DIGITAL BANKING SERVICES: FEATURES AND EMERGING TRENDS

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ABSTRACT: *This paper provides an overview of e-banking services, examining their key features, benefits, and challenges, with particular emphasis on internet and mobile banking as strategic distribution channels and the role of instant payments in digital financial transformation. Over recent decades, the banking sector has undergone profound changes driven by the integration of information and communication technologies. Internet banking initially enabled complex account management, while mobile banking extended real-time, convenient access to essential financial functions, enhancing financial inclusion, operational efficiency, and customer engagement. Building on these developments, instant payments have emerged as a competitive alternative to traditional card-based methods, allowing real-time, 24/7 fund transfers. These systems are relevant both for countries with established digital payment infrastructures and for cash-dependent economies seeking digital alternatives. Adoption has been rapid in less digitized markets such as Brazil and India, whereas uptake in Europe remains comparatively limited, highlighting both opportunities and challenges in the global expansion of real-time payment systems.*

KEY WORDS: *e-banking, internet banking, mobile banking, digital transformation, instant payments, financial inclusion.*

JEL CLASSIFICATIONS: *G21, G28, O33, E58.*

1. INTRODUCTION

The evolution of the banking industry has been significantly influenced by technological advancements, globalization, and shifting consumer demands. Over recent decades, the integration of information and communication technology (ICT) has revolutionized banking services, transforming them from traditional, branch-based transactions into highly sophisticated digital platforms accessible anytime and anywhere. The convergence of technology and finance has led to the development of innovative

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channels through e-banking (online and mobile banking), which continue to redefine the banking experience for both individuals and corporations.

The evolution of digital banking services has significantly reshaped the financial landscape, offering a wide range of opportunities and challenges. With the growing prominence of online and mobile banking, financial institutions have adapted their strategies to meet the increasing demand for accessible, efficient, and secure banking services. Against this background of rapid digitalization and changing consumer expectations, instant payments have emerged as a major driving force behind the growth of e-banking. By enabling consumers and businesses to conduct real-time transactions with immediate fund transfers, instant payment systems enhance convenience and efficiency, ultimately transforming the way digital financial services are accessed and used.

Notably, India's UPI and Brazil's PIX have achieved rapid uptake due to strong regulatory support, interoperable infrastructures, and favourable network effects, while European markets remain in the early stages of adoption, despite ongoing initiatives such as the Instant Payments Regulation (IPR) designed to promote harmonization and growth across the EU.

2. OBJECTIVES AND METHODOLOGY

This study aims to provide a comprehensive overview of the key components and ongoing developments in e-banking services, with a particular focus on innovative payment systems, especially instant payments, and their role in shaping the future of financial transactions. The research seeks to identify and analyse current trends in digital banking, highlighting the main innovations, challenges, and opportunities influencing the evolution of financial services. From a methodological perspective, the paper adopts a descriptive research approach based on the analysis of secondary data obtained from academic literature, official reports, and publicly available statistical sources. This approach is used to assess the factors influencing the adoption of digital banking services at both the global and European levels, offering valuable insights into emerging trends and the shifting dynamics of the global retail payments landscape.

3. CONCEPTUAL FRAMEWORK

The banking sector has undergone a profound transformation over the past decades, driven by technological innovation, globalization, and evolving consumer expectations. Traditional branch-based banking has progressively given way to digital banking services, with internet banking initially enabling customers to manage accounts and execute complex transactions remotely, thereby enhancing efficiency, reducing costs, and expanding accessibility (Drigă & Isac, 2014; Wewege et al., 2020; Isac & Drigă, 2015).

Internet banking is typically accessed through a web browser on a computer, offering detailed account management and sophisticated transactional capabilities. In contrast, mobile banking operates via dedicated applications on smartphones or tablets, providing convenient, real-time access to fundamental banking functions such as fund

transfers, balance inquiries, and bill payments. While internet banking is particularly suited for complex activities, mobile banking excels in convenience for everyday transactions (Drigă, 2015).

