The impact of AI on Digital Banking

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Abstract

The way we engage in banking has evolved over decades, and this process continues to undergo transformations. The use of banking applications has become common. While it may seem that this process is nearly exhausted, today we are witnessing another transformation in banking—this time driven by Artificial Intelligence, which enhances internal bank processes and customer interactions. Due to global disruptions such as the COVID-19 pandemic and the war in Ukraine, the world is undergoing rapid and profound changes, and the banking sector is not exempt from these changes.

One of them is the acceleration of the implementation of broad-based innovations in banking, which has led to a massive digitalization process of the sector. The COVID lockdowns has changed the preferences of customers, to which new business models of banks have adapted by emphasising mobile banking to achieve efficiency, convenience, and increased security. The latter seems to be the biggest risk in the coming years, as technology-based banking systems must deal with various cybersecurity threats. The extensive implementation of Artificial Intelligence (Open AI) can help address these issues in the three pillars mentioned above. Nevertheless, AI is likely to reshape the banking business models we have known for years.

Keywords: Artificial Intelligence, machine learning, digital banking, mobile banking, Banking Business Model Transformation, digitalisation

JEL Classification: F60, G21, L22, O12, O33

Introduction

The banking system, both in Europe and worldwide, has undergone significant transformations in the second and early third decades of the 21st century. This evolution has been made possible by the pervasive forces of globalization and digitalisation. Without doubt, the way we use banking services today differs from that at the beginning of the 21st century. While some of these changes are intuitive and obvious, such as making transfers through an application instead of personally visiting a bank branch, some of them are rather seamless, such as the evolution of the credit scoring process.

The aim of this article is to present the role of digitalization (with focus also on digitization) in the development of the banking sector, especially powered by Artificial Intelligence. The text is divided into five parts. The first briefly describes the process of digitalisation and the phenomenon that facilitated its evolution. The second focuses on user convenience as a driving factor in the development of Artificial Intelligence. In the third part, the author addresses the issue of cybersecurity associated with AI usage. The fourth is a presentation of machine learning-based solutions that banks can utilize to optimize processes by increasing work efficiency. The final chapter serves as a general conclusion, observing the creation of a new AI-based business model for banks.

The research methods employed include data analysis published by financial institutions, the European Banking Authority, the European Central Bank, the World Bank, as well as analysis and synthesis of relevant literature. The part of the study concerning the analysis of mobile banking applications was conducted empirically. This study is not a closed investigation but serves as an introduction to a more in-depth analysis of the role of digitization in the development of the banking system.

It is worth emphasizing, however, that the aforementioned processes are in a phase of continuous progress, making it an open-ended topic. In a world where thousands of brand-new applications are being released every day, we can expect the process of banking digitization to continue. Therefore, further analysis and deeper exploration of the subject are recommended in the future.

Overview of fundamental definitions associated with digital banking

Considerations regarding digital transformation should begin with a reminder of the path that banking has traversed and the processes that have shaped it, leading to the way we interact with it daily. At this point, it is worth bringing an explanation for some of the definitions further used in this paper.

Despite sounding similar, there is a wide discrepancy between digitization and digitalization. First one involves the transformation of physical or analog information into a digital format, with the aim of replacing paper records, facilitating information storage, and minimizing human errors. Moreover, digitization is believed to have a significant impact on three elements within an organization: client experience, organizational processes, and business models (Bonnet 2011). On the other hand, digitalization pertains to the automation of business procedures with the goal of enhancing operational efficiency and improving already existing workflows. We will focus on the second phenomena in this article (Microsoft 365 2022).

All above is bringing us to the wider definition of digital transformation. This definition is close to what has been written about digitalization. However, in this case, digital transformation focuses on increasing the overall company performance and revolving around harnessing knowledge and incorporating it across all facets of a business to enhance engagement and generate fresh value to the organisation (McKinsey & Company 2023).

