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Digital transformation in the Banking Sector in Portugal

Exploring factors influencing Digital Banking Adoption

Hugo Miguel Xavier Dias

Master Thesis

presented as partial requirement for obtaining the Master Degree in Statistics and Information Management

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa

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DIGITAL TRANSFORMATION IN THE BANKING SECTOR IN PORTUGAL

Exploring factors influencing Digital Banking adoption

by

Hugo Miguel Xavier Dias

Master Thesis presented as partial requirement for obtaining the Master's degree in Statistics and Information Management, with a specialization in Risk Analysis and Management

Supervised by

Luís Alberto Ferreira de Oliveira, PhD, NOVA Information Management School

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

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ABSTRACT

Digital banks have been at the forefront of technological innovation in the finance sector, transforming operations and reshaping industry behavior. With consumers exponentially adopting this technology, the impact of digital banking on financial services has become increasingly significant, driving unprecedented changes in customer interaction and service delivery. This study, conducted through an online questionnaire, identifies factors influencing the adoption of digital banks. The findings reveal that younger individuals are primary adopters of digital banking, while older generations show significantly lower adoption rates, highlighting the need for targeted strategies to foster growth in this demographic. Key factors influencing digital banking adoption include perceived innovativeness, trust, service quality, perceived relative advantage over traditional banks, and perceived security. Interestingly, perceived ease of use and features of banking applications do not significantly impact adoption rates. This suggests that enhancing trust, service quality, and security is crucial for promoting wider adoption. Overall, this study offers crucial insights into the drivers of digital banking adoption and identifies avenues for future research and strategic development, recommending targeted efforts towards older age groups and emphasizing influential factors to enhance user acceptance and adoption rates effectively.

KEYWORDS

Digital Banking; Customer Experience; Technology Adoption; Financial Sector; Fintech

Sustainable Development Goals (SDG):



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1. INTRODUCTION

Finance and technology have always been linked to each other, dating more than 150 years, with the introduction of the Telegraph in 1838 and the creation of the first transatlantic cable in 1866 established the foundational infrastructures crucial for the emergence of the digital era in financial services.

Later on, Citigroup with the goal of stimulating technological collaboration, initiated a new project named “Financial Services Technology Consortium”, also known as FinTech (Arner et al., 2015). Nowadays “Fintech” is a noun related to companies that use modern innovative technologies to enable provision of financial services, in a broader sense, Fintech is seen as a new market that integrates finance and technology (Arner et al., 2015). Adopting this technology along with other technological advancement has the goal of decreasing search costs of matching transaction parties, achieving economies of scale in acquiring and using large data, achieving more affordable and secure transmission of information, reducing verification costs (Thakor, 2019).

Contrary to popular belief, Fintech did not emerge only in recent years with the advent of mobile payment applications. Its roots trace back to the 1950s with the introduction of credit cards, which allowed consumers to shop without carrying cash. The modern era of Fintech, known as Fintech 2.0, began in 1967 with the launch of calculators and ATMs. Notably, the British bank Barclays introduced the first cash machine in Enfield, England, transitioning financial services from an analogue to a digital industry and enabling customers to withdraw money without visiting a bank counter.

In the payments sector, SWIFT (Society of Worldwide Interbank Financial Telecommunications) established in 1973 marked a significant step towards interconnecting domestic payment systems across borders. This development underscored the risks associated with increasing international interlinkages, as evidenced by the collapse of Germany’s Herstatt Bank in 1974. This event highlighted the vulnerabilities brought about by new payment system technologies, prompting the first major regulatory focus on Fintech. Consequently, a series of international soft law agreements were developed to create robust payment systems and related regulations (Arner et al., 2015).

Taking note of the rapid evolution driven by Fintech’s, financial institutions began increasing their use of Information Technologies. By the 1980s, they had steadily replaced most forms of paper-based mechanisms, as computerization advanced and risk management technologies were developed to manage internal risks (Arner et al., 2015).

The Internet set the stage for the next level of development. Starting in 1995, American bank Wells Fargo began using the World Wide Web to offer online account checking to their clients. With America leading the world in Fintech adoption, by 2001, eight banks had at least one million online customers, prompting other major jurisdictions to develop similar systems and

related regulatory frameworks to address risk. By 2005, many interactions with outsiders and an increasing number of interactions with retail customers had become digitized, leading to the emergence of the first direct banks without physical branches (Arner et al., 2015).

The 2008 financial crisis significantly impacted public perception of banks. As the crisis turned into an economic downturn, many professionals lost their jobs or received lower compensation. As Arner et al. (2015) states, "Public perception of banks deteriorated," and trust in the traditional banking system diminished.

Indeed, after the 2007-2008 crisis, changes in consumer behavior, regulation, and technologies redefined the financial environment (Duval, 2016). This period of instability lowered barriers for new competitors. As Worthington & Welch (2011) note, this shift occurred "on a scale never seen before." These new competitors, representing innovative companies, challenged traditional financial services, products, and customer experiences. Their innovative approaches generated significant excitement and research interest, bypassing traditional intermediaries in offering financial services (Thakor, 2019).

The rapid rise of FinTech has transformed the business landscape in banking, demanding more innovative solutions. Some members of the financial services industry perceive the boom in FinTech as a threat to the traditional banking industry. However, others believe that FinTech presents a challenge that can be turned into an opportunity, offering more flexibility, better functionality in certain areas, and an aggregation of services.

Based on an analysis of the products and services provided by FinTech companies, Románova & Kudinska (2016) conclude that FinTech companies can be classified into two groups: those providing services complementary to bank services (e.g., technologies used by banks to offer financial services) and those offering services traditionally covered by banks (e.g., payments). Thus, FinTech can be seen as both a competitor and a partner, depending on the goal of the solution.

PILLARS OF FINTECH

FinTech encompasses a range of definitions and business functions, varying by author and the focus of the study. According to Barroso & Laborda (2022), five main business functions have the most significant impact on the financial sector:

1. **Payment Services:** This rapidly growing function involves all payments initiated, processed, and received electronically. It includes innovative forms of payment where the internet intermediates between banks and customers, such as mobile banking, peer-to-peer payments, and e-wallets.

2. **Credit and Lending:** Online platforms enable fundraising through the provision of small credits by individual investors, exemplified by crowdlending and crowdfunding. This

method reduces transaction costs, facilitates financing for small businesses, and increases financial inclusion.

3. Investment Management: Technological advancements allow individuals to make investment decisions using devices like mobile trading, social trading (which bases investment decisions on information from online communities), online brokerages, and high-frequency trading.

4. Artificial Intelligence: described as "a set of technologies that can simulate human actions in technological devices that have been previously taught without any new intervention" (Buchanan, 2019), has been effectively integrated into banking. Machine learning, for instance, is used in credit scoring models to predict creditworthiness and assess the credit risk of individuals applying for loans or credit cards.

5. Robo-Advisors: Extending to credit, insurance, and investing, robo-advisors provide automated investment and management advice without human interaction. They match clients with financial products by asking a series of questions through a questionnaire.

FINTECH IN PORTUGAL

The impact of FinTech in Portuguese society became evident in the 1980s when the Portuguese banking community developed a model of inter-banking cooperation to address the challenges of the time. SIBS (Sociedade Interbancaria de Serviços, SA), likely the first Portuguese FinTech, facilitated the automation of routine banking transactions and created a universal network of interbank services. Over time, SIBS expanded into other FinTech segments, such as SIBS Cards, aimed at providing production and processing services for electronic payment systems.

Currently, within Portuguese territory, SIBS manages the ATM Express and MULTIBANCO networks, which include ATMs, terminals, online, and mobile channels. Their extensive client portfolio includes prominent banks like Millennium BCP, Caixa Geral de Depósitos, and Santander Portugal. FinTech organizations have been meticulously integrating technology within their operations. Millennium BCP, one of the banks mentioned above, has embraced innovation for several years, merging financial technologies with traditional banking to create "ActivoBank."

Founded in 1985, Banco Comercial Português, nowadays Millennium BCP, recognized the importance of innovation early on. In 1994, they created Portugal's first telephone-only bank, introducing a new distribution channel that enabled simple transactions by phone calls, seven days a week, an unprecedented service in Portugal at the time. With the advent of the internet, ActivoBank7 (later rebranded as ActivoBank) offered investment solutions to medium-sized companies and middle to high-class customers. Initially, BCP Group did not focus on growing the digital brand as a primary income stream but aimed for ActivoBank to

be an innovative and experimental bank. However, this approach proved unsustainable, as profitability was necessary for survival.

It took time for the bank to understand a fundamental principle of FinTech: Simplicity (Matos, 2015). Embracing this principle allowed the brand to survive, and today, ActivoBank operates online, offering a wide range of services and products, including loans, insurance, and investment plans.

Ultimately, what distinguishes Millennium BCP and ActivoBank is their digital solutions, a different cost structure, and increased availability to meet customer needs.

EVOLUTION OF FINTECH INTO DIGITAL BANKING

Continuous research and development in the fintech sector have significantly disrupted the financial ecosystem. As Salman (2023) concludes, FinTech's have been providing real-time payment solutions, lowering transaction fees, and making it cost-effective to send and receive money internationally. They have also been experimenting with Blockchain and Artificial Intelligence to enhance security and user experience. Perhaps most importantly, FinTech's have focused on prioritizing user experience by creating intuitive interfaces and user-friendly apps that empower consumers to manage their finances easily.

By deploying technologies such as Artificial Intelligence and Machine Learning, FinTech's continue to enhance fraud detection, personalize financial advice, and automate processes for faster and more accurate transactions. Along with financial institutions, FinTech's are opening new markets and offering customers new opportunities for investment and cross-border transactions through blockchain and cryptocurrency applications.

Given the nature of Fintechs' capital structure and investment profile, there is a necessity for rapid growth, which requires scalable infrastructure, efficient processing, liquidity, and robust security measures. Banks and FinTech, working together, are driving an era of faster, more secure, and more inclusive financial transactions. It is important for both sectors to learn from each other's strengths, fostering a promising future for global payments, supported by strong governance and controls. This assertion is backed by Salman's (2023) report for British bank Barclays on the role of banks in fintech partnerships.

The adoption of FinTech in the banking system has also proven to have significant social benefits. FinTech has expanded access to financial services for individuals who previously lacked access to traditional banking, thereby enhancing financial (Böhme et al., 2015).

DIGITAL BANKING

The continuous development of technology in recent years and its integration into the financial sector have made the emergence of digital banks inevitable. As Gambacorta (2023) explains, the business model of digital banks centers around the use of financial technology and data, simplified in three key concepts: "technology," "data," and "automation." This model focuses on reducing the number of bank branches and heavily relying on mobile apps and online platforms, ultimately minimizing human intervention.