Mobile banking represents a key evolutionary step in electronic banking, functioning as a wireless distribution channel that enables customers to access financial information, conduct transactions, and make payments via mobile devices. As a subset of e-banking, it extends traditional banking infrastructures by leveraging mobile communication technologies to deliver services more efficiently (Aithal, 2016; Hayashi & Toh, 2020). This development has enhanced convenience, increased customer engagement, and fostered financial inclusion, particularly in emerging markets (Barnes & Corbitt, 2002; Vishnuvardhan et al., 2018; Wijayanti et al., 2021). Adoption of mobile banking has been widely analysed through theoretical frameworks which emphasize the roles of perceived usefulness, ease of use, trust, and network effects in shaping user behaviour (Sandhu & Arora, 2022).

By establishing real-time access, widespread user adoption, and interoperable digital infrastructures, mobile banking has laid the technological and behavioural foundations for the emergence of instant payment systems, which represent the next stage in the evolution of digital financial services. Building on these foundations, instant payment systems have emerged as a crucial innovation, enabling real-time, 24/7 fund transfers that enhance efficiency, security, and convenience compared to traditional card-based or batch payment methods (Wewege et al., 2020; Capgemini, 2024). Markets such as India and Brazil exemplify the successful adoption of interoperable infrastructures through UPI and PIX, facilitated by strong regulatory support and network effects. In contrast, European markets remain in the early stages of adoption, although legislative initiatives such as the European Instant Payments Regulation (IPR) aim to harmonize standards and accelerate uptake (ACI Worldwide, 2024; Islatince, 2024).

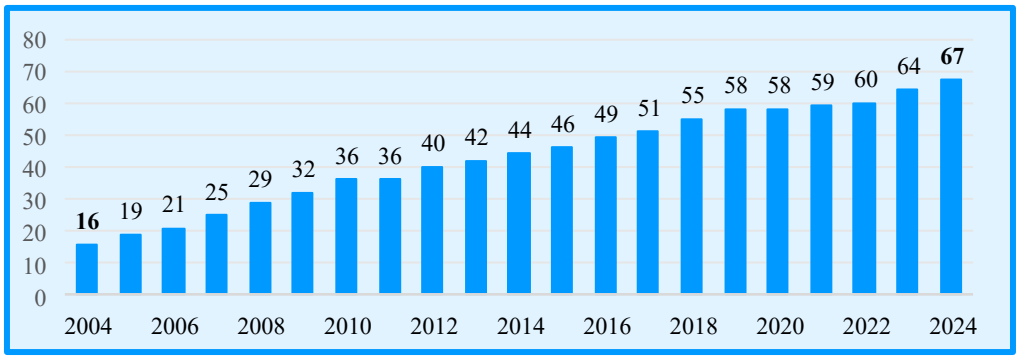
Overall, the evolution from internet banking to mobile banking, and subsequently to instant payments, illustrates a continuum of technological innovation that shapes the accessibility, efficiency, and inclusivity of modern financial services. Integrating these developments with theoretical models highlights the interplay of technological, institutional, and regulatory factors in determining adoption rates and the effectiveness of digital financial ecosystems.

Together, internet and mobile banking constitute the core channels of digital banking, providing the infrastructure and user engagement necessary for the development of advanced services, such as fast payments (Kulk, 2021; Khiaonarong & Humphrey, 2022). Consequently, digital banking services represent a powerful tool for enhancing both the payment experience and overall financial well-being. This is particularly evident in fast payments, which make funds immediately available to the beneficiary (Drigă & Dura, 2022; Pranger, 2024). Thanks to advances in information and communication technologies, including the widespread use of smartphones and the internet, have made retail payments instantaneous in many countries. Instant payments ensure that the transmission of the payment message and the receipt of final funds by the payee occur in real time, delivering efficiency and certainty for all parties involved.