Similarly, we should explain the definitions of two frequently used and wrongly interchanged concepts – artificial intelligence and machine learning. Artificial intelligence refers to the capability of computers to mimic cognitive human abilities like learning and problem-solving. Al involves the use of mathematical and logical processes to replicate the reasoning employed by humans when assimilating new information and making decisions (IBM 2023). Machine learning represents a sophisticated and highly adaptive procedure that consistently acquires knowledge from gathered data. In the context of online banking platforms, ML can provide personalized offers for the customer or analyse each move taken by the mobile app owner to protect him against non-authorized usage by the third person. Machine learning involves instructing computers to identify patterns in accumulated data and apply them to novel tasks they haven't encountered previously (Piloto 2023).

The above-mentioned would not be possible without the interconnectivity of international economies, commonly referred to as globalization (Jedlinska 2022). This phenomenon can be defined similarly to how the Organisation for Economic Co-operation and Development (OECD) did, treating globalization as a process that contributes to the tightening of connections between domestic markets and the products of their labour through the exchange of services, goods, as well as the flow of technology and capital. The International Monetary Fund defines globalization as a historically driven process leading to increased interdependence between national economies, primarily due to the growing importance of financial flows and foreign trade (IMF 2002). As stated by Kamila Tomczyk (2018), due to its broad and specific nature, it is difficult to provide a single, definitive definition of digital banking. However, common among the provided definitions is the emphasis on the utilization of modern technologies. Therefore, internet banking can be described as:

- A specific service provided by banks.
- A set of technical means enabling access to banking services, serving as a distribution channel for banking products and services.
- · Banking activities conducted in a specialized form.

Technological innovations in banking enhancing convenience and customer experience

One of the most important criteria in choosing a bank is convenience. For this reason, banks place great importance on providing customers with the best possible product that is easy to use. Many banks now offer mobile apps that enable customers to apply for a mortgage directly from their smartphone or tablet. These apps typically use AI-powered algorithms to assess the customer's creditworthiness, analyse their financial situation, and provide personalized loan options. Customers can also upload and submit all required documentation electronically, eliminating the need for manual paperwork and in-person meetings. By streamlining the mortgage application process, banks can offer a more convenient and faster service to their customers.

To make it easier for customers to register a new account, some banks us facial recognition technology. Customers can take a selfie with their smartphone, which is then compared to a photo on their governmentissued ID. The bank's AI algorithms can verify the customer's identity quickly and securely, eliminating the need for manual verification processes. This approach offers a more convenient and frictionless experience for the customer, while also reducing the risk of fraud.

Figure 1 presents the short outlook of the level of development achieved by certain technologies within European banks. The European Banking Authority conducted a Risk Assessment Questionnaire (RAQ), surveying banks about their perceptions regarding the implementation of certain solutions within the scope of digitalization inheritance. In the last five years, there has been a notable increase in the adoption of tech-



Source: Author's own analysis, based on figures published by European Banking Authority (2022, 88)

Figure 1. Level of development of selected technologies by European banks

nology across various domains. The percentage of respondents confirming the extensive use of biometric solutions in their organizations has risen from 60% in 2018 to nearly 80% in 2023. This growth is even more pronounced for AI applications, which have surged from 50% to 84%. The API¹, introduced into widespread use in 2022, has swiftly gained significant recognition, with 95% of respondents already incorporating it into their operations. (European Banking Authority 2022, see also Tesche 2021).

The European Union's Payment Services Directive 2 (PSD2) requires banks to open their data and services to third-party providers via APIs. This has enabled a new wave of fintech companies to enter the market, offering innovative solutions and services to customers. Banks can use APIs to offer their customers a broader range of services, such as account aggregation, personal finance management, and payments. By using open APIs, banks can also collaborate with fintech companies to offer more personalized and innovative products and services to their customers (Vives 2019). With PSD2, banks can provide access to account information to third-party providers, such as fintech companies. These companies can then use this information to aggregate a customer's accounts from different banks into one platform. This enables customers to view all their accounts in one place and manage their finances more efficiently. PSD2 also enables third-party providers to initiate payments on behalf of customers. For example, a customer could use a third-party payment initiation service to make a payment from their bank account without having to log in to their bank's website or use a separate payment gateway (Deloitte 2022).