COVID 19 IMPACT

A growing interest in this thesis emerged from understanding how the COVID-19 pandemic affected the Digital Banking sector. The pandemic significantly accelerated the adoption of contactless payments, with both Banks and FinTech's investing in near-field communication technology. British bank Barclays expects this trend to continue, predicting that the movement towards effortless, invisible payments will drive loyalty and growth in the future. Moreover, there is an expectation of greater innovation in the B2B (business-to-business) space, particularly in digital payments, fueled by the growth of B2B e-commerce and e-invoicing.

The pandemic also spurred significant behavioral changes, as consumers sought new ways to pay without risking their health. Concerns about viral transmission through cash prompted both consumers and merchants to switch to digital payment methods. As Auer et al. (2020) note in their study, "A quick and abrupt transition to digital payments was made, including contactless card payments and digital payment apps." Auer et al. (2022) concluded that the pandemic was directly linked to several significant changes in payment behavior, some of which have persisted. During strict lockdowns and periods of restricted mobility, there was a notable increase in the download of payment apps and the use of card-not-present transactions. Personal choices and perceptions of the virus led consumers to decrease their use of cash, prompting countries like Austria, Germany, the United Kingdom and Portugal to raise transaction limits for contactless payments (Auer et al., 2020).

Perhaps the most disruptive and well-known example is Revolut, often considered a revolutionary force in digital banking. It began with a simple goal of providing people with an effective way to manage their money. According to Ferreira (2023), one of Revolut's distinguishing advantages is its global accessibility. This digital banking platform offers various services, including debit cards for global and online transactions, instant currency exchange at interbank rates, and fee-free money transfers for both Revolut users and non-Revolut accounts (Vilkinis & Vasciula, 2018). The founder of Revolut asserts, "Our focus, since we launched, has been to do everything completely opposite to traditional banks" (King, 2018). This emphasis on putting people back in control of their finances ultimately challenges traditional financial institutions.

SWOT ANALYSIS

SWOT analysis assesses both internal strengths and weaknesses, as well as external opportunities and threats within an organization's environment (Sammut-Bonnici & Galea, 2015). The internal analysis focuses on identifying resources, capabilities, core competencies, and competitive advantages that are intrinsic to the organization. Meanwhile, the external analysis examines market opportunities and threats by evaluating competitors' resources, industry conditions, and broader environmental factors (Sammut-Bonnici & Galea, 2015).

STRENGTHS

Digital banking services present several key strengths that are pivotal in modern financial landscapes.

- Contactless payments offer unparalleled convenience and safety, especially in a post-pandemic world where hygiene concerns are paramount (Annes.D & Sornaganesh, 2022).
- The capability for 24/7 access ensures that banking tasks can be managed anytime, anywhere, catering to the fast-paced lifestyles of today's consumers.
- High-speed processing accelerates transactions, reducing waiting times and enhancing efficiency.
- The independence from physical bank branches liberates customers from geographical constraints, enabling seamless banking operations globally. Furthermore, digital banking offers enhanced security compared to physical transactions and is environmentally friendly due to reduced paper usage. Banks' integration of artificial intelligence further enhances service delivery, positioning digital banking as a pivotal growth area in the financial sector (Annes.D & Sornaganesh, 2022)
- The reduced human factor in decision-making processes minimizes errors and biases, ensuring a more objective approach to financial management.

These strengths collectively underscore the transformative impact of digital banking in enhancing accessibility, efficiency, and reliability for users worldwide.

WEAKNESSES

Unfortunately, with every peak comes a valley, and as digital payments have surged, so too have concerns:

- Exposure to fraudulent activities has significantly heightened concerns among customers regarding cybersecurity and the safety of their accounts (Annes.D & Sornaganesh, 2022)
- Perceived lack of information about the security measures employed by digital banks leading to apprehensiveness (Ali & Yildirim, 2019)

- Deposits of Digital Banks react more to changes in market conditions, due to easy accessibility, customers can monitor market conditions and manage deposits efficiently, quickly moving their funds seeking better returns, as it is normally operated through a mobile app or online platforms for account management.

Addressing these weaknesses is crucial for fostering greater trust and adoption of digital banking solutions.

OPPORTUNITIES

Digital banking offers numerous opportunities derived from its rapid growth and continuously expansive service offering.

- With a wide range of services available such as payments, transfers, investments, among others, digital banks can cater to diverse customer needs more comprehensively than before (Vankevich, 2020)
- Global accessibility enables customers to access and manage their accounts and conduct transactions from anywhere in the world (Vankevich, 2020)
- The increasing demand from a young, tech-savvy population for innovation and hyper-personalized services, driven by widespread smartphone and internet usage, has significantly influenced the evolution of digital banking (Annes.D & Sornaganesh, 2022), prompting digital banks to innovate their digital offering and making banking services more accessible and tailored to individual preferences.

Embracing these opportunities empowers customers to manage better their financial lives with greater ease and efficiency in an increasingly changing and digital centric world.

THREATS

In assessing threats faced by digital banking, it is crucial to recognize the dynamic and competitive nature of the financial services industry.

- One of the main issues is Cyber Security, with consumers doubting the security of sensitive information. Due to digitalization, entities should be working together building systems that are reliable enough to prevent any disclosure of sensitive data knowing that they are constantly vulnerable to cyberattacks (Vijai, 2019).
- The competitive market landscape in banking within digital banking is intensifying with both traditional banks and fintech startups aggressively pursuing digital innovation. Traditional banks are increasingly investing in their own digital transformations, by enhancing their online and mobile banking platforms to compete with digital only banks.

Understanding these threats is essential for digital banks to navigate effectively and sustain their competitive edge in the continuous evolving financial technology landscape.

STATISTICS

It is premature to accurately forecast the future impact of Digital Banking, especially considering the unpredictable trajectories of other technologies like Cloud Computing, Artificial Intelligence, and Blockchain. Nevertheless, a discernible trend emerges: as the years progress, technology companies increasingly integrate themselves into financial services, thereby reshaping market dynamics specially in underbanked developing nations.

According to Statista data, the projected worldwide net interest income is expected to reach 1.5 trillion US dollars, as shown in Figure [1]. This upward trend indicates a burgeoning global financial sector. As net interest income expands, it creates opportunities and incentives for innovation, stimulating increased investments and potentially accelerating the adoption of digital banking solutions globally.

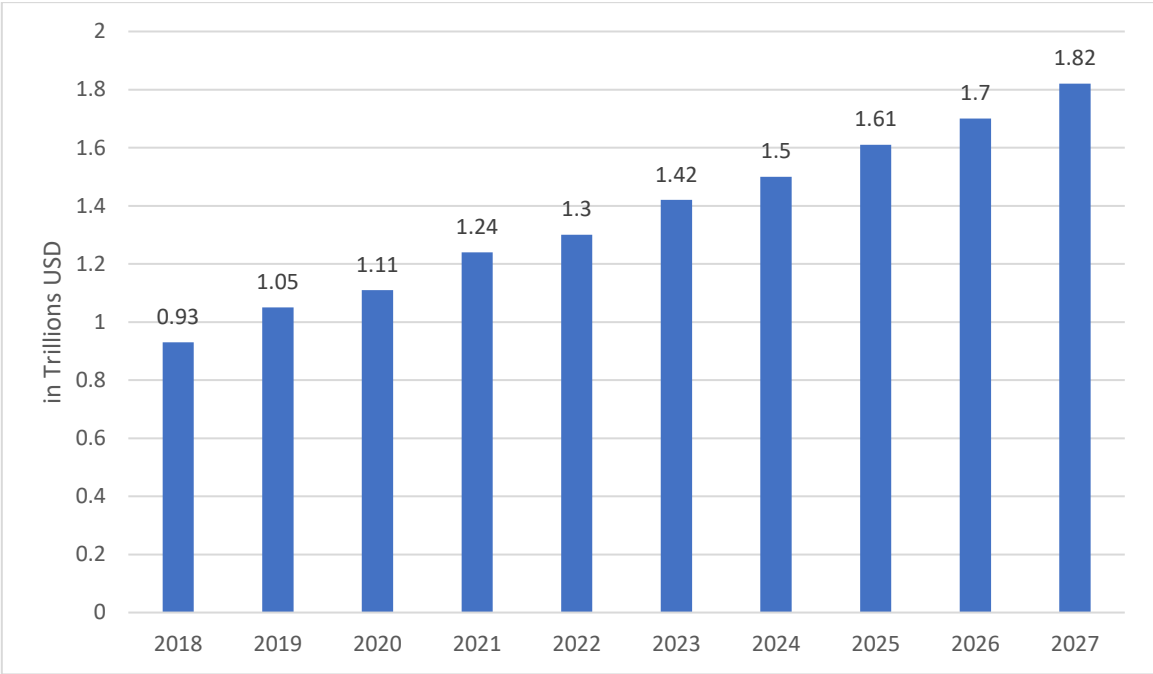


Figure 1 – Worldwide Digital Banking Net Interest Income, source: Statista, 2024

The number of users worldwide follows an exponential trend line, the data shows significant increase over the years from 32.62 million users in 2018 to around 301.8 million (estimations) in 2024, as shown in Figure [2].