4. THE EVOLVING LANDSCAPE IN DIGITAL BANKING

Internet usage has undergone a profound transformation since the launch of the first website in August 1991, when connectivity was limited to only a few million users, reaching approximately 5.35 billion people worldwide by January 2024, thereby illustrating sustained and accelerating growth in global digital connectivity over the past three decades (We Are Social & DataReportal, 2024). This widespread expansion of internet access, alongside technological innovation, the digitalization of financial services, and shifting consumer behaviour, has been a key driver in the global adoption and diffusion of internet banking services.

This dramatic increase in global internet connectivity has established the necessary infrastructure and user base for digital financial services to expand, providing the foundation for the rising adoption of internet banking across the European Union. Thus, figure 1 illustrates the average internet banking adoption rate in the European Union from 2004 to 2024. Over this period, adoption exhibited a clear upward trend, reflecting the increasing prevalence of digital financial services among EU citizens. In 2004, only 16% of the population used internet banking. This figure increased steadily to 51% by 2018, after which growth continued at a slower pace, reaching 67% in 2024.



Source: based on data from Eurostat

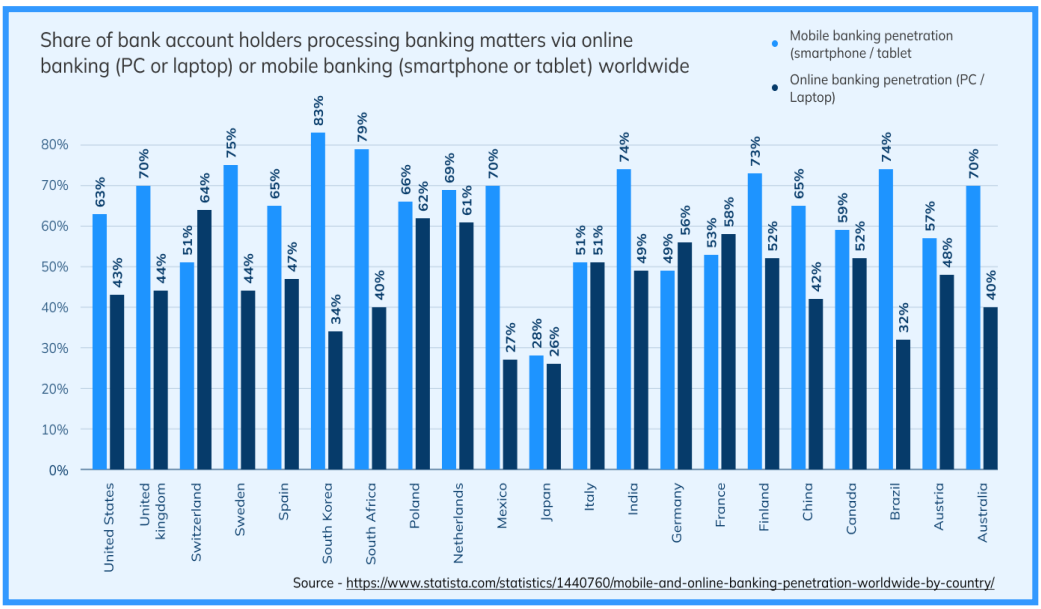
Figure 1. A two-decade overview of EU average internet banking usage: statistical trends from 2004 to 2024 (%)

The data indicate a sustained rise in digital banking usage, likely driven by technological innovation, expanded internet access, and heightened consumer confidence in online financial platforms. The most pronounced growth occurred between 2004 and 2014, during which adoption rates more than doubled, underscoring the rapid initial uptake of internet banking across the EU.

Following the expansion of internet banking, mobile banking has emerged as a key channel for digital financial services. The proliferation of smartphones, improvements in mobile internet connectivity, and the convenience of on-the-go transactions have driven rapid adoption across the European Union and worldwide. Although initial uptake was modest, usage has accelerated sharply over the past decade, reflecting both technological accessibility and growing consumer trust in mobile

platforms. Consequently, mobile banking has become a complementary and, in many contexts, primary method of digital financial engagement, further reshaping the landscape of personal finance globally. By 2024, mobile banking had surpassed 2.8 billion users worldwide, representing approximately 35 % of the global population, and had become the dominant channel for digital banking transactions in numerous markets.

