiences driven by the integration of AI technologies. Beyond personalization, AI has also become a crucial tool in fraud prevention, offering the ability to process and analyze large volumes of data in real time, which allows banks to identify anomalies and address potential threats proactively.

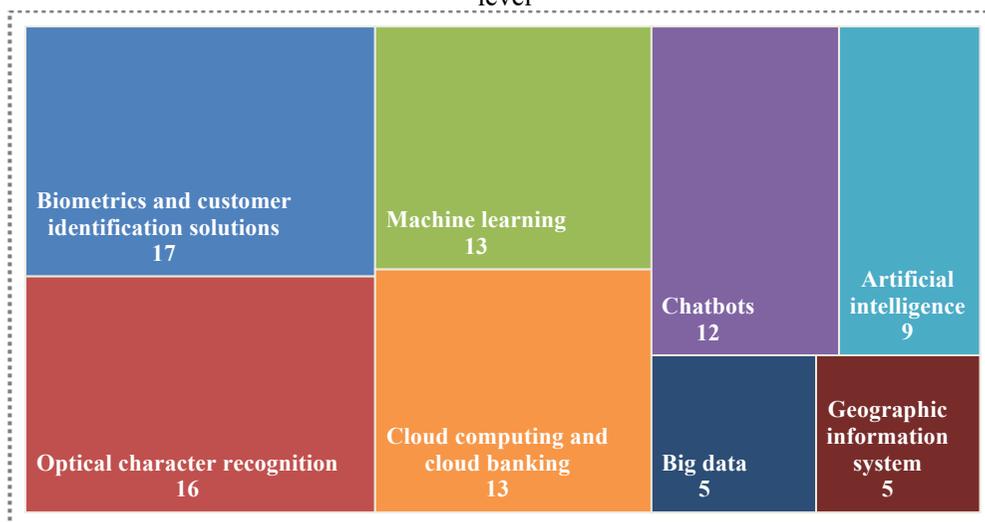
Moreover, Florea et al. (2024) emphasize that the integration of AI into banking decision-making processes has led to a notable reduction in operational risks. These diverse applications of AI not only enhance customer confidence but also contribute to the strengthening of institutional resilience within the Romanian banking sector.

### **Evidence-based analysis of AI and Open Banking in Romanian banking sector**

The adoption of AI has become a race for competitive advantage, where businesses strive to leverage AI-driven benefits such as efficiency gains, innovation facilitation, error minimization and problem-solving capabilities. However, the rapid pace of adoption raises concerns regarding ethical and regulatory challenges, security vulnerabilities and sustainability costs.

According to the information provided in the Financial Stability Report as of June 2024, as we can see in figure 1, in 2024, Romanian banks have adopted various AI-driven technologies to enhance their operational efficiency, security and customer experience. The implementation of these technologies is shaping the banking sector by streamlining processes, reducing costs and enabling data-driven decision-making. The distribution of AI applications across financial institutions highlights the strategic role these technologies play in modern banking.

Figure 1. Distribution of implemented technologies (number of banks) at 2024 level



Source: Authors contribution based on data provided by Financial stability report, June 2024 – BNR

Among the most widely adopted AI solutions, biometric and customer identification technologies stand out, with 17 banks implementing systems such as facial recognition and fingerprint scanning to enhance security and simplify customer authentication. Similarly, optical character recognition (OCR) is utilized by 16 banks to automate data extraction from documents, facilitating efficient loan processing, Know Your Customer (KYC) verification and document management.

Additionally, machine learning is deployed by 13 banks to improve fraud detection, assess credit risks and personalize financial services. A similar number of institutions have integrated cloud computing and cloud banking, benefiting from scalable, secure and cost-effective digital infrastructure. Meanwhile, chatbots, adopted by 12 banks, are transforming customer interactions by offering real-time assistance and automating routine inquiries, thereby optimizing customer service efficiency.