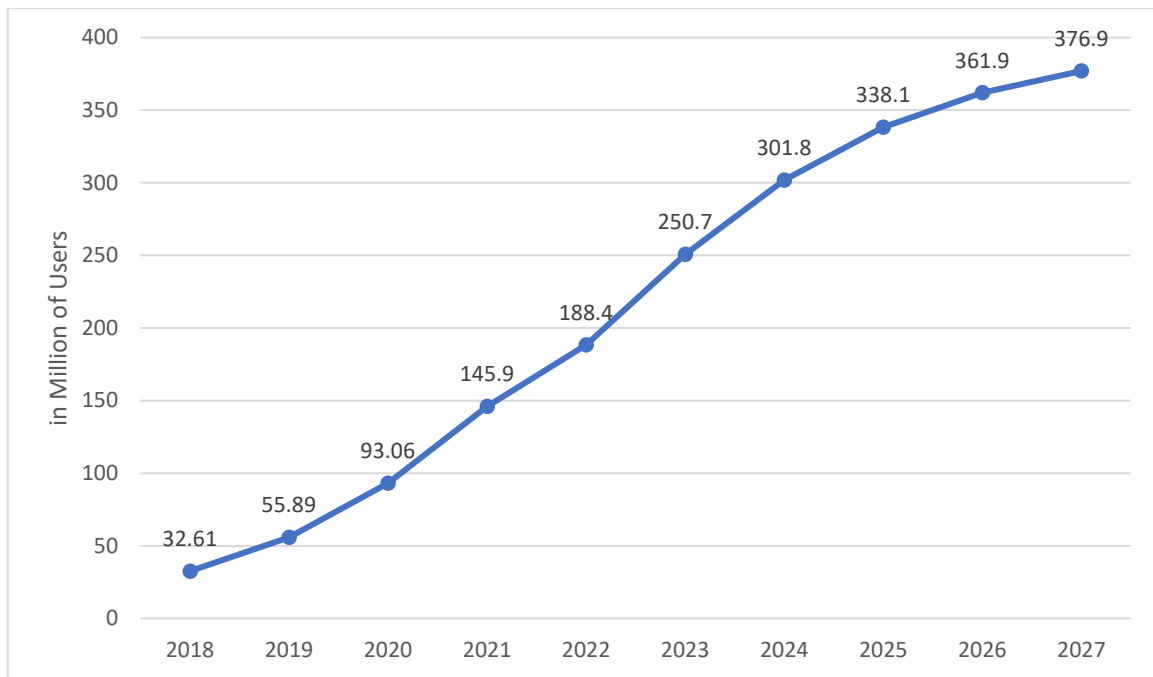


Figure 2 – Digital Banking Users, source: Statista, 2024

This study aims to explore the factors driving the upward trend towards widespread adoption of digital banking. It also seeks to investigate whether and how people's perceptions of digital banks have evolved or improved in recent times.

This dissertation is structured to provide a comprehensive analysis of the factors influencing digital banking adoption. The literature review offers an in-depth examination of existing research on digital banking adoption, as well as related studies in the financial technology sector, including mobile and traditional banking. The methodologies section outlines the research design, data collection techniques, and analytical approaches employed in this study. Following this, the results section presents the findings derived from the online questionnaire, highlighting significant patterns and relationships, and proving the validity and reliability of the data. The discussion section interprets these findings, connecting them to the broader literature and exploring their implications for both theory and practice. Through this structured approach, the dissertation aims to provide valuable insights into the drivers of digital banking adoption and propose strategies to enhance user acceptance and growth in this sector.

2. LITERATURE REVIEW

2.1. PERCEIVED INNOVATIVENESS

Perceived Innovativeness refers to an individual's propensity to explore and try new things, including technologies that can enhance their work performance (Musyaffi et al., 2024). Those lacking this trait often remain within their comfort zones, avoiding new products and technologies.

In the study by Musyaffi et al. (2024), personal innovativeness demonstrated a significant positive impact on the adoption of digital banking. The findings revealed that individuals with high levels of innovativeness are more inclined to embrace new technologies and feel satisfied with digital banking solutions that meet their needs for flexibility and convenience.

Furthermore, a high degree of personal innovativeness can enhance users' knowledge about the technology, influencing their perceptions of its convenience and usefulness, which subsequently boosts technology adoption (Zhong et al., 2021). This highlights the crucial role of personal innovativeness in driving the acceptance and utilization of digital banking technologies.

Based on these insights, the following hypothesis has been formulated to further investigate the positive relationship between personal innovativeness and the adoption of digital banking technologies.

H1. Perceived Innovativeness

H₀: Perceived Innovativeness has no significant positive influence towards digital banking adoption.

H_a: Perceived Innovativeness has a positive significant influence towards digital banking adoption.

2.2. PERCEIVED EASE OF USE

Simplicity provides our brain with the foundation for revolutionary survival (Kreger, 2018). Individuals typically operate according to the principle of least resistance, opting for what is easier and clearer. Therefore, an effective financial interface should prioritize simplicity, offering users seamless and intuitive experiences that enhance both speed and satisfaction (Kreger, 2018).

According to Windasari et al. (2022), perceived ease of using digital banking applications positively affects customer intention to adopt them. This is supported by Danurdoro and Wulandari's (2016) study on internet banking, which found that the easier the platform, the higher the users' intention to adopt the technology. They identified three key factors: ease of learning, applicability to user desires, and ease of operation.

Based on these findings, we propose to test the hypothesis that perceived ease of use significantly influences the adoption of digital banking.

H2. Perceived Ease of Use

H₀: Perceived Ease of Use has no significant positive influence towards digital banking adoption.

H_a: Perceived Ease of Use has a positive significant influence towards digital banking adoption.

2.3. TRUST

Heightened levels of trust are associated with increased intended use, as demonstrated by Gefen et al.'s (2003) study on online shopping. Trust helps reduce social complexity for consumers by mitigating the risk of undesirable activities by vendors, such as the misuse of purchase information, thereby encouraging online business activity.

According to Jafri et al. (2024), banks are required to exhibit reliability, competence, security, and transparency in order to gain the trust of their customers. This means not only maintaining a dependable reputation but also demonstrating capabilities that assure customers of their financial security and the transparency of their operations.

Given that digital banks lack physical locations where customers can interact directly, it is crucial for them to demonstrate a strong commitment to customer service, as highlighted by Kantika et al. (2022). Despite being fully digital, these banks must focus on providing high-quality services to their customers. Kantika et al. also suggest that trust is the most significant variable impacting the adoption of digital banking services.

Based on this understanding, we theorize that customer trust significantly influences the adoption of digital banking.

H3. Trust

H₀: Trust has no significant positive influence towards digital banking adoption.

H_a: Trust has a positive significant influence towards digital banking adoption.

2.4. FEATURES

The product features highlight customer interest in the distinctive characteristics of digital banking technology, which offer comprehensive financial solutions. As consumer experiences become increasingly important in the digital service landscape, it is essential to develop exceptional product features to attract and retain customers (Windasari et al. 2022). These features must be unique and stand out from those offered by traditional banks and mobile banking.

According to Windasari et al. (2022), digital banks must offer unique features to traditional banks to make them more attractive. For example, replacing the account number by a simple nickname attracted the user's intention to use digital banks, easily remembering the bank account. Developing features that had never been available through conventional banking such as splitting the bills with friends, flexible savings and virtual credit cards.

In this study, we aim to validate the impact of service features on digital banking adoption. This variable is highlighted in light of the advanced technologies of the current era, expected to enhance service delivery, efficiency, and convenience significantly.

H4. Features

H_0 : Features has no significant positive influence towards digital banking adoption.

H_a : Features has a positive significant influence towards digital banking adoption.

2.5. SERVICE QUALITY

Service quality serves as a defining factor that sets banks apart from their competitors, ensuring that the services offered consistently meet customer expectations. Improving the quality of an organization's offerings is crucial, as understanding this process can guide bank management on where to focus their efforts.

According to Chai et al. (2016), service quality has a significant relationship with bank performance, validating the hypothesis that high service quality can distinguish a bank's services from its competitors, helping to gain market share and enhance overall performance. Furthermore, service quality shows notable differences between clients of traditional banks and digital banks, with digital banks often outperforming traditional ones in this regard (Cahete, 2021). This evidence supports the notion that digital banks are transforming the imperfections of traditional banks into strategic advantages, thereby attracting more customers.

Nugroho et al. (2023) emphasizes that service quality is not only crucial for the overall success and growth of the banking sector but also plays a pivotal role in driving customer intention to adopt digital banking services, showing that digital banks should prioritize service quality, especially in light of reduced direct interaction between customers and banks, as highlighted in their study.

This study aims to provide insights into what aspects are most valued by customers and how digital banks can continue to improve their services to meet and exceed these expectations.

H5. Service Quality

H_0 : Service Quality has no significant positive influence towards digital banking adoption.

H_a : Service Quality has a positive significant influence towards digital banking adoption.

2.6. PERCEIVED RELATIVE ADVANTAGE

Perceived Relative Advantage refers to the extent to which an innovation is seen as superior to its predecessor (Pearson, 2008). Pearson's study demonstrated that this perception significantly influences the intention to use internet banking, which is unsurprising given the numerous extrinsic benefits of the technology. Sharma et al. (2020) also found that relative advantage is a key factor in boosting mobile banking adoption and increasing financial inclusion in India.

Digital banking offers several advantages, such as autonomy in managing one's relationship with the bank (Gargouri, 2023). Customers can access banking services directly without the need to interact with a banker, saving considerable time that would otherwise be spent in queues. According to Kataria (2019), saving time is the greatest advantage of digital banking, addressing one of the "biggest challenges of our very busy lives."

In this study, we theorize the influence of perceived relative advantage on the adoption of digital banking, exploring how the perceived advantage of digital banking drives consumer adoption.

H6. Perceived Relative Advantage

H₀: Perceived Relative Advantage has no significant positive influence towards digital banking adoption.

H_a: Perceived Relative Advantage has a positive significant influence towards digital banking adoption.

2.7. PERCEIVED SECURITY

Security in the financial sector is one of the primary consumer concerns. Data breaches, potential data leakage, and theft by cyber-criminals and hackers have all contributed to making security a major issue in digital banking. According to Siagian et al. (2022), respondents who perceive the digital payment applications they use as secure in handling information are more inclined to express favorable opinions about them and recommend their use to others. This underscores the crucial role of perceived security in shaping attitudes towards and promoting the adoption of digital payment applications.

Apau & Lallie (2022) concluded that perceived security positively influences the intention to adopt mobile banking apps, and in fact, it was found to be the most significant factor contributing to the variance in behavioral intention towards mobile banking adoption.

Customers need assurance that their personal and financial information is protected from unauthorized access and fraud.

In this study, we aim to explore the influence of perceived security on digital banking adoption, theorizing that higher perceived security will lead to greater willingness among consumers to use digital banking services. This investigation will provide valuable insights into the critical role of security in shaping consumer behavior in the digital banking landscape.

H7. Perceived Security

H_0 : Perceived Security has no significant positive influence towards digital banking adoption.

H_a : Perceived Security has a positive significant influence towards digital banking adoption.

3. METHODOLOGY

The variables used in this study were all based on pre-established and validated scales, every item of the independent variables followed the 5-point Likert Scale.

In the conceptual model proposed for this study (Figure [3]), the relationship between several key independent variables and the dependent variable is explored. By examining these relationships, this conceptual model aims to provide insights into the factors driving digital banking adoption and to guide strategic interventions aimed at fostering greater acceptance and utilization of digital financial solutions.