The transformation and future direction of banking in a digital world reflect the shift from traditional online banking to mobile banking, with an ongoing evolution toward instant payment solutions that enable real-time, seamless financial transactions. The data in figure 2 highlight significant differences between mobile banking (smartphone/tablet) and online banking (PC/laptop) penetration globally, confirming the gradual shift from traditional digital channels to mobile solutions. According to a Statista Consumer Insights survey, in many countries, the penetration rate of mobile banking is over 70%. The leader in this aspect is South Korea, where this figure in 2023 was 83%. In most of the countries, mobile banking has a higher usage rate than online banking, reflecting a shift in consumer behaviour toward mobile devices and real-time financial services. Countries such as South Africa (79%), Sweden (75%), Canada (74%), Brazil (74%), and Australia (70%) also stand out for their very high mobile banking adoption, while online banking via PC or laptop is considerably lower in these markets.



Source: https://www.statista.com

Figure 2. Online banking and mobile banking penetration worldwide, 2023

In advanced European economies such as France, Finland, the Netherlands, and Germany, the use of the two channels is relatively balanced, although mobile banking remains dominant. This suggests a high level of digital maturity, where users combine channels depending on the complexity of banking operations.

In contrast, Japan and Mexico show the lowest usage levels for both types of services, indicating slower adoption of digital banking or a stronger preference for traditional channels. Italy shows identical usage rates for mobile and online banking (51%), suggesting a gradual transition between the two channels.

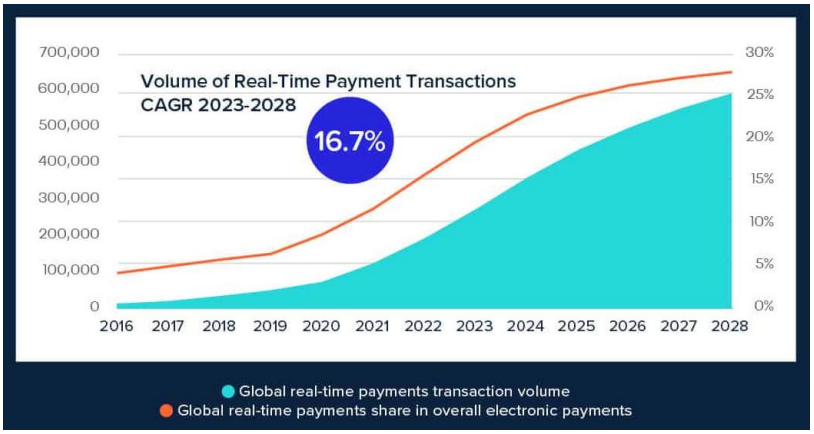
The data also show that in some countries, such as Switzerland and Poland, online banking via PC remains relatively important, especially for more complex operations, even as mobile banking gains ground. Overall, the figure confirms that mobile banking has become the dominant e-banking channel globally due to its accessibility, ease of use, and constant availability. This trend strengthens the role of mobile banking as a technological and behavioural foundation for the development of advanced financial services, including instant payment systems, which rely on mobile access, widespread adoption, and interoperable digital infrastructures.

5. INSTANT PAYMENTS - A KEY DRIVER OF E-BANKING USAGE

The adoption of instant payment services is transforming retail banking by enabling faster, more convenient, and real-time transactions, which may become the new normal in the payments landscape (Hartmann et al., 2019). Instant payments are rapidly reshaping global finance. More than 80 countries have adopted such schemes, and projections showing they will represent 22% of non-cash transactions by 2028 (Capgemini, 2024). For businesses, instant payments improve cash flow, reduce delays, and enhance customer loyalty, while financial institutions benefit from greater efficiency and alignment with modernization initiatives.

More than just a trend, instant payments represent the next stage in the evolution of digital financial services. They have become a major driver of e-banking growth, enabling consumers and businesses to make real-time transactions with immediate fund transfers and greater convenience, ultimately transforming the way digital financial services are accessed and used. The shift from traditional payment methods to real-time payments is accelerating year by year. In 2023, nearly one-fifth of all electronic payments globally were real-time, and by 2028, this share is expected to exceed one-quarter, highlighting the growing global trend toward faster and more efficient payment systems.