Another example of using aforementioned solution is provided by the Spanish bank BBVA. BBVA offers an API that enables developers to access customer transaction data and build personal finance management tools. PSD2 has enabled the creation of open banking platforms that allow third-party providers to offer a range of services, such as account aggregation, payment initiation, and personal finance management. These platforms enable customers to access a range of financial services from different providers in one place. Now some of the solutions are available via their so-called BBVA Pivot Connect, which is an internal platform allowing their customers to connect and centralize business management solutions in one place (e.g., checking balances or transactions associated with suppliers, etc.) (BBVA 2023)

Banks are increasingly using chatbots and automated robo-advisors to provide customer service and financial advice. Chatbots are computer programs that use artificial intelligence and natural language processing (NLP) to communicate with customers via messaging platforms, while robo-advisors are automated investment platforms that use algorithms to provide investment advice. Banks use chatbots to provide customer service to their customers 24/7. Customers can ask the chatbot questions about their accounts, transactions, or other banking-related issues. A chatbot can also provide support for common banking tasks, such as resetting passwords or blocking a lost card. For example, Bank of America uses an Al-powered chatbot called Erica to provide personalized financial guidance to its customers. Banks also use robo-advisors to provide financial advice to their customers. Customers can answer questions about their investment goals and risk tolerance, and the robo-advisor will provide personalized investment advice and portfolio management (Bank of America 2023). For example, HSBC's robo-advisor, My Investment, provides customers with personalized investment advice based on their investment goals and risk tolerance (CNBC 2021).

Some banks use chatbots to help customers open new accounts. Customers can interact with the chatbot to provide personal information and complete the account opening process. The chatbot can also provide guidance on the account opening process and answer any questions the customer may have. Banks decides to use chatbots and robo-advisors to prevent fraud. These systems can detect suspicious activity and alert the bank's fraud team to investigate. For example, Wells Fargo's chatbot can alert customers to suspicious transactions and guide them through the process of reporting fraud (Wells Fargo 2022). Chatbots can also assist customers with loan applications. Clients can interact with the chatbot to provide personal and financial information and receive guidance on the loan application process. For example, TD Bank uses a chatbot called Clari to help customers apply for loans. Banks use chatbots and automated robo-advisors to provide customer

¹ API – Application Programming Interface – comprises a set of established rules that facilitate communication between various applications (IBM 2023)

service, financial advice, account opening, fraud prevention, and loan applications (TD Bank 2023). These systems use AI and NLP to communicate with customers and provide personalized support and advice.

Safety measures powered by AI

Cybersecurity issues are getting raised more often in the years. One of the reasons for that wasCO-VID-19 pandemic which has led to an acceleration of digital transformation in financial institutions. However, this has also increased their exposure to risks related to information and communication technology (ICT), particularly cyber risks. The shift to remote working and increased digital activity has made confidential data and ICT systems vulnerable to cyber criminals, resulting in a rise in cyber-attacks on individuals and healthcare systems. The European Banking Authority (EBA) has provided guidance to institutions on the significance of ICT security and security risk management, highlighting the importance of compliance with the EBA Guidelines. To manage ICT security risks, the EBA has outlined supervisory expectations for financial entities in its Guidelines on ICT risk assessment and in its Guidelines on ICT and security risk management. These guidelines provide a framework for financial entities to manage their exposure to ICT and security risks, including risks related to money laundering and terrorist financing. With many banks outsourcing critical functions to third-party service providers, it is essential that they have adequate security risk management capabilities. Banks must take responsibility for the management of cyber risks associated with outsourced services and functions and prudently identify, assess, manage, and mitigate their exposure to cyber risks. Third-party providers should also have appropriate governance and control frameworks and technologies in place to manage related risks. The EBA's Guidelines on Outsourcing arrangements and ICT and security risk management provide guidance on the steps and approach to managing associated risks (European Banking Authority 2019).