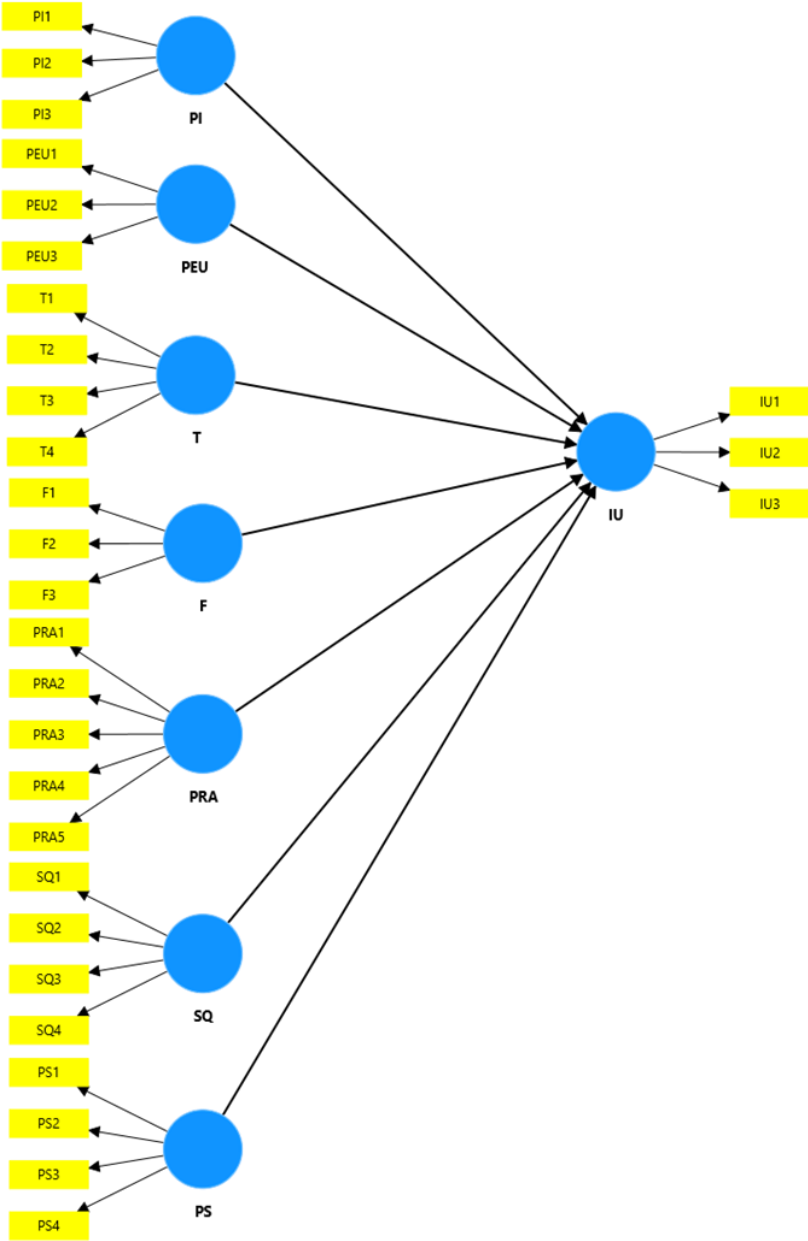


Figure 3 - Conceptual Model

The Table [1] presents essential details regarding the constructs, their respective items, and the contributing authors, central to understanding the conceptual framework of this study. Each construct represents an important aspect under study, carefully defined and measured to capture specific aspects of interest. This compilation of constructs and their items brings together insights from different authors, each contributing unique perspectives and empirical validations.

Table 1 - Construct Items

VARIABLE	LABEL	ITEM	AUTHORS
PERCEIVED INNOVATIVENESS	PI1	If I know there is an update regarding new technology, I will try to experiment with the technology.	Musyaffi et al., 2024
	PI2	I am a person who wants to try new technology compared to my friends or colleagues.	
	PI3	I feel happy when I try new technology.	
PERCEIVED EASE OF USE	PEU1	I expect the digital banking system to be easy to use	Thakur & Srivastava, 2014; Windasari et al., 2022
	PEU2	I expect it will be easy for me to become skilful at using digital bank services	
	PEU3	Learning to use digital banking will be easy	
TRUST	T1	Based on my experience with digital banking in the past, I know it is honest	Gefen et al., 2003; Kantika et al., 2022
	T2	Based on my experience with digital banking in the past, I know it cares about customers	
	T3	Based on my experience with digital banking in the past, I know it is not opportunistic	
	T4	Based on my experience with digital banking in the past, I know it is trustworthy	

FEATURES	F1	I like to use digital banking because it provides many useful features.	Windasari et al., 2022
	F2	My digital bank provides features that I need.	
	F3	The digital Bank that I use provides features that ease my personal financial management	
SERVICE QUALITY	SQ1	I am confident in digital bank expertise	Chai et al. 2016
	SQ2	I am happy with the financial services contracted	
	SQ3	Digital Banks provide service as promised	
	SQ4	Digital Banks have self-ability in handling customers service problems	
PERCEIVED RELATIVE ADVANTAGE	PRA1	I think digital banks make it easier for me to do my banking activities	Pearson, 2008
	PRA2	I think digital banks enable me to complete my banking activities more quickly	
	PRA3	I think digital banks enable me to complete my banking activities conveniently	
	PRA4	I think digital banks allow me to manage my banking activities more efficiently	
	PRA5	I think digital banks are useful in conducting my banking activities	
PERCEIVED SECURITY	PS1	I perceive digital banking apps as secure	Apau & Lallie, 2022;
	PS2	I believe that Digital banking apps have rigorous security control	
	PS3	I believe that transactions in digital banking apps are protected and secured	Musyaffi et al., 2024
	PS4	I believe Digital banking has adequate security functions to protect user data	

INTENTION	IU1	I will/continue using digital banking services in the future	Thakur & Srivastava, 2014
	IU2	During the next 6 months, I intend to use digital banking	
	IU3	Five years from now, I intend to be using digital banking	
	IU4	I encourage others to use digital banking	

3.1. STUDY SAMPLE AND DESIGN

This research adopted a Quantitative methodology, employing the survey technique to gather information from a particular set of individuals. This data was collected using questionnaires, thereby primary data was analysed. Quantitative methodologies involve the measurement of variables to grasp their characteristics, uncover patterns, correlations, and interrelationships. It aims to test, improve, prove or disprove previous theories (Blanchflower, 2018).

Approximately 900 questionnaires were sent through the various social networks, with the goal of targeting individuals old enough to have a bank account.

The data collection instrument was an online questionnaire hosted on Qualtrics, this tool provides a comprehensive and efficient solution for questionnaire data analysis. Its user-friendly interface, robust data collection and management capabilities, and powerful analytical tools facilitated the gathering and analysis of the data.

A pre-test of the questionnaire was conducted prior to the release to the target population, shared with specific individuals selected prior to make sure all questions made were well perceived, and adjustments were made based on the feedback to ensure the instrument was appropriate for the research context and not too extensive.

Data collection involves getting in contact with possible participants through social media. Participants agreed to partake in the study by entering the questionnaire link on Qualtrics. Once all the data was gathered, the results were tabulated and organized in Excel spreadsheets for subsequent analysis, allowing for conclusions to be drawn about the studied phenomenon.

Ethical considerations were strictly adhered to at all stages, procedures being taken with the goal of maintaining anonymity and confidentiality of participants' responses as well as the personal information such as gender, age, academic degree, was aggregated and analysed collectively without direct identification of respondents. The collected data was kept confidential and accessible only for the researcher.

It was clear for the participants that their involvement was voluntary, ensuring impartial responses, reading the consent form and choosing to answer acknowledging their understanding of the ethical protocols.

Data analysis was conducted using structural equation modelling with Partial Least Squares method, using the SmartPLS 4 software. Several preliminary tests were performed to ensure the robustness of the analysis.

PLS-SEM was chosen for this study due to its strengths in handling complex models and predicting key relationships. However, it is essential to address recent discussions regarding its applicability to reflective measurement models. Henseler et al. (2024) highlight a significant misconception about PLS-SEM's capability to accurately estimate parameters in reflective measurement models. Although some sources claim that PLS-SEM can handle reflective models, this assertion lacks both deductive and inductive support, emphasizing the need for careful consideration when applying PLS-SEM in such contexts.

4. RESULTS AND DISCUSSION

4.1. SAMPLE CHARACTERIZATION

The study collected data from a total of 308 respondents. Among these, 194 participants were identified as belonging to the target population because they have a current account in a digital bank; this subset represents approximately 63% of the total respondents.

Out of the 194 respondents in the target population, 109 are male individuals (56.2%) and 85 female individuals (43.8%). This gender distribution suggests a relatively balanced sample, allowing for the analysis of digital banking adoption across both genders.

The age distribution of the target population is diverse. There were 100 respondents (51.5%) aged between 18-24 years, indicating a significant representation of younger adults who are typically more tech-savvy and open to adopting new technologies. Additionally, 34 respondents (17.5%) were aged between 25-34 years, 12 respondents (6.2%) were aged between 35-44 years, 26 respondents (13.4%) were aged between 45-54 years, and 22 respondents (11.3%) were aged above 55 years, with this age distribution highlighting how digital banking is more prevalent among younger age groups, there is also substantial adoption among older adults.

In Figure [4], a comparison is established to analyze the age distribution within the target population versus the whole population. This allows for drawing insights into digital banking adoption across different age groups:

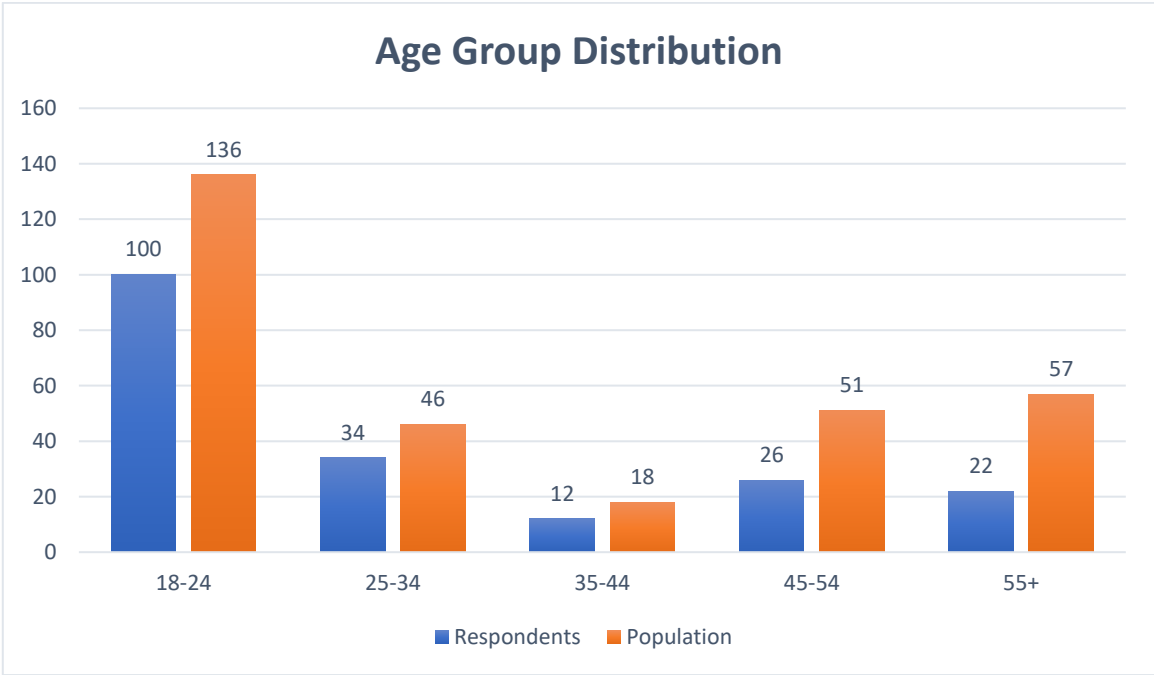


Figure 4 - Age Group Distribution

A higher proportion of younger individuals (18-24 years) are represented in the target population compared to the whole population, from 44.2% to 51.5% representation in the target population, suggesting that younger adults are more inclined to adopt digital banking.