Real-time payments have experienced unprecedented growth in recent years, emerging as a cornerstone of the global digital payments landscape. In 2023, over 266 billion transactions were processed in real time, representing a 42% year-on-year increase, and projections suggest that this volume will surpass 575 billion by 2028, accounting for approximately one-quarter of all electronic transactions worldwide (ACI Worldwide, 2024). The adoption of real-time payments is driven by multiple factors, including the widespread use of mobile wallets, the expansion of interoperable and inclusive payment ecosystems, and active collaboration among regulators, banks, fintechs, and merchants.



Source: ACI Worldwide, Prime Time for Real-Time Global Payments Report, https://www.aciworldwide.com/real-time-payments-report

Figure 3. Global real-time payments volume and share in overall payments (2016-2028f)

Key markets such as India, Brazil, and Thailand have demonstrated particularly rapid uptake, while emerging markets (including Egypt, Peru, and Croatia) exhibit the highest compound annual growth rates, reflecting both modernization efforts and strong consumer demand.

Source: ACI Worldwide, Prime Time for Real-Time Global Payments Report, https://www.aciworldwide.com/real-time-payments-report

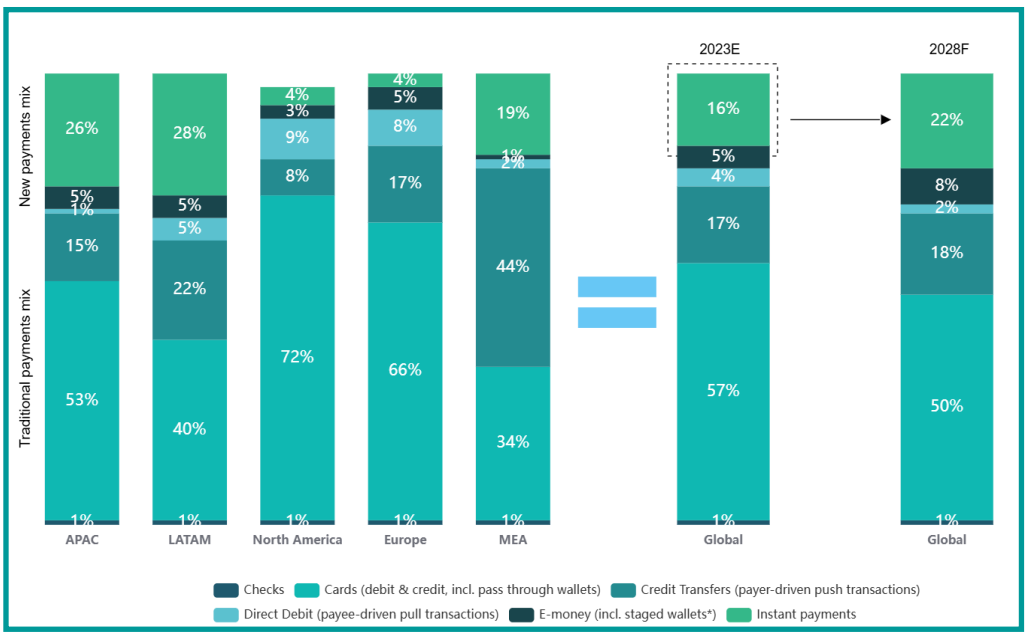
Figure 4. Top 5 real-time payment markets globally (2022)

Instant payments represent a crucial instrument in the modernization of financial ecosystems. Two of the most successful instant payment solutions are India's Unified Payments Interface (UPI) and Brazil's PIX. Introduced in 2016 by the National Payments Corporation of India, UPI was designed to integrate bank accounts into a unified platform, thereby facilitating large-scale adoption of digital payments, whereas PIX, launched in 2020 by the Central Bank of Brazil, aimed to accelerate the digitization of payments and enhance financial inclusion. Both systems are characterized by instantaneity, with funds available to the beneficiary within seconds, and

interoperability, allowing transfers across different financial institutions and fintech providers (Camacho & Costa da Silva, 2024).

The impact of these systems has been substantial. PIX has contributed to reducing reliance on cash in Brazil and facilitating financial inclusion, whereas UPI has driven rapid growth in digital transactions and strengthened India's fintech ecosystem, fundamentally altering consumer payment behaviour. The success of both systems can be attributed to several common critical factors: active regulatory support, ensuring clear rules and reliable infrastructure; an open and collaborative ecosystem, promoting interoperability and innovation; network effects, both on the user and provider side; and secure and scalable systems, essential for maintaining trust and accommodating high transaction volumes.

Figure 5 shows the global and regional composition of payment types, highlighting the shift from traditional methods to digital and instant payments. In 2023, traditional payments dominate globally (57%), while instant payments account for 16%. By 2028, instant payments are projected to grow to 22%, reflecting the accelerating adoption of real-time transaction systems. Regionally, Latin America, Asia-Pacific and Middle East and Africa exhibit higher current usage of instant payments (28%, 26% and 19%, respectively), whereas North America and Europe remain largely dependent on traditional payments and cards. Across all regions, the trend indicates a gradual decline of traditional payments and growing importance of digital channels, especially instant payments, which are expected to become a central component of the global payments landscape by 2028.



Source: Capgemini, World Payments Report

Figure 5. Instant payments volumes will grow significantly by 2028

While adoption of instant payments has been rapid in Asia and Latin America, European economies have so far lagged behind. According to ACI Worldwide's "Prime Time for Real-Time" report (published in collaboration with GlobalData), European economies are largely falling behind in the broad adoption of instant payments. While significant growth is expected in Europe - with instant payment transactions anticipated to increase from 13.2 billion in 2022 to 34.2 billion by 2027, representing a compound annual growth rate of 21% - most European countries are far behind emerging economies in Asia and Latin America in instant payments adoption. While India is still the dominant force in instant payments, accounting for 46% of all transactions globally (followed by Brazil, China, Thailand, South Korea), no EU country ranks among the top 10 global instant payment markets (Fintech News Switzerland, 2023).

Instant payments are steadily gaining ground in Europe, becoming an important component of the modern digital financial landscape. A relevant example is Germany, which recorded 1.1 billion instant payment transactions in 2022 and, according to estimates, it is expected to reach 2.7 billion by 2027. The figures reflect a significant level of adoption, but current trends indicate that this payment method is only at the beginning of a period of rapid growth. The expected development results not only from the growing interest of consumers and businesses in fast and efficient transactions but also from the need to adapt to an increasingly digital economy.

The rapid growth of instant payments also reflects a broader European trend, where consumers and companies are becoming increasingly demanding in terms of speed, accessibility, and convenience when making payments - essential factors driving the increased use of internet and mobile banking services.

Instant payments are rapidly transforming the global financial landscape, enabling real-time transactions that enhance efficiency, convenience, and financial inclusion. Leading markets such as India, Brazil, and Thailand illustrate the impact of interoperable and inclusive payment infrastructures, while emerging economies continue to drive high growth. Although Europe currently lags behind, adoption is accelerating, reflecting rising demand from both consumers and businesses. To support this transition, the European Commission published a legislative proposal on 26th October 2022 aimed at expanding instant payments across Europe. The Council and the European Parliament reached a provisional agreement on 7th November 2023, reflecting the EU's commitment to accelerating adoption, enhancing transaction efficiency, and modernizing national payment infrastructures in alignment with global trends in real-time payments.

6. CONCLUSIONS

The evolution of digital banking demonstrates a clear trajectory from traditional branch-based services to internet and mobile banking, culminating in the emergence of instant payment systems. Technological advancements, increased internet access, and the widespread adoption of smartphones have been critical drivers of this transformation, enabling consumers and businesses to access financial services more conveniently, efficiently, and securely. Internet banking laid the foundation for digital financial engagement, with usage rates in the European Union rising from 16% in 2004 to 67% in

2024, highlighting the significant impact of ICT integration on consumer behaviour. Mobile banking has further accelerated this trend, surpassing 2.8 billion global users by 2024 and emerging as the dominant channel for digital transactions due to its accessibility, ease of use, and constant availability.