Furthermore, European Systemic Risk Board (ESRB) prepared materials about risks and vulnerabilities for the European financial system and pointed out cybercrimes as one of the major issues. The ESRB has identified cyber incidents as a significant threat to financial stability due to their rapid spread across the financial system, leaving authorities and institutions insufficient time to respond effectively. The ransomware attack on ION Group in January 2023, which disrupted the services of various banks, hedge funds, and brokerages, underscores the increasing capabilities of cyber attackers. The ongoing war in Ukraine and the broader geopolitical landscape have further elevated the cyber threat environment, posing risks to financial stability through cyberattacks and sabotage of critical infrastructure. The EU financial sector has experienced a high frequency of cyber incidents in recent years, with distributed denial-of-service (DDoS)² attacks being the most prevalent. The number of significant cyber incidents involving institutions directly supervised by the European Central Bank (ECB) remained elevated in 2022 and early 2023, with 37% of ECB-supervised Significant Institutions (SIs) reporting a cyber incident in 2022. DDoS attacks have become more frequent, sophisticated, and cost-effective, outpacing other types of cyber incidents. These attacks impact data availability, leading to the loss or degradation of critical services, increased remediation costs, decreased productivity, and severe reputational damage. Additionally, DDoS attacks may serve as distractions from other forms of cyber threats (ESRB 2022).

Banks use behavioural verification, also known as behavioural analysis, to verify a customer's identity. This process involves analysing a customer's actions and behaviours to confirm whether the person is who they claim to be. Behavioural verification is one of the many methods that banks use to protect themselves against fraud and other financial crimes. Mouse behaviour is also under supervision. In addition to typing behaviour, banks can also analyse a customer's mouse behaviour. For instance, ING Bank Śląski (ING) uses software that can recognize the unique patterns of mouse movement for each customer. If the system detects any irregularities, it can send an alert to the bank's fraud department. When the system detects something suspicious, the signal is passed on to the appropriate services. ING also uses voice recognition

² DDoS – Distributed Denial of Service – attacks are intricate assaults strategically created to overwhelm a network with excessive and unnecessary traffic (Cisco 2023).

software to confirm a customer's identity. The software analyses the customer's voice pattern and compares it to a pre-recorded voice sample to verify their identity. Moreover, banks can also use location data to verify a customer's identity. For example, if a customer normally logs in from a specific location and suddenly logs in from a different location, the bank's system may flag this activity as suspicious. Transaction history can be also under investigation if some last activities might seem to be suspicious. Banks can analyse a customer's transaction history to detect any unusual activity. For instance, if a customer suddenly makes a large transaction that is not typical of their usual behaviour, the bank may investigate the transaction further. The next used feature is typing behaviour. Every individual has a unique typing behaviour, including typing speed, rhythm, and other habits. Banks can analyse this behaviour and compare it to the known typing behaviour of the customer to verify their identity (ING Bank Śląski 2023).

The COVID-19 pandemic has led to a widespread increase in the use of technology, which has also resulted in a higher number of incidents related to information and communication technology. The complexity and interconnectedness of ICT systems, including those owned by banks and those reliant on third-party providers, have made them vulnerable to cyber-attacks and other ICT-related incidents, which can have a significant impact. Geopolitical tensions have further increased cyber and information security threats, such as DDoS attacks. However, banks have made efforts to address these challenges, as evidenced by a decrease in IT-related risk events from around 72,000 in 2020 to about 50,000 in 2021. This decline may be attributed to increased ICT investments by banks, which highlight the importance of further investments in ICT and related security measures. However, a lack of resources, including skilled staff, may pose challenges for further investments in ICT security infrastructure. While the frequency of cyber-attacks remains high, the majority of responding banks (88%) report that they did not experience a successful cyberattack in the first half of 2022, indicating progress in addressing ICT risks (European Banking Authority 2022).

Still, the society should be aware of the risks resulting from full reliability on technology. Each information we share on social media or just by using mobile banking might be re-used by these platforms for further analysis. Thus, self-awareness together with control of our presence online will be the key to the cybersecurity in the future (Acquisti 2016, Aldasoro 2020). It is also possible to use so called "digital footprint" of each credit customer to calculate credit worthiness. These digital footprint variables are straightforward and readily available metrics that any digital-oriented firm can collect at minimal expense (Berg 2019,Bertrand 2018).