There is a significantly lower representation in the target population for the older generations, in the age group of 45-54 reducing from 16.6% to 13.4% in the target population and on the 55+ age group being this drop the most significant from 18.5% to 11.3%, suggesting that older adults are less likely to adopt digital banking, demonstrating preference for traditional banking methods. This age distribution analysis underscores the importance of targeting younger generations for digital banking services but also acknowledging the importance of developing strategies to better engage older age groups.

In terms of educational background, the target population showed a wide range of educational attainment. A total of 37 respondents (19.1%) had completed high school, 86 respondents (44.3%) held a bachelor's degree, 21 respondents (10.8%) had completed post-graduation, 46 respondents (23.7%) held a master's degree, and 4 respondents (2.1%) had obtained a PhD. This diversity in educational qualifications emphasizes that digital banking adoption spans various levels of education, reflecting its broad appeal and accessibility.

The demographic data provides valuable insights into the characteristics of digital banking users. The balanced gender distribution, along with the significant representation of both younger and older age groups, indicates a widespread acceptance of digital banking across different segments of the population. Moreover, the varied educational backgrounds of the respondents suggest that digital banking is appealing to individuals regardless of their educational attainment, further emphasizing its versatility and user-friendliness.

4.2. SAMPLE ADEQUACY

Skewness measures the asymmetry of a variable's distribution. When the distribution of responses extends significantly towards the right or left tail, it is considered skewed. Kurtosis, on the other hand, assesses whether the distribution is excessively peaked, indicating a very narrow distribution with most responses concentrated in the centre (Hair et al., 2022). Ideally, skewness and kurtosis values close to zero suggest a normal distribution of responses, although this is rarely observed in practice (Hair et al., 2022).

The skewness values across all constructs predominantly show negative skewness, as shown in the table [2] indicating that most respondents rated the various aspects of digital banking towards the higher end of the scale. This suggests a generally positive perception and strong acceptance of digital banking services among the study participants, with only a few items showing near-zero skewness, indicating symmetrical distributions, but the trend remains positive overall.

For our scenario, we used excess kurtosis to analyse the distribution shapes, and the overall conclusion, as shown in the Table [2], reveals a diverse range of distribution characteristics,

indicating varying degrees of peakiness and tail heaviness. Most constructs exhibit positive excess kurtosis, with values ranging from just above 0 to as high as 2.651 (UI2), indicating a tendency to have more extreme values than expected under normal conditions. Construct items T2 and T3 suggest nearly normal distributions as they are close to 0, while T1 shows a negative value, indicating a flatter distribution. The variety in excess kurtosis values underscores the heterogeneous nature of the data, highlighting the need to consider these distributional differences in further statistical analyses.

Table 2 - Sample Adequacy

VARIABLE	CONSTRUCT	EXCESS KURTOSIS	SKEWNESS
PERCEIVED INNOVATIVENESS	PI1	0.796	-0.824
	PI2	0.101	-0.514
	PI3	1.269	-0.86
PERCEIVED EASE OF USE	PEU1	1.423	-0.814
	PEU2	0.651	-0.46
	PEU3	0.971	-0.817
TRUST	T1	-0.52	0.03
	T2	-0.18	-0.009
	T3	-0.191	0.105
	T4	0.064	-0.339
FEATURES	F1	0.597	-0.421
	F2	0.672	-0.176
	F3	0.103	-0.499
PERCEIVED RELATIVE ADVANTAGE	PRA1	0.376	-0.633
	PRA2	0.662	-0.902
	PRA3	0.516	-0.657
	PRA4	0.466	-0.762
	PRA5	0.186	-0.384

SERVICE QUALITY	SQ1	0.14	-0.21
	SQ2	0.625	-0.172
	SQ3	0.741	-0.529
	SQ4	0.138	-0.44
PERCEIVED SECURITY	PS1	1.766	-0.759
	PS2	0.247	-0.335
	PS3	0.947	-0.524
	PS4	1.331	-0.766
INTENTION OF USE	IU1	1.297	-0.637
	IU2	2.651	-1.125
	IU3	0.321	-0.587

4.3. MEASUREMENT MODEL

Model estimation provides empirical measures of the relationships between indicators and measurement models, as well as between the structural model. These empirical measures allow us to compare the theoretically established measurements and structural models with actual data, as represented by the sample. Essentially, this comparison helps us determine how well the theory aligns with the data (Hair et al., 2022).

The goal of PLS-SEM is to maximize the explained variance of the endogenous latent variables in the PLS path model. Therefore, the evaluation of the PLS-SEM measurement and structural models emphasizes metrics that indicate the model's predictive capabilities (Hair et al., 2022).

DATA RELIABILITY

The first criterion to evaluate is typically internal consistency reliability. The traditional measure for internal consistency is Cronbach's alpha, which estimates reliability based on the intercorrelations of the observed indicator variables (Hair et al., 2022). This test determines whether the items within each dimension are internally consistent and can be used to measure the same construct or dimension of service quality.

Cronbach's alpha should exceed 0.700; the higher the alpha value, the stronger the relationship between the independent and dependent variables. An alpha value below 0.600 is considered unreliable, while a value of 0.900 or above indicates excellent internal consistency (Chai et al., 2016). As shown in Table [3], all constructs in our study are

trustworthy as they are all well above 0.700, indicating that the scales in this study are reliable. Most of the constructs have good to excellent internal consistency ultimately proving confidence in the validity of the scales used.

Table 3 - Cronbach's Alpha

CONSTRUCTS	CRONBACH'S ALPHA
PI	0.821
PEU	0.866
T	0.812
F	0.736
SQ	0.804
PRA	0.907
PS	0.888
IU	0.825

Cronbach's alpha is sensitive to the number of items in the scale and often underestimates internal consistency reliability. Consequently, it can be considered a more conservative measure of internal consistency reliability. Due to its limitations, it is technically more appropriate to use a different measure known as composite reliability. This measure accounts for the different outer loadings of the indicator variables (Hair et al., 2022). The composite reliability varies between 0 and 1, higher values indicating higher levels of reliability. As shown in Table [4], all composite reliability values are well above the generally accepted threshold of 0.70, indicating high reliability of the constructs, meaning that the items used to measure each construct are well-correlated and reliable.

Table 4 - Composite Reliability

CONSTRUCT	COMPOSITE RELIABILITY
PI	0.893
PEU	0.918
T	0.875
F	0.851
SQ	0.871

PRA	0.93
PS	0.922
IU	0.897

CONSTRUCT VALIDITY

Convergent validity refers to the extent to which a measure positively correlates with other measures of the same construct. According to the domain sampling model, indicators of a reflective construct are considered different (alternative) approaches to measuring the same construct. Thus, items that serve as indicators of a specific reflective construct should converge or share a high proportion of variance (Hair et al., 2022).

To evaluate the convergent validity of reflective constructs, researchers examine the outer loadings of the indicators and the average variance extracted (AVE). The AVE, which is equivalent to the communality of a construct, should be 0.50 or higher. This value indicates that, on average, the construct explains more than half of the variance of its indicators. Validity assessment is understanding if the items converge to measure the underlined construct (Hair et al., 2022). As shown in Table [5], all values are within the acceptable range, indicating that the variance captured by the items in each construct is moderately to strongly substantial relative to measurement error, supporting the reliability and validity of the study.

Table 5 - Average Variance Extracted

CONSTRUCTS	AVERAGE VARIANCE EXTRACTED (AVE)
PI	0.735
PEU	0.788
T	0.639
F	0.657
SQ	0.629
PRA	0.728
PS	0.748
IU	0.744

DISCRIMINANT VALIDITY

Discriminant validity refers to the degree to which a construct is truly distinct from other constructs, as demonstrated by empirical evidence. In other words, it implies that a construct is unique and captures phenomena not represented by other constructs in the model. For

discriminant validity to be established, the values should be less than 0.9, indicating that the constructs are distinct and do not overlap, with no significant correlations between them (Hair et al., 2022).

The Fornell-Larcker criterion is used to assess discriminant validity by comparing the square root of the AVE of each construct with its correlations with other constructs. For adequate discriminant validity, the square root of the AVE for each construct should be higher than the highest correlation value of that construct with any other construct (Hair et al., 2016). This method is based on the view that latent variables should explain better for the item variant than the variant for other latent variables.

Table 6 - Fornell-Larcker Criterion

CONSTRUCTS	F	IU	PEU	PI	PRA	PS	SQ	T
F	0.81							
IU	0.526	0.863						
PEU	0.537	0.435	0.888					
PI	0.263	0.348	0.194	0.858				
PRA	0.619	0.577	0.449	0.233	0.853			
PS	0.434	0.54	0.423	0.23	0.363	0.865		
SQ	0.578	0.646	0.519	0.251	0.583	0.668	0.793	
T	0.342	0.384	0.447	0.201	0.362	0.634	0.634	0.799

In this study, we also assess the discriminant validity of our constructs using the Heterotrait-Monotrait ratio (HTMT), as recommended by Hair et al. (2022). HTMT is a robust method for evaluating discriminant validity by comparing the mean correlations between indicators of different constructs (between-trait correlations) with the mean correlations between indicators of the same construct (within-trait correlations). Specifically, HTMT calculates the average correlation of indicators across different constructs and compares it to the average correlation of indicators within the same construct.

In other words, an HTMT value above 0.90 typically indicates a lack of discriminant validity between constructs. However, when constructs in a path model are conceptually distinct, a more conservative threshold of 0.85 is often considered appropriate. As shown in Table [7], all HTMT values are below 0.900, confirming that discriminant validity is established among the constructs.