The shift from internet and mobile banking to instant payments represents a natural progression in the digitalization of financial services. Instant payments, offering real-time, 24/7 fund transfers, enhance transaction efficiency, convenience, and financial inclusion. While internet banking initially provided consumers with detailed account management and complex transaction capabilities, and mobile banking brought convenience and real-time access to fundamental financial functions, instant payments have redefined the pace and expectations of financial transactions.

In recent years, empirical research on electronic payment systems and their role in economic development has expanded, reflecting the growing significance of these innovations within the global financial ecosystem. Leading markets such as India, Brazil, and Thailand exemplify the impact of interoperable and inclusive payment infrastructures, while emerging economies continue to drive high growth. Implementations including Brazil's PIX and India's UPI highlight the benefits of instantaneity, interoperability, and collaborative infrastructures, reinforcing financial inclusion and driving innovation within national payment systems.

Although European economies currently lag behind leading markets, significant growth is anticipated, reflecting increasing consumer and business demand for speed, convenience, and efficiency. By 2028, instant payments are projected to account for a substantial share of global electronic transactions, underscoring their strategic importance not only for operational efficiency and financial inclusion but also as a foundation for the continued evolution of digital financial services worldwide.

REFERENCES:

[1]. Aithal, P.S. (2016) *A comparison of ideal banking model with mobile banking system*, International Journal of Current Research and Modern Education, 1(2), pp. 206-224

[2]. Aurazo, J., Frost, J., Anneke Kosse, A. (2024) *Faster digital payments: global and regional perspectives*, Bank for International Settlements, papers no. 152

[3]. Barnes, S.J., Corbitt, B. (2003) *Mobile banking: concept and potential*, International Journal of Mobile Communications, 1(3), pp. 273-288

[4]. Bech, M. L., Shimizu, Y., Wong, P. (2017) *The quest for speed in payments*, BIS Quarterly Review, March

[5]. Camacho, T.S., Costa da Silva, G.J. (2024) *Instant payments and Brazilian PIX: lessons from the Indian experience in the 2010's*, Brazilian Keynesian Review, 10(2), pp. 287-311

[6]. Chung, N.; Kwon, S.J. (2009) *The Effect of Customers' Mobile Experience and Technical Support on the Intention to Use Mobile Banking*, Cyber Psychology and Behavior, vol. 12, pp.539-543

[7]. Donner, J.; Tellez, C.A. (2008) *Mobile Banking and Economic Development: Linking Adoption, Impact and Use*, Asian Journal of Communication, vol. 18(4), 318-332

[8]. Drigă, I., Niță, D., Dura, C. (2009) *Aspects regarding internet banking services in Romania*, Annals of the University of Petroşani, Economics, 9(3), pp. 239-248

[9]. Drigă, I. (2012) *Produse şi servicii bancare*, Editura Sitech, Craiova

[10]. Drigă, I., Isac, C. (2014) *E-banking services - features, challenges and benefits*, Annals of the University of Petroşani. Economics, 14(1), pp. 49-58

[11]. Drigă, I. (2015) *The rise of mobile banking*, Annals of the University of Petroşani, Economics, 15(2), pp. 29-36

[12]. Drigă, I., Dura, C. (2022) *Retail payments landscape in Europe*, Annals of the University of Petroşani, Economics, 22(2), pp. 181-192

[13]. Hartmann, M., Gijsel, H.V., Plooij, M., Vandeweyer, Q. (2019) *Are instant payments becoming the new normal? A comparative study*, ECB Occasional Paper, no. 229

[14]. Hayashi, F., Toh, Y.L. (2020) *Mobile banking use and consumer readiness to benefit from faster payments*, Economic Review, 105(1), 21-36

[15]. Islatince, N. (2024) *Digital transformation in the banking sector: A review of the use of internet banking, mobile banking and digital banking*, Journal of Current Research on Business and Economics, 14(1), pp. 1-18

[16]. Isac, C., Drigă, I. (2015) *Internet banking services - A business necessity in the third millennium*, Annals of the University of Petroşani, Economics, 15(2), pp. 53-62

[17]. Khiaonarong, T., Humphrey, D. (2022) *Instant payments: Regulatory innovation and payment substitution across countries*, IMF Working Papers, 228

[18]. Kulk, E. (2021) *Request to pay: Monetising the instant payments investment*, Journal of Digital Banking, 5(3), pp. 194-203

[19]. Pranger, N.M. (2024) *Instant payments: Providing the rails for new payment solutions*, Journal of Payments Strategy & Systems, 18(1), pp. 96-108

[20]. Sandhu, S., Arora, S. (2022) *Customers' usage behaviour of e-banking services: Interplay of electronic banking and traditional banking*, International Journal of Finance & Economics, 27(2), pp. 2169-2181

[21]. Srinivas, V., Wadhwani, R. (2018) *Online Banking Usage in a Mobile-Centric World*, Deloitte Insights, Deloitte Global Economics Research Center, https://www.deloitte.com /us/en/insights/research-centers/economics.html?icid=disubnav_economics

[22]. Srinivas, V., Ross, A. (2018) *Accelerating digital transformation in banking*, Deloitte Insights, Deloitte Global Economics Research Center, https://www.deloitte.com/us/en/ insights/research-centers/economics.html?icid=disubnav_economics

[23]. Valenti, J., Alderman, A. (2021) *Building on the digital banking momentum*, Deloitte Insights, Deloitte Global Economics Research Center, https://www.deloitte.com/ us/en/insights/research-centers/economics.html?icid=disubnav_economics

[24]. van Oost, M. (2023) *Real-Time Payments Are the Backbone of Modern Economies,* https://www.connectingthedotsinfin.tech/real-time-payments-are-the-backbone-of-modern-economies/

[25]. Vishnuvardhan, B. Manjula, B., and R. Lakshman Naik, R. (2018) A Study of Digital Banking: Security Issues and Challenges, Proceedings of the Third International Conference on Computational Intelligence and Informatics ICCII 2018, Springer

[26]. Wewege, L., Lee, J., Thomsett, M.C. (2020) *Disruptions and digital banking trends*, Journal of Applied Finance and Banking, 10(6), pp.15-56

[27]. Wijayanti, R.P., Al Azizah, U.S., Daulay, Y., Nugroho, A.W. (2021) *The effect of digital banking innovation on the performance of conventional commercial banks in Indonesia*, International Journal Economic and Business Applied, 2(2), pp. 1-14

[28]. Yu, C.S. (2014) *Consumer switching behavior from online banking to mobile banking*, International Journal of Cyber Society and Education, 7(1), pp. 1-28

[29]. ACI Worldwide's (2024) *Prime Time for Real-Time*, https://www.aciworldwide.com/wp-content/uploads/2024/04/Prime-Time-2024-Executive-Summary-Infographic.pdf

[30]. Allied Market Research (2023) *Mobile banking market size, share, competitive landscape and trend analysis report, 2022–2032*, Allied Market Research, https://www.alliedmarketresearch.com/mobile-banking-market

[31]. Capgemini (2024), *World Payments Report*, https://www.capgemini.com

[32]. Capgemini (2024) *Secure and simple instant payments. The path to a unified Confirmation of Payee solution*, October, https://www.capgemini.com/insights/research-library/

[33]. European Commission, *Eurostat Database*, https://ec.europa.eu/eurostat/databrowser/

[34]. Fintech News Switzerland (2023) *Europe Lags Behind Asia and Latin America in Real-Time Payments Adoption,* June 21, 2023, https://fintechnews.ch/moneytransfer/europe-lags-behind-asia-and-latin-america-in-real-time-payments-adoption/62358/?utm_source=chatgpt.com

[35]. We Are Social & DataReportal (2024) *Digital 2024: Global overview report*, https://wearesocial.com/uk/reports/