Cybersecurity plays a crucial role in the financial sector. According to the European Central Bank, nearly 83% of banks consider process automation as a critical tool for cost reduction, particularly by transforming outdated IT systems. These banks allocate approximately 22% of their IT budget to digital transformation initiatives, while US banks tend to allocate around 40%. Although the overall business relevance of artificial intelligence is somewhat lower, it is noteworthy that 60% of banks are already employing AI, and additional use cases are under development. However, mobile banking has a bright future ahead. Even though the mobile channel is more popular than internet banking among users (36% and 21% respectively), there is still room for further development (ECB 2021, Prescott 2015).

Efficiency – brief overview of selected solutions

In the context of the ongoing digitalization of European banking, a compelling factor propelling this transformation is convenience. Within the dynamic landscape of financial institutions, the pivotal role played by an artificial intelligence solutions is increasingly apparent. This integration is driven by the quest for improved user experiences, streamlined operational processes, and the proactive facilitation of decision-making. As a result, the banking sector is undergoing a profound reconfiguration, with convenience emerging as a central tenet in steering this digital evolution.

AI Credit scoring

Artificial intelligence has revolutionized the credit scoring process for banks. Traditional credit scoring relied on static data such as credit history and income, but Al-based credit scoring uses a wider range of

Alternative data sources	Banks can use alternative data sources to supplement traditional credit data, such as social media activity, online behaviour, and utility bill payments. Al algorithms can analyse this data to identify patterns and correlations that can predict creditworthiness.
Predictive analytics	Al algorithms can analyse large amounts of data to identify patterns and trends that can predict credit risk. For example, banks can use Al algorithms to analyse a customer's spending behaviour, income, and credit history to predict the likelihood of default.
Natural language processing (NLP)	Banks can use NLP to analyse unstructured data, such as loan applications, customer feedback, and social media activity. NLP algorithms can analyse this data to identify patterns and sentiment that can predict credit risk.
Fraud detection	Al algorithms can detect fraudulent activity by analysing patterns and anomalies in customer data. For example, Al algorithms can detect when a customer's spending behaviour suddenly changes, indicating a possible case of fraud.
Personalization	Al algorithms can provide personalized credit offers based on a customer's financial behaviour and credit history. For example, banks can use Al algorithms to analyse a customer's spending habits and offer them a credit product that matches their needs.
Continuous monitoring	Al algorithms can monitor a customer's creditworthiness on an ongoing basis, allowing banks to identify changes in credit risk over time. This allows banks to proactively manage credit risk and take action to mitigate any potential problems.

Table 1. Selected AI solutions with possible use during credit scoring process

Source: Authors' own analysis, based on figures published by the World Bank Group (2019).

data sources and predictive algorithms to analyse credit risk. Table 1 shows the selected solution which can be used during credit scoring process (Nan Jiang 2021).

Concluding, banks use AI in the credit scoring process to supplement traditional credit data with alternative data sources, predictive analytics, NLP, fraud detection, personalization, and continuous monitoring. This allows banks to improve credit risk assessments and provide better credit offers to customers (Fuster 2019).

BLIK technology

Polish banking sector is a good example how relatively young system can become very mature in terms of technological development. Referring to this, so-called "BLIK" is a tool which significantly raised security of transaction and made them one of the easiest ways to make online payment. It is a mobile payment system that allows users to make transactions using their smartphones, making payments faster and more convenient than traditional payment methods. It was launched in 2015 as a joint initiative between six of Poland's largest banks: Alior Bank, Millennium Bank, Bank Zachodni WBK, ING Bank Ślaski, mBank, and PKO Bank Polski. To use BLIK, customers must have an account in one of these banks and download the BLIK mobile app from their respective app stores. The app can be used to make payments to other BLIK users by entering their phone number or selecting them from the user's contacts list. One of the primary benefits of BLIK is its ease of use. Customers can make payments guickly and easily, without needing to carry cash or cards. The app generates a unique six-digit code for each transaction, which the user must enter to confirm the payment. This provides an additional layer of security for users, making BLIK a safe and reliable payment method. Another advantage of BLIK is its versatility. In addition to peer-to-peer payments, the system can also be used for cash withdrawals at ATMs without the need for a physical card. This is especially useful for customers who may have lost or forgotten their card, or for those who prefer not to carry cash. Businesses can also benefit from using BLIK. By accepting BLIK payments, merchants can increase their revenue by providing customers with a fast and convenient payment option. BLIK transactions are processed in real-time, which means that businesses can receive payments quickly, helping to improve their cash flow and reduce the risk of late payments. Overall, BLIK is a fast, secure, and convenient payment system that is transforming the way people in Poland make transactions. With its ease of use and versatility, BLIK is becoming an increasingly popular payment method for both consumers and businesses alike.

Co-operation with fin-tech

Collaboration between banks and fintech companies is becoming increasingly common. Therefore, this has led to the regulation of such partnerships, with one of the entities overseeing this being the US Federal Reserve System (Fed). Fed published a report describing various forms of third-party partnerships that banks and credit unions engage in. These partnerships can take on different forms, such as operational technology partnerships, customer-oriented partnerships, and front-end banking partnerships. Operational technology partnerships involve using third-party technology to improve processes, while customer-oriented partnerships focus on enhancing customer-facing aspects of the business. Front-end banking partnerships involve combining a bank's infrastructure with technology from a third-party provider, which interacts directly with the customer (Fed 2023).

The digital transformation of the banking industry and the rising expectations of customers are driving collaboration between fintech firms, traditional financial institutions, and third-party solution providers. The goal of this collaboration is to expand the range of modern financial services offered to customers. Traditional bilateral partnerships are being replaced by more collaborative relationships, which will lead to continued innovation and change. APIs will play a crucial role in facilitating this collaborative innovation. Banks and third-party providers will be able to share and co-create solutions using APIs, allowing them to explore new products, service delivery methods, and revenue models. These collaborations will result in a significantly improved and seamless experience for customers (Stulz 2019).

Concerns about financial stability arise in relation to technology and its impact on the non-traditional sector. As the non-traditional sector, including fin-tech, expands, certain risks to financial stability may increase. The use of similar technological innovations by both the fin-tech credit sector and traditional banks can also influence financial stability. Moreover, certain risks can quickly become systemic, as cyberattacks have the potential to impact multiple financial institutions simultaneously directly or indirectly. The concentration of global cloud service providers further adds to systemic vulnerabilities. However, determining the appropriate responses to these new systemic risks is not straightforward. The usual macroprudential toolkit used to address systemic risk, such as capital surcharges for Global Systemically Important Banks (G-SIBs) or countercyclical capital buffers to mitigate banking system procyclicality, may not be readily applicable. This is primarily because many of these new activities are not yet within the regulatory perimeter, and there is uncertainty regarding the design and effective implementation of such macroprudential tools. Additionally, the COVID-19 crisis has necessitated rapid adjustments in banking and other regulations, making it challenging to assess their impacts at present (Carletti 2020, Auer 2019).

Chat GPT

Chat GPT can be a powerful tool for banks to improve customer experience, reduce costs, and manage risks. By leveraging the power of AI and NLP, banks can provide personalized, efficient, and secure services to their customers. ChatGPT is an artificial intelligence tool that can be used in the financial services industry for a variety of purposes. It can help to extract financial information from documents, provide introductory analysis for bankers, offer high-level financial advisory, simplify financial calculations for consumers, and improve customer service. Additionally, ChatGPT can be used for product marketing, generating marketing campaign scripts and creative ideas. When considering the broader implications of AI in financial services, there are several additional use cases, including real-time financial market trading advice, financial fore-casting, fraud detection, product personalization, risk management, and enhancing productivity through improved communication with complex Excel formulas. The use of AI in financial services has the potential to significantly improve efficiency and effectiveness in various areas of banking, including customer service, risk management, and product development. By leveraging AI technologies like ChatGPT, businesses can gain a competitive advantage and provide better service to their customers.

However, as Chat GPT is relatively new solution on the market further tests are necessary, as the tools still tends to make minor mistakes. Another issue might be the intellectual property aspects. Some countries are concerned how such tools may impact fruits of our work. For that reason, Italian data protection authority, known as Garante, decided to ban using Chat GPT for almost a month (Reuters 2023). It is also difficult to assess what will be a reaction of the other countries as this topic is getting raised more and more often. Nevertheless, we can expect that machine learning solution will be adopted in this or different way with even bigger expansion in the future.

New business models on the horizon

Over time, as the process of digitalisation in banking began to advance, it became evident that it would influence the way the bank operates daily, and consequently, how it shapes its business model. This impacts relationships both within and outside the organization – on employees, as well as on customers or business partners. When we look at the number of bank branches in the European Union, their total count has been consistently decreasing, and in the year 2021, it 30% lower compared to 2008. Today, it stands at nearly 140,000 branches throughout the EU (Figure 2).

However, this change can be explained in two ways. First, it is related to the process of digitalisation and, consequently, to customer preferences. Customers increasingly and willingly choose to use mobile banking rather than visiting a branch. As reported by *Rzeczpospolita*, a major mainstream Polish broadsheet, approximately 20 million Poles, use mobile banking actively (Polish Banking Association 2023). This calls into question the maintenance of a consistently substantial number of branches and provides grounds for their consolidation. Moreover, the decrease in the number of branches may also be due to the number of mergers and acquisitions in the banking sector.

According to the European Banking Authority (2021), the growing utilization of digital platforms offers various potential benefits for customers and financial institutions within the European Union. It enables easier access to financial products and services, while also providing lenders with cost-effective means of reaching a broader customer base without the need for a traditional sales network. However, as the reliance on digital platforms increases among lenders for service marketing, it can create novel dependencies in terms of financial, operational, and reputational aspects between banks and non-financial entities (European Banking Authority 2019). The consolidation is also visible in the number of employees in the European banking sector which is decreasing year by year. Between 2008 and 2021, the number of employees in the credit



Figure 2. Number of domestic bank branches in the EU



Figure 3. Number of employees in the credit institutions in the EU

institutions sector within the European Union decreased by nearly 25% to the level of 2.1 million workers (See Figure 3).

The decrease in the number of banking employees may be a consequence of the decline in the number of branches; however, another contributing factor could be the advancing digitalisation of the sector. According to Eurofound (2019), digitalisation may reshape the labour market within banking. They indicated that there will be more job opportunities for highly qualified workers, especially those with ICT backgrounds, in favour of low-skilled and voluntary atypical employment.

One radical perspective has been presented by the World Economic Forum (2023). According to the report, 83 million jobs will disappear between 2023 and 2027 due to macro trends and technology. Non-etheless, there will be 69 million new job opportunities within the same period. It is important to note that this projection extends beyond the field of banking.

While the provided numbers are merely forecasts, some studies demonstrate that the pandemic has already changed the way we work. Within the European banks online work constitutes now nearly 60% of working time (Portilla 2022). Additionally, a new generation of workers (Gen Z) has entered the market. Zoomers have different preferences and expectations regarding their current and future employers. While salary remains important for them, as it does for other generations, what sets them apart is their high appreciation for diversity and working in a place that shares the same values as they do (Deloitte 2023).

Governments and companies are autonomously moving in the direction where work-life balance plays a key role, as they are initiating and advocating for the idea of a four-day work week. Numerous studies also support this trend, indicating that such a work model not only does not reduce productivity but can contribute to better well-being and, sometimes, even higher productivity. However, it is too early to draw unequivocal conclusions, as the tests so far involve a relatively small group, making it difficult to definitively assess how the introduction of this format across the entire economy would impact overall productivity (Joly 2023).

Conclusions

Without a doubt, ubiquitous technology, and the progressing digitization, accelerated further by COVID, have led to a change in the way we bank today compared to the past. With a certain degree of probability, it can be said that this process will continue to progress. Thanks to the more widespread use of AI solutions,

such as ChatGPT, these changes will likely become more pronounced and increasingly groundbreaking. Furthermore, these changes will not be one-dimensional. They will impact every facet of banking, starting from internal solutions streamlining the work of entry-level workers, through communication and strategysetting by the management, and concluding with what will be offered to the end consumer, such as an account holder in a bank. Given that this process is in its flourishing stage, the topic has certainly not been exhausted in this material, and a more in-depth analysis in the future is advisable.

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