Table 7 - Heterotrait Monotrait (HTMT) Matrix

CONSTRUCTS	F	IU	PEU	PI	PRA	PS	SQ	T
F								
IU	0.671							
PEU	0.667	0.513						
PI	0.343	0.421	0.228					
PRA	0.756	0.659	0.499	0.267				
PS	0.533	0.625	0.482	0.269	0.395			
SQ	0.738	0.778	0.619	0.304	0.661	0.785		
T	0.446	0.458	0.53	0.249	0.407	0.737	0.786	

OUTER LOADINGS

Outer loadings, as described by Hair et al. (2022), refer to the correlations between observed variables (indicators) and their corresponding latent constructs in a measurement model. Indicators with outer loadings above 0.70 are considered strong. Indicators with loadings between 0.40 and 0.70 should be considered for removal only if their deletion leads to an increase in composite reliability (Hair et al., 2022). From Table [8], most items exhibit strong relationships with their respective constructs. However, the items SQ4 and T3 do not represent their respective constructs as well, but they are within the acceptable range. Given that the Cronbach's Alpha for their respective constructs is above 0.700 and the Average Variance Extracted (AVE) is higher than 0.50, we can justify keeping these items in the model.

Table 8 - Outer Loadings

ITEMS	OUTER LOADINGS
PI1 --> PI	0.850
PI2 --> PI	0.839
PI3 --> PI	0.882
PEU1 --> PEU	0.874
PEU2 --> PEU	0.891
PEU3 --> PEU	0.898
T1 --> T	0.847

T2 --> T	0.803
T3 --> T	0.675
T4 --> T	0.861
F1 --> F	0.852
F2 --> F	0.856
F3 --> F	0.715
SQ1 --> SQ	0.816
SQ2 --> SQ	0.847
SQ3 --> SQ	0.821
SQ4 --> SQ	0.678
PRA1 --> PRA	0.848
PRA2 --> PRA	0.855
PRA3 --> PRA	0.888
PRA4 --> PRA	0.832
PRA5 --> PRA	0.839
PS1 --> PS	0.892
PS2 --> PS	0.844
PS3 --> PS	0.870
PS4 --> PS	0.853
IU1 --> IU	0.902
IU2 --> IU	0.904
IU3 --> IU	0.776

With the confirmation that the construct measures are reliable and valid, the next step is to evaluate the structural model results.

4.4. STRUCTURAL MODEL

We will assess the model's predictive capabilities and examine the relationships between constructs. Collinearity occurs when two or more constructs are highly correlated, making it

challenging to isolate their individual effects on the dependent variable. A common measure of collinearity is the variance inflation factor (VIF). In our analysis, VIF values exceeding 5 suggest that more than 80% of a construct's variance is explained by other formative indicators within the same construct (Hair et al., 2022), indicating potential collinearity issues. As shown in Table [9], we can confirm all constructs are within the acceptable results.

Table 9 - Variance Inflation Factor

CONSTRUCTS	VIF
PI --> IU	1.103
PEU --> IU	1.627
T --> IU	2.011
F --> IU	2.059
SQ --> IU	2.842
PRA --> IU	1.887
PS --> IU	2.138

Typically, an econometric model is expected to possess strong predictive capability when it achieves a high R-squared or adjusted R-square value. Many social scientists consider a model with a high R-square to have strong predictive power, whereas scientists and statisticians in the pure sciences typically regard models with an R-square below 0.6 as 'weak' (Ozili, 2022).

Since social science focuses on human behavior and relationships, which can change over time, it is challenging to accurately predict human behavior in this field. A R-squared between 0.5 and 0.99 is acceptable especially when most of the explanatory variables are statistically significant (Ozili, 2022). As shown in Table [10] it is possible to conclude that 53,9% of the intention to adopt digital banking services is explained by these 7 independent variables.

Table 10 - R-Squared

	R-SQUARE	R-SQUARE ADJUSTED
IU	0.539	0.521

Predictive relevance serves as an indication of the model's ability to predict outcomes beyond the data it was trained on, known as out-of-sample predictive power or predictive relevance. When a PLS path model demonstrates predictive relevance, it effectively forecasts data that were not included in the model's initial estimation process. Values larger than 0 indicate that

the exogenous constructs have predictive relevance for the endogenous construct under construction (Hair et al., 2022).

As shown in Table [11] the Q²predict value of 0.487 indicates that the model has good predictive relevance, meaning it is capable of accurately predicting the outcomes of the endogenous constructs.

The RMSE value of 0.727 and the MAE value of 0.564 both suggest that the model has a moderate level of prediction error. In conclusion, the combination of a strong Q²predict value and moderate RMSE and MAE values suggests that the model is robust with good predictive accuracy, aligning well with the standards described by Hair et al. (2022).

Table 11 - Q-Squared

	Q²PREDICT	RMSE	MAE
IU	0.487	0.727	0.564

PATH COEFFICIENT

The path coefficients of the model represent the hypothesized relationships among the constructs (Hair et al., 2022), having the values ranging from -1 to +1, the closer to +1 the stronger is the positive relationship and vice versa for negative values, the closer to 0 the weaker are the relationships.

We get the path coefficient results by means of the Bootstrapping test, where we assess whether a formative indicator significantly contributes to its corresponding construct.

In this study, we employed a one-tailed bootstrapping method with a 95% confidence level to test our hypothesis that the independent variables apply a positively significant influence on the dependent variable. A one-tailed test is appropriate because our hypothesis specifically predicts the direction of the relationship. By focusing on the positive direction, we enhance the sensitivity of our statistical analysis to detect this anticipated effect. According to standard guidelines, a hypothesis is accepted if for our scenario the T statistic exceeds 1.965 and the P-value is less than 0.05 (Hair et al. 2022).

Table 12 - Hypothesis Results

	PATH COEFFICIENT	STANDARD DEVIATION	T STATISTICS	P VALUES	
PI -> IU	0.156	0.048	3.260	0.001	Accepted

PEU -> IU	0.053	0.07	0.749	0.227	Rejected
T -> IU	-0.14	0.068	2.052	0.020	Accepted
F -> IU	0.053	0.089	0.593	0.277	Rejected
SQ -> IU	0.333	0.072	4.603	0.000	Accepted
PRA -> IU	0.256	0.082	3.119	0.001	Accepted
PS -> IU	0.231	0.085	2.729	0.003	Accepted

The hypothesis results can be described as follows:

H1. Perceived Innovativeness has a positive significant influence towards digital banking adoption.

Based on the results above, it is possible to assume that the intention of use of digital banking is strongly predicted by its Perceived innovativeness. Individuals with higher levels of essential innovation ability and desire to learn, find it easier to grasp new technologies (Musyaffi et al., 2024), proving that individuals with a higher perception of innovativeness tend to be more open to adopting new technologies, embracing innovation in the various aspects of their life, including banking services.

The significant influence of perceived innovativeness on digital banking adoption, as justified in this hypothesis, underscores the importance of recognizing individual's attitudes and predispositions towards technology, taking advantage of this digital banks can tailor their marketing strategies and user experiences with the goal of appealing more to innovative users and encouraging adoption.

H2. Perceived Ease of Use has a positive significant influence towards digital banking adoption.

Surprisingly, the Perceived Ease of Use did not prove to have a significant influence on Digital Banking adoption in this study, contradicting previous studies (Thakur & Srivastava, 2014; Windasari et al., 2022; Siagian et al., 2022), where Perceived Ease of Use was found to be a significant predictor of digital banking adoption.

Digital banks are known for their simplicity, and changes in the landscape, such as advancements in technology or shifts in user expectations, might have changed the factors that drive adoption. One possible explanation for this discrepancy is that users now expect a high level of ease of use as a standard feature, making it less of a differentiating factor compared to other attributes such as Trust and Service Quality. Additionally, the rapid evolution of digital interfaces and the increasing familiarity of users with technology could mean that ease of use has become a baseline expectation rather than a distinguishing feature influencing adoption.

H3. Trust has a positive significant influence towards digital banking adoption.

In this study, we refer to Trust as the belief that digital banks are honest, customer-focused and committed to keeping their promises, without taking advantage of their customers.

The path coefficient of -0.14 reveals a negative relationship between trust and digital banking adoption. This indicates that as trust increases, digital banking adoption tends to decrease. However, the absolute value of 0.14 signifies that this relationship is relatively weak. Even though this finding is statistically significant, it points to a surprising pattern that deserves further investigation.

This unexpected result suggests that there may be underlying factors influencing the relationship between trust and digital banking adoption. For instance, users might perceive traditional banking systems as more trustworthy, leading to lower adoption rates of digital banking despite potential benefits. Alternatively, aspects of digital banking, such as security concerns or unfamiliarity with the technology, could impact trust levels negatively.

Digital banking institutions, by not having a physical location, should focus on building a high-quality customer service that customers can continue to receive high quality services, even if they are only digital (Kantika et al., 2022). In the digital banking context, it is important that customers have the assurance that their personal and financial information will be protected and the bank will act with integrity. This trust is built when customers perceive that the bank is transparent, providing clear information about fees, terms and services without hidden agendas, ensuring that customers feel secure and valued.

To gain better insights, further research should examine specific elements of trust that affect digital banking adoption. This includes investigating users' perceptions of security, privacy, and reliability in digital banking platforms. Additionally, demographic factors such as age, education, and technological proficiency might play a role in how trust influences adoption rates. Understanding these nuances will provide a more comprehensive view of the trust-adoption relationship and help in developing strategies to enhance trust in digital banking solutions.

H4. Features have a positive significant influence towards digital banking adoption.

While previous research from Windasari (2022) indicated that the features of the applications positively affect the intention to use digital banking, this hypothesis was not supported in our study.

Several factors can explain this discrepancy, firstly the demographic and behavioral characteristics of the sample population in the present study differ from those prior, while on Windasari (2022) research only took into consideration the opinion of Gen Y and Gen Z, for this study there was no age restriction, and by including an older generation in the population

it might have included less tech-savvy individuals, or individuals with different banking needs and preferences, influencing the perception of digital banking features.

By contradicting Windasari (2022) study and showing that features do not significantly influence Digital Banking adoption, suggests that users now consider a robust set of features as a baseline expectation rather than a differentiating factor. This evolution reflects changing user priorities, where the quality of user experience and the reliability of the platform take precedence over the quantity of features offered. Future research and strategic developments in digital banking should thus focus on enhancing user experience, ensuring security, and providing personalized services to meet the evolving expectations of users.

H5. Service Quality has a positive significant influence towards digital banking adoption.