More advanced AI applications are also gaining traction, albeit at a slower pace. Artificial intelligence, encompassing algorithmic trading, risk modeling and AI-driven customer engagement tools, has been adopted by 9 banks. Moreover, big data analytics is employed by 5 banks to extract valuable insights into customer behavior, enhance decision-making and develop targeted financial products. Similarly, geographic information systems (GIS), also used by 5 banks, play a crucial role in optimizing branch networks, assessing lending risks and expanding financial services based on geospatial data.

These developments underscore the increasing reliance on AI technologies in the Romanian banking sector, signaling a shift toward automation, enhanced security and improved customer experiences. As financial institutions continue to integrate AI-driven innovations, they are expected to further refine their operational frameworks, strengthen fraud prevention mechanisms and expand access to more personalized banking solutions.

AI and ML technologies are predominantly used for data collection and extraction, risk management, customer evaluation through scoring models, fraud detection

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and anti-money laundering (AML) monitoring. Despite the growing recognition of AI's strategic importance, the integration of AI into corporate governance frameworks remains limited. Notably, 81% of responding banks, representing 97% of the total market share, acknowledge that incorporating AI into their business strategy is essential for long-term institutional success. However, efforts to formally embed AI governance structures within banking frameworks remain underdeveloped.

These findings emphasize the critical role of AI in shaping the future of Romanian financial sector, with increasing adoption rates in fraud prevention, risk assessment and operational efficiency. However, further steps are needed to enhance AI governance and regulatory alignment to ensure the sustainable integration of these technologies.

The adoption of innovative technologies in the Romanian banking sector has seen significant progress, as depicted in Fig. 1. Financial institutions are increasingly integrating AI-driven solutions into their operations, with a particular focus on machine learning (ML), artificial intelligence (AI) and big data analytics. However, blockchain technology remains entirely absent from current implementations.

Among these technologies, machine learning is the most widely adopted technology, used by half of surveyed banks representing 85% of market share, mainly for risk assessment, fraud detection and customer analytics. AI applications are deployed by one-third of banks (68% market share), primarily using Natural Language Processing and Computer Vision to enhance automation and client interaction. Big data analytics, employed by 20% of banks, supports improved decision-making and service personalization. In contrast, blockchain remains unadopted in the Romanian banking sector, reflecting either institutional caution or regulatory constraints despite its global relevance in secure transactions and decentralized finance.

These trends indicate a strong commitment to AI-driven innovation among Romanian banks, yet also highlight a reluctance or lack of regulatory readiness for adopting blockchain-based solutions in financial operations.

This study explores the synergistic role of Open Banking and AI in driving financial innovation within the Romanian banking sector. As evidenced by the wide adoption of AI-driven solutions, financial institutions are actively leveraging biometric authentication, machine learning and cloud banking to optimize efficiency and enhance customer experience.

Furthermore, Open Banking, enabled through the PSD2 Directive in Europe, fosters a competitive and innovation-driven ecosystem, where third-party financial service providers integrate AI-powered solutions for real-time data analytics, fraud prevention and personalized banking services.

By correlating Open Banking with AI adoption trends, this study highlights how Romanian banking sector is gradually embracing digital transformation despite lower-than-average AI adoption rates in the broader economy. The insights drawn from this analysis serve as a valuable reference for banking institutions, policymakers and fintech stakeholders aiming to accelerate AI-driven Open Banking solutions in developing financial markets.

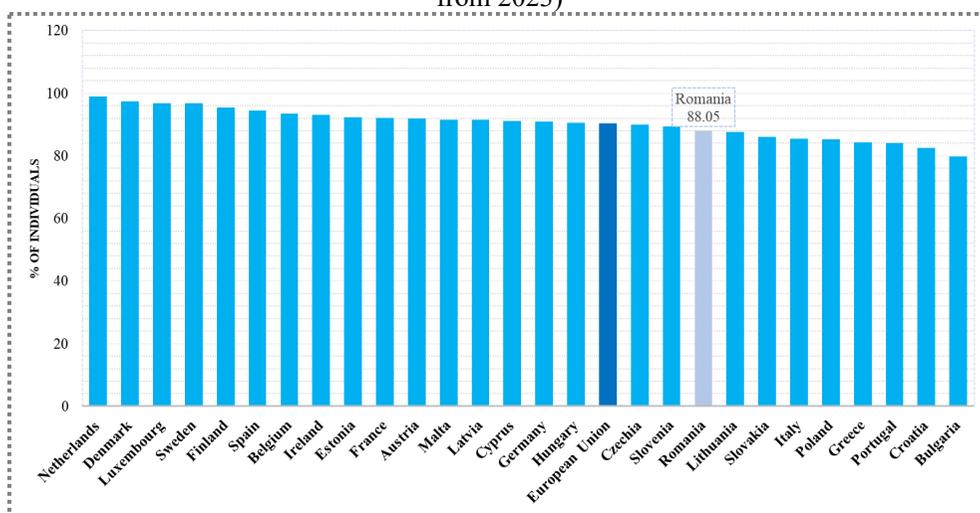
The internet use indicator (Figure 2) reflects how digitally connected and engaged the population is. As of DESI 2024, 88.05% of Romanians use the internet at least once a week, a notable increase compared to previous years (~70% in 2018-2019). This steady growth provides a fertile ground for banks to deploy and scale digital financial innovations, such as AI-driven chatbots and virtual assistants, personalized financial

insights powered by machine learning and Open banking APIs for account aggregation and instant payments. A broader and more consistent internet user base facilitates higher adoption and acceptance of these services.

Although this figure reflects a relatively high level of digital engagement, it remains below the EU average of 90.27%.

The performance of Romania places it in the lower third among EU Member States, indicating that a notable portion of the population is still not regularly engaged in digital activities. While the gap compared to the European average is modest, it nonetheless points to underlying structural challenges, such as limited digital skills, socio-economic disparities and varying levels of access to reliable internet infrastructure, especially in rural and underserved areas.

Figure 2: Internet use, all individuals (aged 16-74), DESI period: 2024 (data from 2023)



Source: Authors contribution based on data provided by Digital Decade DESI visualisation tool, European Comission website

The Romanian banking sector has been undergoing rapid digital transformation in recent years. According to the Financial Stability Report published by the National Bank of Romania in December 2024, information technology (IT) expenditures incurred by credit institutions have registered a significant increase of 53% compared to December 2020. This upward trend reflects the intensification of digitalization efforts within the banking sector, alongside a growing emphasis on mitigating cyber threats.

A considerable number of small and medium-sized banks have notably accelerated their investments in enhancing IT infrastructure and implementing advanced cybersecurity solutions. As of September 2024, outsourced IT services represented, on average, approximately one-third of the total IT expenditure across the sector. Notably, over 80% of these outsourced services were attributed to large banking institutions, indicating their substantial reliance on external technological support.

The success of these AI technologies and Open Banking depends on consumer readiness, which in turn is strongly influenced by internet usage. In this way, we can

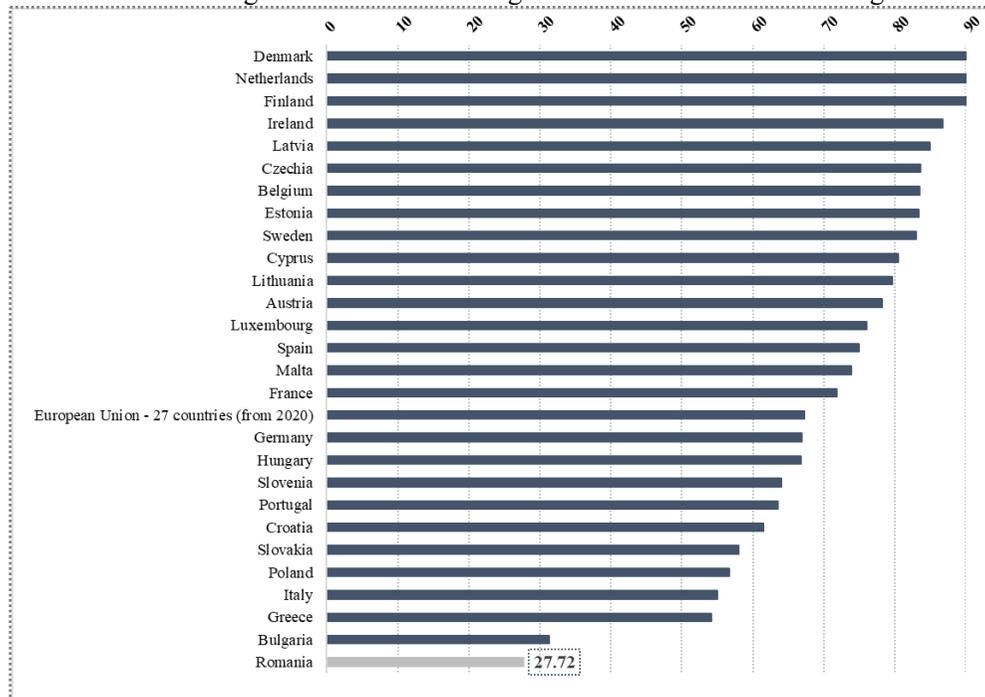
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identify a positive correlation between increased internet use and the adoption of AI and Open Banking services, as follows:

- increased internet penetration (88.05%) has made consumers more comfortable interacting with digital platforms, creating the demand for 24/7 AI-powered services and app-based banking solutions;
- the expansion of online banking and mobile apps is both a result of and a catalyst for rising internet usage;
- Open Banking models rely heavily on customer consent and digital interaction. Higher digital literacy and internet access increase the likelihood that consumers will share data securely via Open APIs.

In order to summarize the aspects mentioned above, as internet usage increases, banks have greater incentives to invest in AI and Open Banking technologies, knowing that a digitally engaged population is more likely to use them.

Figure 3: Individuals using the internet for internet banking



Source: Authors contribution based on data provided by EUROSTAT

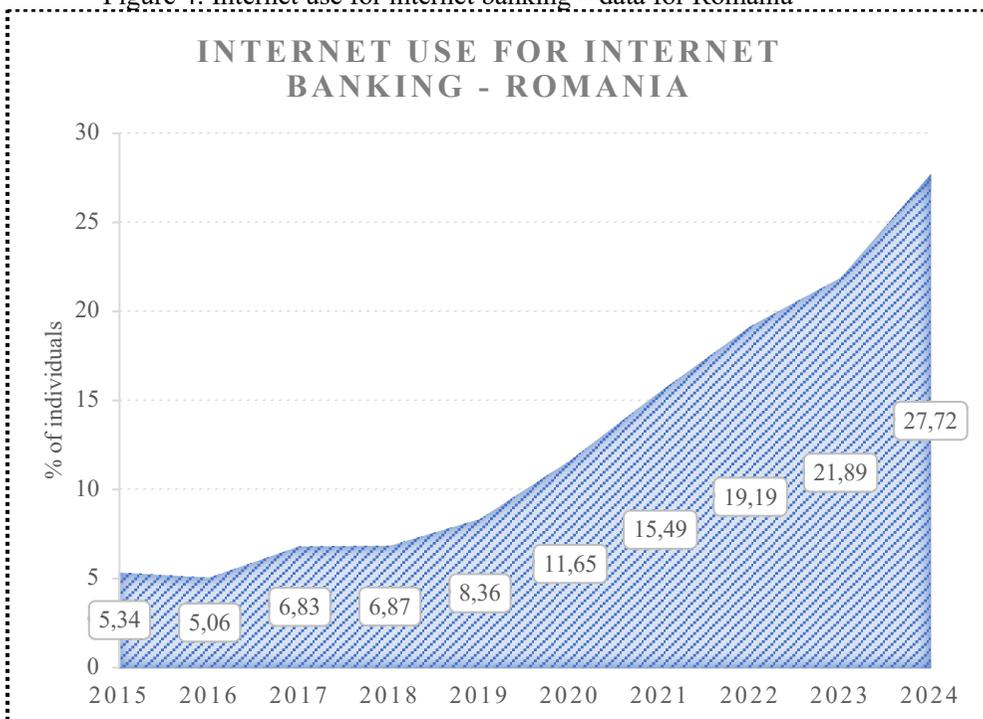
The figure 3 represents the percentage of individuals in each EU country who used the internet for internet banking in 2024. The indicator is part of the Information Society statistics and provides insights into the digital adoption of financial services across the EU.

Romania ranks last among all EU Member States, with an internet banking usage rate of just 27.72% of individuals. This is significantly below the EU average, which is well above 60% in most countries.

Figure 4 reveals that, although Romania ranks last among all EU Member States, the country has experienced a steady and notable upward trend over the past decade.

Despite its current position at the bottom of the EU ranking, with only 27.72% of individuals using internet banking services, Romania has made important progress compared to 2015, when the usage rate was just 5.34%. This consistent growth highlights an ongoing digital transformation process within the Romanian financial sector and suggests that, while the country still faces challenges in digital financial inclusion, it is steadily moving in the right direction.

Figure 4: Internet use for internet banking – data for Romania



Source: Authors contribution based on data provided by EUROSTAT

According to the Financial Stability Report published by the National Bank of Romania (June 2024), digital access to banking services expanded significantly in 2023, with notable growth in user adoption and transaction volumes, particularly for domestic payments and transfers. The increasing use of mobile banking apps and digital wallets (e.g. Apple Pay, Google Pay) reflects a shift toward digital financial behavior, aligning Romania with broader European digitalization trends. However, traditional banking practices, including POS card use, ATMs and cash transactions, remain dominant. This gradual digital transition is hindered by structural barriers such as an ageing population, low digital literacy, Romania ranks last in the EU's DESI digital skills index and unequal access to financial services across regions and socio-economic groups.

Given these conditions, it is expected that banks in Romania will maintain a balanced approach, ensuring continued access to non-digital banking services. This is essential to prevent financial exclusion, particularly among vulnerable groups, as the country advances toward greater digitalization. Ensuring inclusivity in this transformation process remains a key priority for the sustainable development of the financial sector.

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In this context, the following section of the article presents a ranking of the top 10 banks in Romania, based on the total value of their assets. This analysis will serve as the foundation for selecting the top three banks from the ranking, with the aim of examining the AI and Open Banking solutions they have implemented as part of their digital transformation strategies and efforts to adapt to the evolving demands of the financial market.

Table 1. Top 10 credit institutions in Romania by assets

Rank	Bank	Assets S1/ 2024 (bn. Lei)	Market share (% of total assets)
1	Banca Transilvania	169.00	20.25
2	BCR	111.00	13.30
3	CEC Bank	93.00	11.14
4	BRD	84.00	10.06
5	ING	76.00	9.11
6	Raiffeisen Bank	74.00	8.87
7	Unicredit	68.00	8.15
8	Exim Banca Românească	27.00	3.24
9	Alpha Bank	23.00	2.76
10	OTP Bank	19.00	2.28

Source: Authors contribution based on data provided by zf.ro, bnr.ro and banks website

Based on the data for the first semester of 2024, the top 10 credit institutions in Romania collectively dominate the banking market, with significant differences in total assets and market share.

Banca Transilvania leads the Romanian banking market with assets of 169 billion lei (20.25% market share), followed by BCR with 111 billion lei (13.3%) and CEC Bank with 93 billion lei (11.14%). These top three institutions have made substantial investments in digital transformation, AI, and Open Banking. BRD, ING, Raiffeisen and Unicredit also maintain strong market positions, while other banks account for smaller shares under 4%.

Given the dominance of Banca Transilvania, BCR and CEC Bank, we have chosen to analyze a part of their Open Banking and AI solutions. These institutions, as the top three players, have significant digital transformation strategies, investments in innovative technologies and extensive customer bases that allow them to leverage Open Banking and AI for enhanced financial services.

To assess the level of digitalization of a bank, a relevant indicator is the proportion of digitalized clients relative to the total customer portfolio.

In its Preliminary Financial Results Report for 2024, Banca Transilvania reports that 95% of its 4.6 million active clients are digitalized. Recognized by Brand Finance as the top banking brand in Europe and third globally, the bank exemplifies strategic innovation. It was the first in Romania to implement large-scale AI, notably through BT Pay's virtual assistant Chat BT and the Azure OpenAI-powered, Ask BT platform.

According to the same source, Brand Finance, BCR and BRD have advanced by 44 and 28 positions in the Banking 500 ranking, highlighting their strategic initiatives to

strengthen their market presence. This progress also underscores the resilience and increasing competitiveness of the Romanian banking sector on the global stage.

In the context of its strategic commitment to digital transformation, BCR has reported significant progress in the adoption of AI-based technologies and Open Banking solutions, as outlined in its Financial Results Report as of December 31, 2024. The digital strategy of BCR centers on the George ecosystem, with 2.53 million users and 2.16 million active mobile users as of 2024. George supports product onboarding, bill payments and AI-driven guidance through tools like George SmartEU and chatbot ADA. In business banking, BCR enables over 160,000 companies via George for Businesses, with high digital onboarding rates and automated credit processing.

Complementing this is Finqware, a Romanian Open Banking platform integrated with Banca Transilvania and CEC Bank, allowing clients to access and initiate transactions across multiple banks within one app. This integration supports a seamless, multi-bank user experience aligned with Open Banking principles.

### **Conclusions**

The research highlights the transformative impact of Open Banking and Artificial Intelligence (AI) on the Romanian banking sector, offering compelling evidence that the integration of these technologies significantly contributes to financial innovation, operational optimization and enhanced customer experiences. Open Banking, regulated by the PSD2 Directive, serves as a foundational framework that enables secure, consent-based data sharing between banks and third-party providers, thus fostering competition and driving the development of customized, user-centric financial services.

Simultaneously, the integration of AI technologies, ranging from machine learning and chatbots to biometric authentication, cloud computing and big data analytics, is redefining operational efficiency, service personalization and risk management. The implementation of AI across Romanian banks has led to measurable reductions in transaction costs, improved fraud detection mechanisms and enhanced decision-making capabilities through real-time analytics.

While Romania still lags behind other EU Member States in terms of digital financial inclusion, as evidenced by relatively low internet banking usage rates, the steady growth trend in internet adoption, particularly for financial services, signals a positive trajectory toward digital maturity. This upward trend provides fertile ground for the scaling of AI-driven and Open Banking innovations, which are further supported by growing IT investments within the sector.

Moreover, the study reveals that leading financial institutions such as Banca Transilvania, BCR and CEC Bank are at the forefront of the digital transformation. Through its innovations, Romanian banks demonstrate a growing capacity to leverage AI and Open Banking for improved competitiveness, personalization and financial accessibility.

Synthesizing the key points, the synergistic implementation of Open Banking and AI not only drives financial innovation in the Romanian context but also serves as a scalable model for other developing markets. The findings contribute valuable analytical and statistical insights to academic literature and offer practical implications for policymakers, financial institutions and fintech stakeholders committed to advancing digital transformation in banking systems worldwide.

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## Authors' Contributions

The authors contributed equally to this work.

## References:

- Alt, M., Ibolya, V. and Săplăcan, Z. (2021), Banking with a chatbot – a study on technology acceptance, *Studia Universitatis Babe-Bolyai Oeconomica*, 66(1), 13-35. <https://doi.org/10.2478/subboec-2021-0002>
- Babina, T., Bahaj, A., S., Buchak, G., De Marco, F., Foulis, K., A., Gornall, W., Mazzola, F., Yu, T. (2024), Customer Data Access And Fintech Entry: Early Evidence From Open Banking, *NBER Working Paper No. 32089*, [https://www.nber.org/system/files/working\\_papers/w32089/w32089.pdf](https://www.nber.org/system/files/working_papers/w32089/w32089.pdf)
- Broby, D. (2021), Financial technology and the future of banking. *Financial Innovation*, 7(1). <https://doi.org/10.1186/s40854-021-00264-y>
- Casolaro, A., M., B., Rauber, G., N., Monteiro de Lima, U., S. (2024), Open banking: a systematic literature review, *Journal of Banking Regulation*, <https://doi.org/10.1057/s41261-024-00262-x>
- Cath, C. (2018), Governing artificial intelligence: ethical, legal and technical opportunities and challenges, *Philosophical Transactions of the Royal Society a Mathematical Physical and Engineering Sciences*, 376(2133), 20180080. <https://doi.org/10.1098/rsta.2018.0080>
- Chan, R., Troshani, I., Rao Hill, S. and Hoffmann, A. (2022), Towards an Understanding of Consumers' FinTech Adoption: The Case of Open Banking, *International Journal of Bank Marketing*, Vol. 40 No. 4, pp. 886-917, <http://dx.doi.org/10.1108/IJBM-08-2021-0397>
- Fang, J. and Zhu, J. (2023), The impact of open banking on traditional lending in the BRICS, *Finance Research Letters*, Vol. 58, 104300, <https://doi.org/10.1016/j.frl.2023.104300>
- Florea, N., Croitoru, G., Radu, G. and Florea, D. (2024), The analysis of the impact of digital product innovation and human resources specialists on intention to use artificial intelligence in financial banking system, *Journal of Financial Studies*, 9(16). <https://doi.org/10.55654/jfs.2024.9.16.07>
- Gaies, B. (2023), Banking sector openness, a path to social responsibility? Evidence from Southern European Banks., *Economics and Business Letters*, 12(4), 284-295. <https://doi.org/10.17811/ebl.12.4.2023.284-295>
- Hadad, S. and Brătianu, C. (2019), Dematerialization of banking products and services in the digital era, *Management & Marketing*, 14(3), 318-337. <https://doi.org/10.2478/mmcks-2019-0023>
- Hermawan, S., Khoirunisa, Z., & Tejomurti, K. (2023), Triangular insight on open banking in Indonesia, Singapore, and Australia, *International Journal of Legal Information*, 51(3), 197-215. <https://doi.org/10.1017/jli.2024.11>
- Ionașcu, A., Gheorghiu, G., Cerasela, S., Munteanu, I., Grigorescu, A., and Dănilă, A. (2023), Unraveling digital transformation in banking: evidence from Romania, *Systems*, 11(11), 534. <https://doi.org/10.3390/systems11110534>
- Mehdiabadi, A., Shabadi, V., Shamsinejad, S., Amiri, M., Spulbar, C. Birau, R. (2022), Investigating Industry 5.0 and Its Impact on the Banking Industry: Requirements, Approaches and Communications, *Applied Sciences*, Vol. 12 No. 10, pp. 5126, <https://doi.org/10.3390/app12105126>

- Mehdiabadi, A., Tabatabeinasab, M., Spulbar, C., Yazdi, A., K. and Birau, R., (2020), Are We Ready for the Challenge of Banks 4.0? Designing a Roadmap for Banking Systems in Industry 4.0, *International Journal of Financial Studies*, Vol. 8 No. 2, pp. 32, <https://doi.org/10.3390/ijfs8020032>
- Okeke, N., Alabi, O., Igwe, A., Ofodile, O. and Ewim, C. (2024), AI-powered customer experience optimization: enhancing financial inclusion in underserved communities, *International Journal of Applied Research in Social Sciences*, 6(10), 2487-2511. <https://doi.org/10.51594/ijarss.v6i10.1662>
- Oprea, I. and Duță, D. (2024), Integrating AI in Bank Digitalization: Strategies, Challenges and Future Perspectives, Legal Perspectives in the Modern Era of Technological Transformations, *ADJURIS – International Academic Publisher*, Bucharest, Paris, Calgary, 2024, p. 205-216., <https://doi.org/10.62768/ADJURIS/2024/1/13>
- Osei, L., K., Cherkasova, Y. and Oware, K., M. (2023), Unlocking the Full Potential of Digital Transformation in Banking: A Bibliometric Review and Emerging Trend, *Future Business Journal*, Vol. 9 No. 30, <https://doi.org/10.1186/s43093-023-00207-2>
- Pham, L., O’Sullivan, B., Scantamburlo, T., & Tan, T. (2024), Addressing digital and AI skills gaps in european living areas: a comparative analysis of small and large communities, *Proceedings of the AAAI Conference on Artificial Intelligence*, 38(21), 23119-23127. <https://doi.org/10.1609/aaai.v38i21.30357>
- Shalihin, M. and Safuan, S. (2021), Effects of financial inclusion and openness on banking stability: evidence from developing and developed countries, *Economics and Finance in Indonesia*, 67(2), 212. <https://doi.org/10.47291/efi.v67i2.967>
- Shetty S. K., Spulbar C., Birau R., Filip R. D. (2022), Impact of Artificial Intelligence in Banking Sector with Reference to Private Banks in India, *ResearchGate, Physics AUC*, vol. 32, 59-75, [https://www.researchgate.net/profile/Ramona-Birau/publication/368848498\\_Impact\\_of\\_Artificial\\_Intelligence\\_in\\_Banking\\_Sector\\_with\\_Reference\\_to\\_Private\\_Banks\\_in\\_India/links/63fddbdb](https://www.researchgate.net/profile/Ramona-Birau/publication/368848498_Impact_of_Artificial_Intelligence_in_Banking_Sector_with_Reference_to_Private_Banks_in_India/links/63fddbdb)
- Thakur, N. and Sharma, A. (2024), Ethical considerations in ai-driven financial decision making, *JMPP*, 15(3), 41-57. <https://doi.org/10.47914/jmpp.2024.v15i3.003>
- Versal, N., Erastov, V., Balytska, M., Honchar, I. (2022), Digitalization Index: Case for Banking System, *Statistika*, Vol. 102 No. 4, pp. 426-442, <https://doi.org/10.54694/stat.2022.16>
- Wolska, A. (2024), Bridging the Gap: The Impact of Open Banking on Traditional Banking and FinTech Collaboration, *SSRN*, <http://dx.doi.org/10.2139/ssrn.4912378>
- Xie, C. and Hu, S. (2024), Open banking: an early review, *Journal of Internet and Digital Economics*, 4(2), 73-82. <https://doi.org/10.1108/jide-03-2024-0009>
- Zeynalova, A. (2024), From closed banking to open banking: risks and opportunities, *Journal of Applied Business Taxation and Economics Research*, 3(3), 303-316. <https://doi.org/10.54408/jabter.v3i3.278>
- Digital Decade Country Report 2024: Romania, <https://digital-strategy.ec.europa.eu/en/library/digital-decade-2024-country-reports>
- [www.bancatransilvania.ro](http://www.bancatransilvania.ro)
- [www.bcr.ro](http://www.bcr.ro)
- [www.bnr.ro](http://www.bnr.ro)

## How Open Banking and AI Drive Financial Innovation: Evidence from the Romanian Banking Sector

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