Previous research has established that service quality significantly influences the adoption of digital banking, a finding corroborated by the present study. According to Nugroho et al. (2023), enhancing service quality increases user interest in digital banking applications. Chai et al. (2016) further emphasize that high service quality helps distinguish banks from their competitors, gaining market share and enhancing overall performance. While Chai et al. primarily focuses on the bank's perspective, the present study highlights that service quality also significantly impacts the customer's perspective.

High service quality ensures accurate and efficient transaction processing, responsive and helpful customer support, and an ideal user experience. This level of service not only expresses high customer satisfaction but also attracts more users to adopt digital banking. As a result, banks that prioritize service quality are likely to see increased digital banking adoption, reflecting the importance of maintaining high standards to meet and exceed customer expectations.

H6. Perceived relative advantage has a positive significant influence towards digital banking adoption.

Previous research has established that perceived relative advantage significantly influences the adoption of various technologies. For instance, Pearson (2008) demonstrated its impact on internet banking adoption, while Sharma et al. (2020) highlighted its significance in mobile banking adoption. Similarly, studies by Gargouri (2023) and Kataria (2019) confirm its relevance in the context of digital banking adoption.

In present study, perceived relative advantage reflects the benefits customers believe they will gain from using digital banking compared to traditional banking methods. These benefits include increased efficiency, convenience, time-saving, and enhanced management features. As consumers become more comfortable with digital technologies, the perceived gap between the benefits of traditional and digital banking increases, making digital banking more attractive. The findings align with prior research, indicating that when customers perceive digital banking as offering superior advantages over traditional methods, they are more likely

to adopt these digital solutions. This underscores the importance for digital banks to continually innovate and highlight the tangible benefits they offer to attract and retain customers.

H7. Perceived Security has a positive significant influence towards digital banking adoption.

The significant influence of Perceived Security on digital banking adoption, as demonstrated in the present study, is in line with findings from previous research. In past studies Perceived Security was found to be the most significant factor in mobile banking apps (Apau & Lallie, 2022), as valid concern over possible data breaches and cyber-attacks steadily increases.

Perceived Security is closely linked with Trust, when customers perceive digital banking platforms as secure and trustworthy, as we have proved, they are more likely to feel comfortable using it for their financial transactions, enhancing customer confidence.

Security concerns are a primary barrier to this adoption, many digital banking having a two-factor authentication and biometrics to increase banking security (Musyaffi et al., 2024) as understandably customers are cautious about entrusting their finances. Furthermore, digital banking is considered competent at handling personal information due to the assurance of data protection mandated by government regulations. Such security guarantees have the potential to enhance customer's perceptions of the functionalities and advantages of digital banking, increasing technology's adoption (Musyaffi et al., 2024).

5. CONCLUSION

The primary objective of this study was to identify the factors influencing the behavioral intention to adopt Digital Banking services among bank customers in Portugal. Despite various limitations, the findings have been encouraging, providing valuable insights into the variables affecting this intention of adoption. This research can serve as a foundational step in understanding Digital Banking adoption, raising awareness among bank customers about the availability and benefits of these services, additionally increasing knowledge and information about Digital Banks should help mitigate the risks associated with these technologies.

The findings in this study confirm that a higher proportion of younger individuals are the primary adopters of digital banking, with significantly lower representation proportionally among older generations. This underlines the necessity for developing strategies aimed at better engaging older age groups, as there is substantial potential for growth in this demographic. The data reveals that younger people exhibit a stronger preference for using digital banking compared to older individuals, not being impacted by their respective educational background.

Furthermore, our analysis tries to demonstrate that several key variables significantly influence the adoption of Digital Banking. Perceived Innovativeness, Trust, Service Quality, Perceived Relative Advantage towards traditional banks, and Perceived Security all play a crucial role in encouraging the use of digital banking services. On the other hand, it was surprising to find that Perceived Ease of Use, which has been an important variable in previous literature and Features of the banking applications do not have a significant impact on adoption. This insight highlights the importance of focusing on enhancing trust, service quality and security features to foster broader acceptance and use of digital banking, while suggesting that merely improving the user interface or adding new features may not be sufficient to attract new users.

Overall, this study aims to provide valuable insights into the factors driving digital banking adoption and identifies areas for future research and strategy development, particularly in targeting older age groups and emphasizing the elements that most strongly influence user acceptance.

LIMITATIONS AND FUTURE WORK

This study faced several limitations that should be acknowledged. The recruitment of participants for the questionnaire posed a significant challenge. Despite using social networks as a primary source of reaching potential respondents, the response rate was lower than anticipated, with a lot of individuals showing reluctance to participate. This difficulty in obtaining a large and diverse sample may have affected the applicability of the findings. The challenge of acquiring a broad and varied sample size could have influenced the applicability of the results, potentially altering the outcome of the hypothesis not accepted.

Another limitation of this study is its reliance on self-reported data, which introduces the potential for biases such as social desirability. This occurs when survey respondents may alter their answers to reflect what they believe others would view positively. This limitation can compromise the accuracy and reliability of the data collected, as it may not truly reflect respondents' actual behaviors or attitudes. Thus, findings based on self-reported data should be interpreted cautiously, considering the inherent risk of skewed or misleading information.

To address these limitations and build on the findings of this research, several suggestions for future studies are proposed. Future research should aim to use a larger and more diverse sample to enhance the generalizability of the results, employing a mixed methods approach, by combining quantitative surveys with qualitative interviews could provide deeper insights into the factors influencing Digital Banking adoption. Exploring the impact of technological advancements and emerging trends, such as the integration of Artificial Intelligence and Blockchain technology, could offer valuable insights to researchers and practitioners. However, it is important to acknowledge that these are complex topics, which may pose challenges in finding suitable samples that meet the study's criteria.

BIBLIOGRAPHICAL REFERENCES

- Ali, T., & Yildirim, F. (2019). Impact of new trends: SWOT Analysis of Online and mobile banking: Case study of a Djiboutian bank. <https://www.semanticscholar.org/author/Tessir-Fahmi-Ali/2046070560>
- Annes.D, M. Q., & Sornaganesh, V. (2022). SWOT ANALYSIS OF DIGITAL BANKING DURING COVID 19. 18, 35–41. https://www.researchgate.net/publication/360620214_SWOT_ANALYSIS_OF_DIGITAL_BANKING_DURING_COVID_19
- Apau, R., & Lallie, H. (2022). Measuring User Perceived Security of Mobile Banking Applications. https://www.researchgate.net/publication/357733773_Measuring_User_Perceived_Security_of_Mobile_Banking_Applications
- Arner, D. W., Barberis, J. N., & Buckley, R. P. (2015). The Evolution of Fintech: A New Post-Crisis Paradigm? (SSRN Scholarly Paper 2676553). <https://doi.org/10.2139/ssrn.2676553>
- Auer, R., Cornelli, G., & Frost, J. (2020). Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.3724070>
- Auer, R., Cornelli, G., & Frost, J. (2022). The pandemic, cash and retail payment behaviour: Insights from the future of payments database. <https://www.bis.org/publ/work1055.htm>
- Barroso, M., & Laborda, J. (2022). Digital transformation and the emergence of the Fintech sector: Systematic literature review. *Digital Business*, 2(2), 100028. <https://doi.org/10.1016/j.digbus.2022.100028>
- Blanchflower, T. M. (2018). Leavy, P. (2017). *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*. New York, NY: The Guilford Press. ISBN 9781462514380. 300 pp. (Paperback). *Family and Consumer Sciences Research Journal*, 47(1), 101–102. <https://doi.org/10.1111/fcsr.12276>
- Böhme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, Technology, and Governance †. *Journal of Economic Perspectives*, 29, 213–238. <https://doi.org/10.1257/jep.29.2.213>
- Buchanan, R. (2019). Systems Thinking and Design Thinking: The Search for Principles in the World We Are Making. *She Ji: The Journal of Design, Economics, and Innovation*, 5(2), 85–104. <https://doi.org/10.1016/j.sheji.2019.04.001>

- Cahete, J. N. M. (2021). Traditional banking at digital age are they keeping up with changes in consumer behavior?: Millennials' perception in the portuguese market [masterThesis]. <https://repositorio.iscte-iul.pt/handle/10071/22349>
- Chai, B. B.-H., Tan, P. S., & Goh, T. S. (2016). Banking Services that Influence the Bank Performance. *Procedia - Social and Behavioral Sciences*, 224, 401–407. <https://doi.org/10.1016/j.sbspro.2016.05.405>
- Danurdoro, K., & Wulandari, D. (2016). The Impact of Perceived Usefulness, Perceived Ease of Use, Subjective Norm, and Experience Toward Student's Intention to Use Internet Banking. *Jurnal Ekonomi Dan Ekonomi Studi Pembangunan*, 8(1), 17–22. <https://doi.org/10.17977/um002v8i12016p017>
- Digital Banks—Worldwide | Statista Market Forecast. (n.d.). Statista. Retrieved 7 July 2024, from <https://www.statista.com/outlook/fmo/banking/digital-banks/worldwide>
- Duval, L. (2016). How financial technologies are revolutionizing the financial industry [masterThesis]. <https://repositorio.iscte-iul.pt/handle/10071/13903>
- Ferreira, P. (2023, August 29). Revolut: Redefining Convenience in Digital Banking. *Financial and Business News | Finance Magnates*. <https://www.financemagnates.com/trending/revolut-redefining-convenience-in-digital-banking/>
- Gambacorta, L. (2023). Digital Banking: Opportunities and Challenges. <https://www.imf.org/-/media/Files/News/Seminars/2022/sti-digital-money/bis-digital-banking-in-asia-051123.ashx>
- Gargouri, O. (2023). DIGITAL BANKING SERVICES: CUSTOMERS' PROS AND CONS. A THEORETICAL LITERATURE REVIEW. *BUSINESS EXCELLENCE AND MANAGEMENT*, 13, 5–13. <https://doi.org/10.24818/beman/2023.13.2-01>
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in Online Shopping: An Integrated Model. *MIS Quarterly*, 27(1), 51–90. <https://doi.org/10.2307/30036519>
- Hair, J., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2022). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). https://www.researchgate.net/publication/354331182_A_Primer_on_Partial_Least_Squares_Structural_Equation_Modeling_PLS-SEM
- Henseler, J., Lee, N., Roemer, E., Kemény, I., Dirsehan, T., & Cadogan, J. W. (2024). Beware of the Woozle effect and belief perseverance in the PLS-SEM literature! *Electronic Commerce Research*, 24(2), 715–744. <https://doi.org/10.1007/s10660-024-09849-y>

- Jafri, J. A., Mohd Amin, S. I., Abdul Rahman, A., & Mohd Nor, S. (2024). A systematic literature review of the role of trust and security on Fintech adoption in banking. *Heliyon*, 10(1), e22980. <https://doi.org/10.1016/j.heliyon.2023.e22980>
- Kantika, K., Kurniasari, F., & Mulyono, M. (2022). The Factors Affecting Digital Bank Services Adoption Using Trust as Mediating Variable. *Journal of Business and Management Review*, 3, 690–704. <https://doi.org/10.47153/jbmr310.4882022>
- Kataria, M. (2019, September 3). DIGITAL BANKING IN INDIA: RECENT TRENDS ... | Lecture notes Technology | Docsity. <https://www.docsity.com/en/digital-banking-in-india-recent-trends/8918143/>
- King, I. (2018, April 26). New UK banks challenge dominance of 'big four'. *Sky News*. <https://news.sky.com/story/revolut-is-uks-first-digital-bank-unicorn-11347255>
- Kreger, A. (2018, February 28). Simplicity: The Core of Phenomenal Digital Banking Experiences. *The Financial Brand*. <https://thefinancialbrand.com/news/digital-banking/simplicity-digital-banking-guide-trends-71025/>
- Matos, M. M. N. de. (2015). *ActivoBank: A new market opportunity* [masterThesis]. <https://repositorio.ucp.pt/handle/10400.14/18383>
- Musyaffi, A., Johari, R., Sobirov, B., Oli, M., Rahmi, & Afriadi, B. (2024). Examining Initial Trust in Adoption of Digital Banking Platform: A Personal Innovativeness and Security Perspective. *Journal of System and Management Sciences*, 14, 67–86. <https://doi.org/10.33168/JSMS.2024.0105>
- Nugroho, A. P., Zed, E. Z., & Syakila, F. (2023). INTENTION TO USE DIGITAL BANK: ROLE OF PERCEIVED EASE OF USE, CUSTOMER KNOWLEDGE, SERVICE QUALITY, AND SYSTEM SECURITY. *Jurnal Ekonomi*, 12(01), Article 01. <https://www.ejournal.seaninstitute.or.id/index.php/Ekonomi/article/view/1297>
- Ozili, P. K. (2022). The Acceptable R-Square in Empirical Modelling for Social Science Research (SSRN Scholarly Paper 4128165). <https://doi.org/10.2139/ssrn.4128165>
- Pearson, J. (2008). An Exploratory Study Into The Adoption of Internet Banking in a Developing Country: Malaysia. *Journal of Internet Commerce*, 7, 29–73. <https://doi.org/10.1080/15332860802004162>
- Romānova, I., & Kudinska, M. (2016). Banking and Fintech: A Challenge or Opportunity? In *Contemporary Issues in Finance: Current Challenges from Across Europe* (Vol. 98, pp. 21–35). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1569-375920160000098002>

- Sammut-Bonnici, T., & Galea, D. (2015). SWOT Analysis. <https://www.studocu.com/row/document/university-of-malta/marketing/sammut-bonnici-swot-swot-analysis/31546674>
- Sharma, D., Mehta, K., & Rani, A. (2020). Mobile Banking Adoption Behaviour in India Using EFA and CFA. *Journal of Advanced Research in Dynamical and Control Systems*, 12, 271–279. <https://doi.org/10.5373/JARDCS/V12I8/20202473>
- Siagian, H., Jiwa, Z., Basana, S., & Basuki, R. (2022). The effect of perceived security, perceived ease of use, and perceived usefulness on consumer behavioral intention through trust in digital payment platform. *International Journal of Data and Network Science*, 6, 861–874. <https://doi.org/10.5267/j.ijdns.2022.2.010>
- Thakor, A. V. (2019). Fintech and Banking: What Do We Know? (SSRN Scholarly Paper 3429223). <https://papers.ssrn.com/abstract=3429223>
- Thakur, R., & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research*, 24(3), 369–392. <https://doi.org/10.1108/IntR-12-2012-0244>
- Vankevich, Y. (2020). Swot analysis of digitalization in Belarus banking industry. *Education and Science in the 21st Century: Articles of the V International Scientific and Practical Conference, Vitebsk, November 29, 2020 / Vitebsk State Technological University*. <http://rep.vstu.by/handle/123456789/14407>
- Vijai, C. (2019). Fintech in India – Opportunities and Challenges (SSRN Scholarly Paper 3354094). <https://doi.org/10.2139/ssrn.3354094>
- Vilkinis, T., & Vasciula, T. (2018). Disruption of the Financial Services Industry: A Case Study of British Fintech Startup Revolut. CBS Research Portal. <https://research.cbs.dk/en/studentProjects/disruption-of-the-financial-services-industry-a-case-study-of-bri>
- Windasari, N. A., Kusumawati, N., Larasati, N., & Amelia, R. P. (2022). Digital-only banking experience: Insights from gen Y and gen Z. *Journal of Innovation & Knowledge*, 7(2). <https://doi.org/10.1016/j.jik.2022.100170>
- Worthington, S., & Welch, P. (2011). Banking without the banks. *International Journal of Bank Marketing*, 29, 190–201. <https://doi.org/10.1108/02652321111107657>
- Zhong, Y., Oh, S., & Moon, H. C. (2021). Service transformation under industry 4.0: Investigating acceptance of facial recognition payment through an extended technology acceptance model. *Technology in Society*. <https://doi.org/10.1016/j.techsoc.2020.101515>

APPENDIX A

0% Survey Completion 100%

Caro Participante,

Obrigado por dedicar o seu tempo a participar neste inquérito. Sou estudante de Análise e Gestão de Riscos na Nova IMS e estou a realizar um estudo para compreender a adoção dos serviços de Bancos Digitais em Portugal para a minha dissertação de mestrado.

Este inquérito demorará menos de 8 minutos a ser concluído e agradeço as suas respostas honestas. A participação é anónima e voluntária, e tem a opção de sair do inquérito a qualquer momento, sem qualquer consequência. As respostas serão mantidas confidenciais e exclusivamente para fins de investigação.

Se tiver alguma questão, não hesite em contactar-me através do email r20191267@novaims.unl.pt. Ao clicar em avançar, está a consentir a sua participação neste estudo.

Atenciosamente,
Hugo Dias

0% Survey Completion 100%

Bancos tradicionais e bancos digitais representam dois paradigmas distintos no cenário financeiro, cada um oferecendo abordagens únicas para serviços bancários.

Os **bancos tradicionais** são caracterizados pela sua presença tangível através de agências físicas, promovendo interações presenciais entre clientes e funcionários bancários, limitadas pela acessibilidade restrita, com serviços geralmente disponíveis durante horários especificados. Exemplos de bancos tradicionais incluem **Caixa Geral de Depósitos, BPI, Santander, Montepio**, entre outros.

Por outro lado, os **bancos digitais** operam principalmente através de plataformas online e aplicativos móveis, atendendo às necessidades dos clientes remotamente, priorizando eficiência e conveniência, com acessibilidade 24/7 e foco em inovação, redefinindo a experiência bancária para a era digital. Exemplos de bancos digitais incluem **Revolut, ActivoBank, Moey, Wise, BIG**, entre outros.



Quantos anos tem?

18-24

25-34

35-44

45-54

55+

Qual é o seu género?

Masculino

Feminino

Prefiro não dizer

Qual é o seu nível académico completado?

Ensino Secundário

Licenciatura

Pós-Graduação

Mestrado

Doutoramento

Tem uma conta bancária?

Sim

Não

Há quanto tempo tem uma conta bancária?

Até 1 ano

Entre 1 a 3 anos

Entre 4 a 6 anos

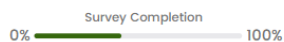
Mais de 7 anos

Possui uma conta bancária num Banco Digital?

Sim

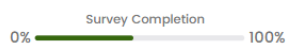
Não





Responda o quanto concorda ou discorda com as seguintes afirmações.

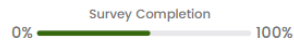
	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
Se eu souber que existe uma atualização relacionada a uma nova tecnologia, vou tentar experimentar a tecnologia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sou uma pessoa que gosta de experimentar novas tecnologias em comparação com os meus amigos ou colegas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sinto-me feliz quando experimento uma nova tecnologia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Responda o quanto concorda ou discorda com as seguintes afirmações.

	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
É fácil usar sistema de Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
É fácil tornar-me habilidoso a usar serviços de Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aprender a usar Bancos Digitais é fácil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Responda o quanto concorda ou discorda com as seguintes afirmações.

Com base na minha experiência com bancos digitais...

	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
sei que são honestos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sei que se preocupam com os clientes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sei que não são oportunistas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sei que são de confiança	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Responda o quanto concorda ou discorda com as seguintes afirmações.

	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
Gosto de usar Bancos digitais porque oferecem muitas funcionalidades úteis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
O Banco Digital que utilizo disponibiliza funcionalidades que necessito	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
O Banco Digital que utilizo disponibiliza funcionalidades que facilitam a gestão financeira pessoal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Eu acredito que os Bancos Digitais...

	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
facilitam minhas atividades bancárias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
me permitem completar minhas atividades bancárias mais rapidamente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
me permitem concluir minhas atividades bancárias de forma conveniente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
me permitem gerir minhas atividades bancárias de forma mais eficiente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
são úteis para realizar minhas atividades bancárias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
Confio na competência dos serviços de Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estou satisfeito com os serviços financeiros de Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Os Bancos Digitais prestam serviço conforme prometido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Os Bancos Digitais têm capacidade própria para lidar com problemas de atendimento ao cliente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Eu acredito que...

	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
as aplicações de Bancos Digitais são seguras	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
as aplicações de Bancos Digitais têm controlos de segurança rigorosos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
que as transações nas aplicações de Bancos Digitais estão protegidas e seguras	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
que os Bancos Digitais possuem funções de segurança adequadas a proteger os dados dos utilizadores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	Discordo completamente	Discordo	Neutro	Concordo	Concordo completamente
Eu continuarei a utilizar os serviços de Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Daqui a cinco anos, pretendo continuar a utilizar Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu encorajo a outros a utilizarem Bancos Digitais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





This is to certify that

Project No.: **FIN2024-4-222123**

Project Title: **Digital Banking adoption in Portugal**

Principal Researcher: **Hugo Dias**

according to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to meet the requirements of the NOVA IMS Internal Review Board, being considered **APPROVED** on 4/22/2024.

It is the Principal Researcher's responsibility to ensure that all researchers and stakeholders associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change;
- Any unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role or any other change in research personnel involved in the project.

Lisbon, 4/22/2024

NOVA IMS Ethics Committee
ethicscommittee@novaims.unl.pt



NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa