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Impact of Digital Payments and Cryptocurrencies on the Banking World

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ABSTRACT

The financial system is undergoing a profound transformation driven by the rapid advancement of digital payments, cryptocurrencies, and decentralized technologies. These innovations are challenging the traditional banking model, reshaping financial intermediation, and prompting a reevaluation of how value is exchanged, stored, and regulated in the modern economy. Banks have historically been the cornerstone of payment processing, credit issuance, and financial trust. However, the rapid growth of digital payments and the emergence of decentralized financial systems are redefining the expectations of both consumers and institutions.

A key trend analyzed in this study is the gradual displacement of banks as exclusive intermediaries in financial transactions. Cryptocurrencies and blockchain-based solutions have accelerated this trend, allowing users to transfer funds across borders instantly and at lower costs compared to traditional banking methods. At the same time, fintech companies and mobile payment platforms such as PayPal, Alipay, and Revolut have revolutionized how people send and receive money, further reducing dependence on conventional banking systems. The emergence of neobanks has also highlighted a new banking format that is proving highly effective, blending digital agility with financial inclusivity.

However, this transformation is not without its complexities. Financial inclusion has expanded, providing populations outside the banking system with access to financial services through mobile wallets and cryptocurrency adoption. However, this transition also introduces regulatory uncertainties, cybersecurity threats, and financial stability concerns, as traditional banking models struggle to adapt. In response, regulators and central banks have begun adapting frameworks, such as the EU's MiCA regulation, and experimenting with Central Bank Digital Currencies (CBDCs) as a public-sector counterpart to private digital innovation. Rather than a disruptive threat, these changes represent a technological evolution that, if properly harnessed, can benefit both end-users and financial entities.

This study critically examines the role of digital payments and cryptocurrencies in the reconfiguration of the banking sector, emphasizing that the future of finance is not purely decentralized nor strictly traditional. It is increasingly hybrid: a space where legacy infrastructure coexists with programmable money, algorithmic governance, and digital-native services. Ultimately, the question is no longer whether banks will survive, but how they will adapt and innovate within this new financial paradigm.

Key words: digital payments, cryptocurrencies, blockchain technology, traditional banking, neobanks, decentralized finance (DeFi), financial innovation, central bank digital currencies (CBDCs), MiCA regulation, fintech, hybrid banking models, digital transformation.

RESUMEN

El sistema financiero está atravesando una profunda transformación impulsada por el rápido avance de los pagos digitales, las criptomonedas y las tecnologías descentralizadas. Estas innovaciones desafían el modelo bancario tradicional, reformulan la intermediación financiera y provocan una reevaluación de cómo se intercambia, almacena y regula el valor en la economía moderna. Históricamente, los bancos han sido pilares del procesamiento de pagos, la emisión de crédito y la confianza financiera. Sin embargo, el crecimiento acelerado de los pagos digitales y los sistemas financieros descentralizados están redefiniendo las expectativas tanto de los consumidores como de las instituciones.

Una de las tendencias clave analizadas en este estudio es el desplazamiento gradual de los bancos como intermediarios exclusivos en las transacciones financieras. Las criptomonedas y las soluciones basadas en blockchain han acelerado esta tendencia, permitiendo a los usuarios transferir fondos de forma instantánea y con menores costos en comparación con los métodos bancarios tradicionales. Al mismo tiempo, empresas fintech y plataformas de pago móvil como PayPal, Alipay y Revolut han revolucionado la forma en que las personas envían y reciben dinero, reduciendo aún más la dependencia de los sistemas bancarios convencionales. La aparición de los neobancos también ha evidenciado un nuevo formato bancario altamente eficaz, que combina agilidad digital con inclusión financiera.

Sin embargo, esta transformación no está exenta de complejidades. La inclusión financiera se ha ampliado, brindando acceso a servicios a poblaciones previamente excluidas mediante billeteras móviles y criptomonedas. No obstante, esta transición introduce incertidumbres regulatorias, amenazas de ciberseguridad y riesgos para la estabilidad financiera, ya que los modelos tradicionales enfrentan dificultades para adaptarse. En respuesta, los entes reguladores y bancos centrales han comenzado a ajustar sus marcos normativos, como la regulación MiCA en la Unión Europea, y a experimentar con monedas digitales de bancos centrales (CBDCs) como respuesta pública a la innovación digital. Más que una amenaza disruptiva, estos cambios representan una evolución tecnológica que, si se gestiona adecuadamente, puede beneficiar tanto a los usuarios como a las entidades financieras.

Este trabajo examina críticamente el papel de los pagos digitales y las criptomonedas en la reconfiguración del sector bancario, subrayando que el futuro de las finanzas no será completamente descentralizado ni estrictamente tradicional. Se perfila, más bien, como un modelo híbrido: un espacio en el que la infraestructura heredada convive con el dinero programable, la gobernanza algorítmica y los servicios nativos digitales. En última instancia, la cuestión ya no es si los bancos sobrevivirán, sino cómo lograrán adaptarse e innovar dentro de este nuevo paradigma financiero.

Palabras clave: pagos digitales, criptomonedas, tecnología blockchain, banca tradicional, neobancos, finanzas descentralizadas (DeFi), innovación financiera, monedas digitales de bancos centrales (CBDCs), regulación MiCA, fintech, modelos bancarios híbridos, transformación digital.

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1. Introduction

1.1 Background and Motivation

For decades, traditional banks held a near-monopoly over the financial system. They controlled access to payments, savings, credit, and cross-border transfers, acting as the central gateway for nearly all financial activity. Individuals and businesses relied on banks not only to move money but also to store value, assess risk, and provide trust.

In recent years, however, this dominance has begun to shift due to rapid technological innovation. Digital payment platforms and cryptocurrencies have introduced new ways to exchange value. Very often these new ways are faster, cheaper, and more flexible than traditional banking services. What once required a visit to a physical branch can now be done instantly through a smartphone, while decentralized finance (DeFi) platforms are offering core financial services without any traditional intermediaries. As a result, banks are no longer the only players in the financial world.

Growing up in a family of bankers, I was constantly exposed to conversations about the financial system and how banks operate. Over time, I began to notice a recurring theme in these discussions: the traditional banking model was being challenged by new technologies. Today, this is more relevant than ever, as fintech companies, blockchain-based platforms, and even central banks are redefining the future of finance. This study explores how digital payments and cryptocurrencies are disrupting traditional banking models, and how financial institutions are responding to remain relevant in the digital age. I believe that studying this topic is both personally meaningful and essential to understanding one of the most significant financial transformations of this modern time.

1.2 Objectives of the Study

The main objective of this study is to analyze the impact of digital payments and cryptocurrencies on traditional banking, assessing how these technological innovations are transforming payment systems, redefining the role of financial institutions, and driving new models within the global financial system. This research aims to understand how these tools are influencing the efficiency and structure of banking services, while also identifying the opportunities and challenges they present for both traditional banks and emerging digital actors.

To achieve this general objective, several specific goals are proposed. First, the study seeks to analyze how digital payments and cryptocurrencies are reshaping the architecture of financial transactions, particularly in terms of speed, accessibility, and cost-efficiency. Second, it explores the emergence of neobanks and decentralized platforms as new actors in the financial ecosystem, assessing their impact on the traditional banking model. Third, the study examines how legacy institutions are responding to maintain relevance in a rapidly evolving environment. It also investigates the role of regulatory frameworks, such as the European Union's MiCA regulation and the global push toward Central Bank

Digital Currencies (CBDCs), in shaping the development of this new financial landscape. Finally, the study aims to reflect on the broader implications of these trends for the future of banking, including the potential emergence of hybrid financial systems that blend traditional trust-based models with cutting-edge digital infrastructure.

1.3 Methodology

This study adopts a primarily qualitative research approach, focusing on real-life case studies and examples to explore the impact of digital payments and cryptocurrencies on the traditional banking system. The core phase involves an in-depth literature review, utilizing academic articles, institutional reports, and case analyses related to financial digitalization, cryptocurrencies, DeFi, fintech advancements, and CBDCs. This review establishes the theoretical framework necessary to understand the evolution and distinctive features of the technologies transforming the global financial sector. Key references include publications from the World Bank, the Bank for International Settlements, and the European Central Bank, which provide regulatory and macroeconomic context. Additional insights from McKinsey & Company, the University of Cambridge, and PwC's Global Fintech Reports, as well as academic journals like the *Journal of Banking and Finance* and the *Journal of Economics and Business*, add both industry-focused and scholarly depth.

While the emphasis remains on qualitative insights, the study is also supported by relevant quantitative data where applicable, such as transaction volumes, adoption rates, and market penetration metrics, to highlight broader trends and validate findings. These data points are drawn from financial databases, market intelligence sources, and official statistics to contextualize the qualitative evidence and illustrate the ongoing shift from traditional banking models to digital finance alternatives.

To complement the analysis, the study examines selected case studies from both countries and corporation initiatives that have made significant progress in adopting digital financial tools. These examples include China's implementation of the digital yuan, the European Union's exploration of a digital euro, and El Salvador's adoption of Bitcoin as legal tender. On the corporate side, innovations such as JPMorgan's development of JPM Coin, BBVA's integration of blockchain-based services, Goldman Sachs' partnership with Apple to launch the Apple Card, and Bankinter's acquisition of Evo Banco illustrate how traditional banks are embracing digital transformation and hybrid banking models. Additionally, Citi's collaboration with the SIX Digital Exchange to facilitate tokenized asset trading highlights the growing integration of blockchain technology in mainstream finance.

A comparative analysis of regulatory approaches is also conducted, highlighting how policy frameworks and corporate strategies shape the success or limitations of digital payments and cryptocurrencies. This combination of theoretical insights, real-life case studies, and selected quantitative evidence is intended to provide a well-rounded understanding of how digital finance is transforming the role of traditional banks and reshaping financial systems worldwide.

2. The Evolution of Digital Payments

2.1 Historical Development of Digital Payments

The history of digital payments can be traced back to the 1980s with the introduction of credit and debit cards, which marked the beginning of cashless transactions. These early tools enabled a shift away from physical cash, introducing consumers to the convenience and security of electronic payment methods. Over the next few decades, these systems laid the groundwork for more sophisticated digital financial services. With the rise of the internet in the late 1990s, platforms like PayPal expanded the scope of online transactions, by living up to their promise of digital payments and seamless integration across all devices (Naik, 2016).

The 2010s saw a dramatic acceleration in the development of mobile payment solutions. Smartphones became central to how people interacted with their finances, giving rise to mobile wallets like Apple Pay, Google Pay, and Samsung Pay. These platforms enabled contactless transactions and also integrated loyalty programs, and biometric security features. In countries like India, mobile payments rapidly became mainstream, boosted by government initiatives and high smartphone penetration (KPMG, 2019). India's 2016 demonetization initiative marked a crucial turning point in the widespread adoption of digital payment methods, with systems like the Unified Payments Interface (UPI) enabling instant person-to-person transactions and transforming the way people conduct financial activities (Mahesh & Ganesh Bhat, 2022). This decade also saw fintechs like Wise (formerly TransferWise) enter the scene, initially targeting retail transfers and later expanding into SME and business transactions. Wise was a pioneer in disrupting the traditional banking industry by using a peer-to-peer model that matched users with opposite currency needs, enabling low-cost, transparent international transfers without moving money across borders. This evolution of the fintech industry signified a transformative shift in the financial landscape, with traditional banks facing increased competition from technology-driven firms that redefined customer expectations and industry benchmarks (Comeig Ramirez et al., 2025).

2.2 Key Technologies Driving the Shift

The evolution of digital payments in the 21st century has been closely intertwined with the rapid advancement of mobile technology and contactless payment systems. Smartphones have become central to personal finance, enabling users to manage accounts, make transactions, and access a range of financial services through dedicated apps. Mobile wallets such as Apple Pay, Google Pay, and Samsung Pay exemplify this transformation by allowing users to complete secure transactions using Near Field Communication (NFC) technology, often paired with biometric authentication like fingerprint or facial recognition. This integration of hardware and software has dramatically improved the speed, convenience, and security of everyday payments. In many countries, consumer adoption has grown in parallel with the development of app ecosystems and digital banking interfaces, which provide users

with seamless access to account management, and personalized financial services. For instance, in the UK, digital banks like Monzo and Revolut have attracted a growing user base with features such as instant card freezing and real-time spending alerts, appealing particularly to tech-savvy consumers (Chmiel, 2024). Adoption is particularly strong among younger generations, who represent the future core clientele of the financial system and are quick to integrate these digital solutions into their daily financial routines.

Simultaneously, the adoption of QR code-based payments and the rise of open banking frameworks have expanded the scope and flexibility of digital finance. QR codes offer a low-cost, infrastructure-light solution that enables even small merchants and informal vendors to accept digital transactions. While this model was popularized by Chinese super apps like WeChat Pay and Alipay, it is increasingly being adopted globally, including by European mobile payment initiatives (Beck et al., 2022). On the institutional side, open banking, enabled through Application Programming Interfaces (APIs), has allowed third-party providers to securely access user data from banks with consent, fostering a competitive and collaborative financial environment. This shift, especially notable under the European Union's Revised Payment Services Directive (PSD2), has paved the way for more personalized and data-driven services while enhancing customer control over their financial data (Ziegler & Shneor, 2020). When combined with cloud computing and real-time data analytics, these developments have allowed for secure and adaptive payment platforms that continue to redefine the financial landscape.

2.3 The Acceleration of Digital Payments Post-COVID-19

Alongside advances in payment technologies, the COVID-19 pandemic significantly accelerated the global shift toward digital payments. The crisis prompted a large increase in digital payment usage worldwide, as lockdowns and health concerns precipitated consumers and businesses to turn to cashless transactions. According to World Bank survey data, roughly two-thirds of adults globally made or received a digital payment in 2021, a marked rise from pre-pandemic levels. In developing economies, nearly 40% of adults opened their first financial account during the pandemic specifically to receive a government payment, highlighting how emergency relief efforts also advanced financial inclusion (World Bank, 2022). Governments helped enable this transition by distributing COVID-19 relief, unemployment benefits, and stimulus funds via digital channels. During this period, digital payments experienced rapid adoption across diverse regions and demographic groups, contributing to reduced financial exclusion and reshaping the way individuals conduct everyday financial transactions.

Importantly, the pandemic-driven gains in digital payments have proven durable and even continued to evolve in the post-pandemic period. Studies indicate that the widespread shift to digital transactions has largely persisted as economies reopened, with many new users retaining their cashless habits. For example, a McKinsey & Company consumer survey found that over 90% of respondents in 2023 had used some form of digital payment, up from less than 80% before the pandemic (Chen et al., 2023).

Such trends suggest that the convenience and safety advantages of digital payments have led consumers to embrace these technologies for the long term. Even demographic groups such as older adults, who were previously slower to adopt digital finance, saw significant increases in usage during COVID-19, indicating a broad normalization of digital payments (Bijlsma et al., 2022). In effect, the COVID-19 shock acted as a catalyst that permanently accelerated the trajectory of cashless payments worldwide.

3. Cryptocurrencies: Beyond Traditional Banking

3.1 Origins, Concepts, and Their Role as a Financial Tool

The emergence of cryptocurrencies has redefined fundamental ideas in monetary economics, offering a decentralized alternative to state-issued currency. Bitcoin, launched in 2009 by the pseudonymous Satoshi Nakamoto, was the first cryptocurrency to successfully use blockchain technology to record transactions on a public, immutable ledger without requiring a trusted central authority (Ciarko et al., 2023). This innovation allowed Bitcoin to function as a peer-to-peer electronic cash system, igniting the development of thousands of other cryptocurrencies. Historically, monetary theory held that money needed a non-monetary use to gain acceptance (Luther & Sridhar, 2022). However, Bitcoin's rise challenged this notion, demonstrating that digital tokens without intrinsic value can become widely accepted as media of exchange when supported by technological and social consensus. As a result, cryptocurrencies are now seen not just as speculative assets, but as a potential evolutionary stage in the history of money.

Beyond their conceptual significance, cryptocurrencies have gained practical traction as both payment mechanisms and financial tools. Bitcoin and similar assets allow for cross-border transactions with minimal fees and no intermediary oversight. These benefits are particularly valuable in areas with limited access to banking services or where there are persistent inflationary pressures. The decentralized nature of cryptocurrencies allows users to maintain greater control over their assets, enabling transactions without reliance on financial intermediaries or centralized authorities, as mentioned before. This not only reduces the costs associated with banking but also enhances financial autonomy, an important consideration in countries experiencing currency devaluation, or political instability (Nicolini & Intini, 2024).

Moreover, cryptocurrencies function as financial tools that can be held, transferred, or exchanged much like traditional currencies or commodities. Although their high volatility makes them less reliable for saving value over time, cryptocurrencies are still commonly used for investment, risk management, and speculation. Bitcoin's capped supply has led some to compare it to "digital gold," and it has been included in some institutional investment portfolios as an alternative asset class (Crypto.com, 2025). Its underlying technology, blockchain, also ensures transparency and traceability in transactions, which is particularly useful for auditing and financial recordkeeping (Nicolini & Intini, 2024). Thus, even in

their current state of evolution, cryptocurrencies demonstrate real financial utility beyond being merely tools for speculation or symbols of monetary decentralization.

3.2 DeFi and Stablecoins: The New Financial Ecosystem

As digital assets continue to evolve, their use has expanded beyond simple transactions and investment, giving rise to a new wave of financial innovation, most notably in the form of stablecoins and DeFi. These innovations have extended the utility of digital assets beyond speculative investment, offering new financial infrastructure with the potential to rival traditional banking. Stablecoins, which are cryptocurrencies pegged to fiat currencies like the U.S. dollar, enable the benefits of blockchain technology without the extreme volatility typical of cryptocurrencies such as Bitcoin or Ethereum. Initially developed for trading stability on crypto exchanges, they now serve a broader set of functions including payments, remittances, and savings, particularly in regions grappling with inflation or lacking banking access (Adani et al., 2025). For example, USDT and USDC are popular U.S. dollar–pegged stablecoins that enable fast, low-cost international money transfers. Their adoption is accelerating in countries like Nigeria and Turkey, where economic instability drives demand for alternative stores of value. (Mai, 2022).

Parallel to the rise of stablecoins, DeFi platforms are reconstructing financial services by leveraging smart contracts on blockchain networks. These applications allow users to lend, borrow, trade, and earn interest without relying on traditional intermediaries like banks. At its core, DeFi offers an open, permissionless, and global financial system, challenging legacy structures with greater transparency and accessibility. As of 2024, more than USD 50 billion worth of stablecoins were locked into DeFi applications, illustrating their foundational role in this ecosystem (Adani et al., 2025).

Beyond individual use cases, stablecoins and DeFi are increasingly regarded as fundamental components of a broader digital financial ecosystem. Stablecoins' growing integration into services offered by firms like Visa, PayPal, and JPMorgan signals a shift toward institutional adoption and regulatory normalization (Adani et al., 2025). At the same time, DeFi platforms continue to scale in scope and sophistication, providing lending, trading, and yield-generating services governed by smart contracts rather than centralized entities (Mai, 2022). These innovations are not evolving in isolation: stablecoins supply the liquidity that powers most DeFi applications, while DeFi expands the utility and demand for stablecoins by embedding them into new, borderless financial services. Together, they represent a transformative shift in global finance, one that prioritizes transparency, accessibility, and decentralization over traditional models of control.

3.3 Key Challenges and Opportunities

While stablecoins and DeFi have introduced significant innovations to the financial system, they also face considerable challenges that obstruct broader adoption. One of the most notable setbacks was the

collapse of algorithmic stablecoins such as TerraUSD in 2022, which exposed the fragility of certain design models and caused distrust among users and regulators (Mai, 2022). In contrast, collateral-backed stablecoins like USDC have demonstrated greater resilience but still face scrutiny regarding their transparency and regulatory compliance (Mai, 2022). The lack of consistent global regulation exacerbates these risks, creating uncertainty for institutional actors and limiting the ability of banks to engage in crypto-related services. In the European Union, the Markets in Crypto-Assets (MiCA) Regulation, adopted by the EU Parliament in April 2023, has been designed to level the playing field by standardizing rules across member states. This regulatory shift is enabling banks to enter the crypto space and compete more directly with fintechs and exchanges, which had previously benefited from regulatory gaps.

Moreover, the decentralized nature of DeFi introduces legal and compliance complexities, especially in areas such as anti-money laundering (AML), counter-terrorism financing (CTF), and Know Your Customer (KYC) enforcement. DeFi protocols, which often operate without centralized governance or intermediaries, make it challenging for regulators to ensure financial stability. According to Al Naqbi et al. (2025), the anonymity and lack of regulation in crypto transactions significantly increases vulnerability to financial crimes, including money laundering and fraud. On top of threatening customer protection, these risks may also undermine broader trust in digital financial services. As a result, regulators are increasingly focused on implementing robust monitoring systems, international collaboration, and clearer legal frameworks to mitigate misuse while supporting innovation. Until such frameworks are fully established and enforced, the crypto-financial ecosystem will remain fragmented and exposed to both technological and systemic vulnerabilities.

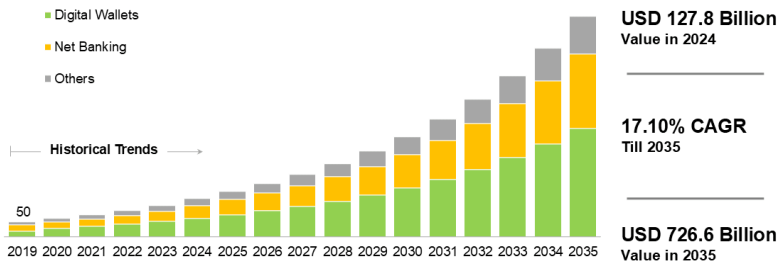
Despite these challenges, blockchain technology also offers critical benefits that could strengthen trust and accountability in financial systems. Its core attributes, immutability, transparency, and traceability, allow for the permanent recording of all transactions in a public ledger, accessible and verifiable by anyone. Unlike traditional financial systems, where records can be manipulated or hidden, blockchain enables authorities to trace illicit funds and even seize assets in cases of fraud or money laundering (IBM, 2025). Furthermore, advocates such as Larry Fink, CEO of BlackRock, argue that tokenization will “revolutionize” investing by improving efficiency, reducing settlement times, and enhancing transparency (Villanueva, 2025). Fink has described tokenization as the “next generation for markets,” emphasizing that blockchain's openness could empower regulators while protecting investors (Observatorio Blockchain, 2025). This perspective shows that, when properly regulated, blockchain technology can become a force for integrity and modernization in global finance.

4. Impact on the Traditional Banking Sector

4.1 How Digital Payments Are Disrupting Banking Operations

As digital payments and blockchain innovations gain momentum, their impact is increasingly disrupting traditional banking operations. The rise of digital wallets, contactless cards, and real-time transfers is shifting consumer behavior away from conventional banking channels, forcing financial institutions to adapt rapidly. As seen in Figure 1 below, the projected growth of the digital payment market, from USD 127.8 billion in 2024 to USD 726.6 billion by 2035, underscores the scale of this transformation. Digital wallets are expected to lead this expansion, reflecting a significant shift in consumer preferences and financial behavior. This rapid increase, at a compound annual growth rate (CAGR) of 17.10%, highlights the urgency for banks to digitize their services to remain competitive (Kashyap & Sharma, 2024).

Figure 1: Projected Growth of the Global Digital Payment Market by Type (2019–2035)



Source: Kashyap & Sharma (2024)

As digital payments transform how customers interact with banks, deeper structural changes are also taking place, most notably the rapid closure of physical bank branches. Recent research shows that U.S. banks have been shedding branches at an unprecedented rate since 2009, driven by the rise of digital technology and internal automation (Keil & Ongena, 2024). Between 2009 and 2020 alone, over 11,000 branches were closed across the U.S. This trend has continued into 2025, with Rishad and Shah (2025) reporting 148 net branch closures in Q1, up from just 21 in Q4 2024. As digital tools, such as digital payments reduce the operational need for physical infrastructure, traditional banks are reconsidering their cost structures and strategic presence in the market. In Europe, Spain has been particularly affected; between 2021 and 2024, the country's five largest banks closed approximately 2,500 branches, reducing their combined network from over 11,400 to fewer than 8,900 offices (Bolinches, 2024). This wave of closures shows how banks are adapting to new customer habits and the growing use of digital services.

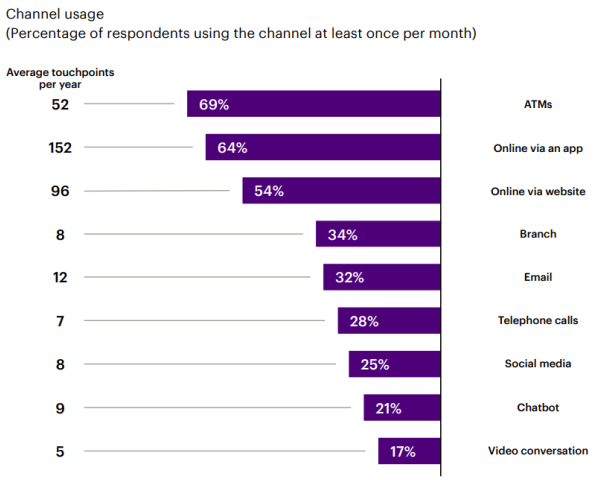
The impact of digital payment methods also extends to banks' internal structures. As Rathod (2023) explains, processes such as account opening and credit approvals are increasingly automated through AI and real-time data analytics. This not only improves operational efficiency but also enhances

customer experience and reduces human error. Digital financial tools have also broadened access in underserved markets by eliminating the need for traditional banking infrastructure. For traditional banks, this presents a dual challenge: keeping up with technological innovation while maintaining regulatory compliance and customer trust.

As stated before, digital payments are reshaping the operational core of banking. Traditional revenue streams, such as fees from in-branch services and manual processing, are declining in relevance. As noted by Márquez Dorsch (2016), banks are increasingly shifting from physical branches to digital infrastructure, with many branches repurposed into advisory centers or closed entirely. Mobile banking apps now allow users to manage accounts, send money, pay bills, and even invest. All these functions that once required physical presence, now can be done with a single tap on a screen. This shift was particularly evident during the COVID-19 pandemic. Countries with stronger digital infrastructure transitioned more quickly to online transactions, emphasizing that financial access today is shaped more by digital readiness than by geography (Cull et al., 2023).

Consumer engagement data further confirms the shifting dynamics of banking operations in the digital era. As shown in Figure 2, in a study carried out by Accenture, while ATMs remain widely used (69% of respondents), digital channels, particularly mobile apps (64%) and websites (54%), have become dominant points of interaction between banks and their customers. In contrast, traditional channels such as telephone calls (28%) and in-branch visits (34%) see significantly lower usage. This trend highlights a customer base that increasingly values speed, autonomy, and around-the-clock access, features that digital platforms offer more effectively than conventional models. For banks, this reinforces the strategic need to prioritize omnichannel digital infrastructure, transforming how services are delivered and experienced.

Figure 2: Banking Channel Usage Frequency (2025)



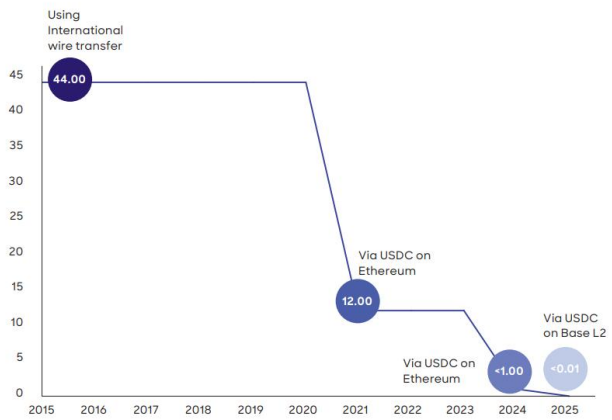
Source: Abbott et al. (2025)

4.2 The Systematic Impact of Crypto and DeFi on Traditional Banking

While digital payments are transforming how banks deliver services, the emergence of cryptocurrencies is challenging the very foundations of traditional financial systems. By enabling peer-to-peer transactions and user-controlled asset management, these technologies diminish the centrality of banks in financial intermediation roles. This shift has caused measurable decreases in bank deposit growth and changes in liquidity patterns, especially in countries with high crypto adoption rates (Ahmed et al., 2025). Moreover, in times of financial trouble, cryptocurrency prices often move together with stock markets (Ahmed et al., 2025). Because of this, their instability can now cause problems across the financial system, similar to the way traditional assets like stocks used to. This has negatively affected the banking sector by increasing overall financial risk and making it harder for banks to manage stability during market crises. This shift also undermines the efficacy of conventional monetary tools, such as interest rate adjustments, in influencing credit cycles and deposit behaviors. The rise of DeFi protocols further challenges the banks' monopoly over credit creation and financial returns, creating an alternative financial system that makes traditional banking less central.

Stablecoins are being the main disruptor of the financial system by offering fast, low-cost, and borderless alternatives to traditional banking services. Originally designed to facilitate crypto trading, stablecoins like USDC and USDT have evolved into widely used instruments for payments, remittances, and even personal savings. This evolution has directly challenged the banking sector's role in international transfers and deposit-taking. For example, traditional international wire transfers can cost up to $45 per transaction, while transferring USDC via Ethereum Layer 2 networks like Base costs less than $0.01 (see Figure 3). Such drastic cost reductions and transaction speeds diminishes the comparative advantage of banks in payment processing, especially in countries with high remittance flows or rising inflation like Nigeria and Turkey, where users are turning to stablecoins to protect value and bypass high remittance fees (Adani et al., 2025).

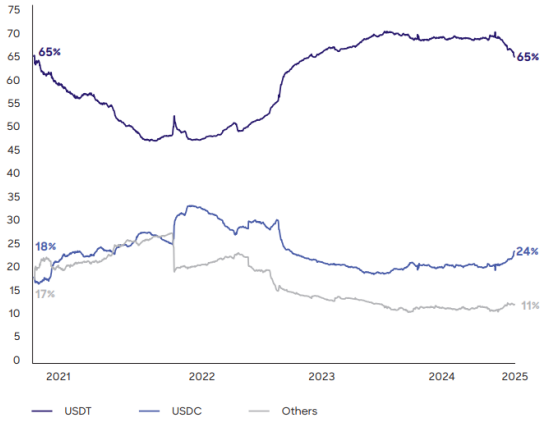
Figure 3: Cost of sending USD internationally [USD]



Source: Adani et al. (2025)

Beyond payments, stablecoins have threatened banks' core functions such as deposit management and lending. As more users store funds in self-custodial wallets instead of traditional bank accounts, banks face a decline in their deposit base, limiting their ability to issue loans and generate interest income. This shift is evident in the steady rise of stablecoins as a share of the total crypto market. As shown in Figure 4, stablecoins have consistently held over 60% of total market capitalization from 2021 to 2025, demonstrating resilience and growing dominance amid volatile crypto cycles. The persistence and expansion of stablecoins suggest they are no longer just a support tool for crypto trading but a parallel financial infrastructure offering savings, transfers, and credit alternatives. For banks, this represents a structural challenge: if customers increasingly choose to store and transact in stablecoins, the banking system may lose its role as the default provider of everyday financial services (Adani et al., 2025).

Figure 4: Share of stablecoins, 2021-25 [% of total market capitalization]



Source: Adani et al. (2025)

Crypto and DeFi are not only replacing bank services, but they are also introducing new systemic vulnerabilities that impact the traditional banking model's stability. While stablecoins were developed to offer price stability, systemic risk in the broader crypto ecosystem persists due to the high volatility of mainstream cryptocurrencies like Bitcoin and Ethereum. During market downturns, these assets often exhibit correlated declines with equities, undermining their perceived function as safe-haven alternatives (Ahmed et al., 2025). This dynamic introduces new channels of contagion between decentralized assets and traditional markets, increasing the complexity of financial stability management for both banks and regulators.

Additionally, the rise of decentralized finance introduces structural risks related to financial exclusion and disintermediation. On one hand, DeFi may enhance financial access for underbanked populations; on the other, it risks excluding individuals without digital literacy or access to secure internet infrastructure, particularly in emerging economies (Chen & Phelan, 2025). Moreover, the possibility of a growing shift away from traditional banking raises concerns about the long-term viability of funding loans using customer deposits. If more people begin to trust and use decentralized platforms instead of

banks, these may face difficulties in fulfilling their key role of providing credit and supporting the wider economy.

This shift is already visible in the increasing use of cryptocurrencies like Bitcoin and Ethereum. They have introduced a new paradigm of financial independence by allowing users to store, transfer, and invest wealth without relying on banks. This has caused traditional banks to lose a portion of their customer base, especially among younger, tech-savvy users who prefer decentralized, peer-to-peer systems over centralized financial institutions (Ranjan, 2024). The erosion of this client trust is compounded by the fact that crypto wallets and exchanges offer around-the-clock access and global usability. Furthermore, the blockchain infrastructure that supports these assets has already demonstrated superiority in speed and cost-efficiency for functions such as remittances and settlement processing, areas historically dominated by traditional banks (Tech Remit, 2025).

These disruptions extend beyond commercial banks and into the realm of monetary policy and central banking. As cryptocurrencies enable non-sovereign value exchange, they complicate central banks' ability to control capital flows, track illicit activity, and implement effective monetary interventions. Rai et al. (2024) explain that as more people use cryptocurrencies, it becomes harder for central banks to influence the economy through interest rates. This is because people are moving their money out of traditional bank accounts and into decentralized assets like Bitcoin, which are not affected by interest rate changes. This trend has raised alarms about the potential fragmentation of the financial system, where traditional mechanisms of regulation and financial stability become less effective. Also, because cryptocurrencies operate outside traditional banking systems, central banks may lose some control over the money supply and exchange rates. These shifts reflect both technological disruption and a major challenge to the traditional role of banks in economic governance.

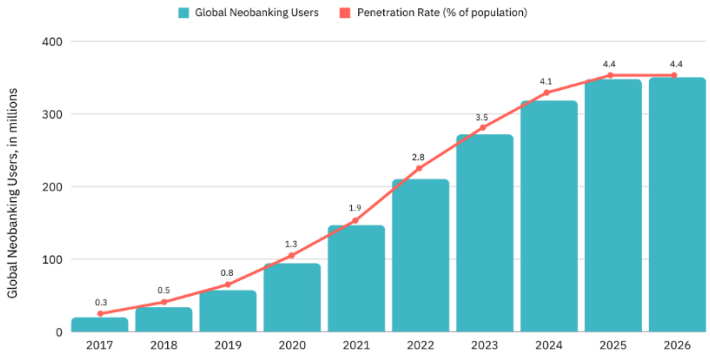
4.3 The Competitive Threat of Neobanks

The emergence of digital payment systems and cryptocurrencies has paved the way for a new breed of financial institutions: neobanks. Unlike traditional banks, which have historically only competed among themselves, these digital natives now pose a significant threat to the conventional banking model. Neobanks, also known as challenger banks, operate entirely through mobile applications and lack any physical branches. Institutions like N26, Monzo, and Revolut have rapidly gained popularity by offering seamless user experiences, low fees, real-time services, and features tailored to a digitally native generation (Ranjan, 2024). Their success lies not only in technological innovation but also in their ability to meet modern customer expectations at a level that many traditional banks have struggled to match. As a result, traditional financial institutions are facing serious pressure to modernize or risk losing significant market share to these tech-driven competitors.

Neobanks' appeal lies in their convenience, cost-efficiency and also in their design philosophy: digital-first, mobile-centric, and highly personalized. The shift in consumer behavior is reflected in the dramatic

increase in global neobank user numbers. As illustrated in Figure 5, the number of neobank users has skyrocketed from around 10 million in 2017 to over 146 million by 2021, and is projected to surpass 300 million by 2026. This represents a significant increase in market penetration, rising from a mere 0.1% to 4.4% of the global population within less than a decade. This indicates not just user growth, but a deepening integration of neobanks into everyday financial behavior.

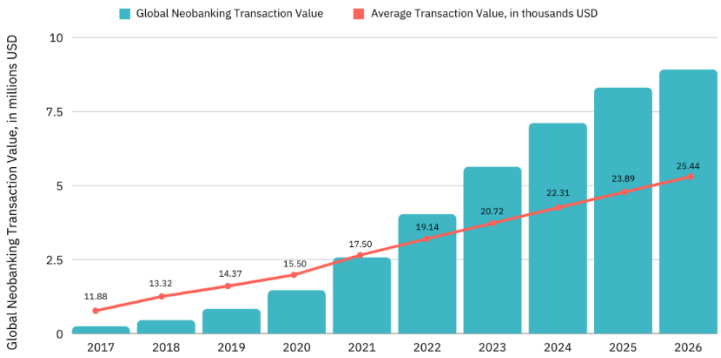
Figure 5: Global Growth of Neobank Users and Market Penetration (2017–2026)



Source: Unit21 (2022)

Beyond user adoption, the economic influence of neobanks is intensifying. Their operational agility enables them to process an increasing share of global banking transactions. According to Figure 6, total neobank transaction value rose from almost USD 230 million in 2017 to USD 4.02 trillion in 2022 and is expected to reach USD 8.91 trillion by 2026. This remarkable rise reflects how neobanks are capturing financial activity once monopolized by traditional banks. Neobanks are not merely complementary actors but serious challengers to the traditional retail banking ecosystem. Their disruptive pricing (often offering no-fee accounts and higher interest returns), along with their integration of AI-driven financial tools, positions them as formidable competitors across nearly every aspect of retail banking.

Figure 6: Neobank Transactions and Spending



Source: Source: Unit21 (2022)

The rising influence of neobanks is also forcing traditional institutions to confront fundamental shifts in how financial services are delivered and consumed. Unlike fintechs that often specialize in single solutions, neobanks offer a full suite of banking services entirely through digital platforms, aiming to replace conventional banking relationships (Curzon et al., 2025). Their ability to integrate features like spending insights, automated budgeting, and multi-currency accounts positions them as comprehensive financial hubs for a digitally native generation. This all-in-one model appeals particularly to underserved or niche customer segments, including freelancers and those seeking more affordable cross-border financial services. Though concerns remain around cybersecurity and the lack of physical presence, neobanks have clearly redefined what modern consumers expect from financial institutions. And in doing so, they have carved out a space that directly challenges the relevance of traditional banks in the digital era.

4.4 Regulatory and Operational Challenges for Traditional Banks

In addition to the competitive pressure posed by neobanks, traditional banks are also grappling with the regulatory and operational burdens brought about by the broader digital finance ecosystem. These developments have outpaced existing financial regulations, making it difficult for authorities and banks to keep up. Many cryptocurrencies operate in a legal grey area, bypassing traditional oversight mechanisms. This creates uncertainty for banks, which must now navigate a fragmented regulatory landscape while still ensuring compliance with AML, CTF, and consumer protection standards (Jovanic, 2020).

A notable example is the global crackdown on Binance, the world's largest cryptocurrency exchange. It has faced legal action in the U.S., U.K., Japan, and other countries for operating without proper licenses and violating financial laws (Taskinsoy, 2022). Banks that processed transactions for Binance or held its funds had to respond quickly. Some cut ties and others faced pressure from regulators or suffered reputational damage. This case shows how unclear and fragmented crypto regulations can

directly impact traditional banks, even when they are not the primary actors. For international banks, the lack of a unified global framework makes cross-border compliance even harder and riskier.

Internally, while the need for modernization has already been discussed in operational terms above, it also carries significant implications for compliance and digital risk management. Many traditional banks still depend on legacy infrastructure that was not built to handle real-time digital transactions, blockchain interoperability, or AI integration. This outdated technology can create serious compliance gaps, especially when trying to meet evolving regulatory expectations for transparency, transaction monitoring, and cybersecurity (Rathod, 2023). For example, banks may struggle to implement robust anti-money laundering controls or data protection protocols if their systems cannot process high-frequency digital transactions efficiently. While fintechs and neobanks can build their platforms around new technologies from the ground up, traditional banks face the challenge of upgrading complex legacy systems while continuing day-to-day operations. These upgrades require significant financial investment and skilled personnel, both of which are often limited.

The shift to digital finance has also introduced new forms of financial risk. For example, the growing popularity of stablecoins and decentralized platforms has led to increased competition for customer deposits, reducing banks' traditional funding sources. At the same time, models like peer-to-peer lending and automated trading reduce the need for bank intermediation. As highlighted by Chen and Phelan (2025), the presence of stablecoins can lower the interest spread on deposits, weakening banks' ability to recover from financial shocks. This puts long-term pressure on their stability and increases the likelihood of systemic risk during market downturns. In this new landscape, banks must not only compete with digital alternatives but also prepare for emerging risks that are still poorly understood by regulators and policymakers.

5. The Reinvention of Banking in the Digital Age

Amid the disruption explored in the previous section, a pressing question emerges: What is the future of banks, will they adapt or become obsolete? Traditional banks, once the unquestionable pillars of financial systems, now find themselves under pressure from all sides. As discussed, the rise of digital payments, cryptocurrencies, DeFi, and neobanks has challenged their relevance and ability to meet evolving customer expectations. In response, banks are not standing still. To survive, and thrive, in this fast-changing landscape, they are undergoing a deep transformation that touches not just their technology but also their regulatory posture, strategic partnerships, and even their relationship with money itself.

This reinvention is taking shape across several fronts. Traditional banks are accelerating their digital transformation to modernize operations and improve customer experience. Many are also stepping into the crypto space by experimenting with custody solutions, blockchain infrastructure, and crypto-integrated payment systems. At the same time, central banks are emerging as key players in the financial

future, developing CBDCs to reassert monetary control and enable digital innovation. Regulation is also evolving with governments crafting new frameworks to govern this hybrid financial reality. And finally, a new model is gaining traction: hybrid banking, where traditional institutions blend physical presence with digital ecosystems, offering users a seamless financial experience across platforms and borders.

5.1 Digital Transformation Efforts in Traditional Banks

One of the most immediate and visible aspects of this reinvention is the digital transformation taking place within traditional banks. This change is not just about modernizing IT systems, but rethinking the very way financial services are delivered and consumed. From enhanced mobile banking platforms to fully integrated AI tools, banks are increasingly prioritizing digital-first strategies that align with evolving consumer expectations for speed, personalization, and convenience. The widespread adoption of digital payment methods has accelerated this transformation, enabling banks to reduce reliance on physical branches while offering 24/7 services through digital channels.

A clear example of this evolution is BBVA's recent reinvention of its mobile banking app in Spain, which was launched in May 2025. The redesigned app integrates advanced artificial intelligence to offer personalized financial insights, proactive savings suggestions, and tailored product recommendations based on user behavior (BBVA, 2025a). It also aims to promote financial health through automated goal-setting and budgeting tools, while introducing a new feature: the integration of its own digital wallet. BBVA is designing the app to attract younger, digitally native consumers by emulating the user-centric design and intuitive functionality found in successful neobanks like Revolut and N26. This initiative reflects the bank's broader strategy of evolving into a more intuitive and customer-centric financial partner. Rather than simply digitizing existing services, the bank is redefining the mobile banking experience, highlighting how traditional institutions can leverage technology to meet modern consumer expectations.

Beyond customer-facing tools, internal digitalization is also reshaping core banking functions. Banks are automating account opening, fraud detection, and loan underwriting using AI and real-time data analytics. These efforts reduce operational costs and human error, and additionally create scalable systems better suited for digital competition. According to Rathod (2023), this streamlining is essential for survival as digital-native players set new benchmarks for efficiency. Moreover, as customer preferences shift toward digital interactions, banks are investing in omnichannel infrastructure to offer seamless transitions between mobile, web, and physical touchpoints.

Another important but less visible shift in the digital transformation of banks is the move toward cloud-based and modular banking infrastructure. While front-end tools and automation are essential, the ability to rapidly adapt and innovate also depends on modern, scalable IT architecture. Traditional banks are increasingly adopting flexible platforms that support faster product development and seamless integration with external partners. A remarkable example is JPMorgan Chase, which announced a

record-breaking $18 billion technology budget for 2024, its largest to date (Farooque, 2025). This investment includes significant advances in cloud infrastructure, AI development, and data platforms designed to power everything from fraud detection to personalized financial services (Farooque, 2025). The bank has implemented over 400 AI use cases across its operations and launched its own proprietary large language model to enhance internal workflows and client interactions (Kalra, 2024). These efforts demonstrate that digital transformation is not only about what users see, but about the foundational systems that enable banks to scale and adapt in real time. In JPMorgan's case, this internal reinvention has allowed the institution to stay ahead of fintech competition, improve operational efficiency, and ride the wave of technological change.

5.2 Entering the Crypto Space

While digital transformation has reshaped banks internally, their long-term survival may depend on how well they integrate into the broader crypto ecosystem. This transition is not just a matter of offering crypto-related products, but of redefining what it means to operate within a financial system that no longer sleeps. Unlike traditional banking hours, the crypto market is open 24/7 year-round, pushing banks to rethink the rigidity of legacy systems. In response, major financial institutions are developing their own blockchain-based tools, offering crypto custody solutions, and experimenting with tokenized assets to compete in a landscape shaped by immediacy, programmability, and decentralization.

A key example of this transformation is JPMorgan Chase's development of JPM Coin, a blockchain-based digital currency. Officially launched in 2020 and further refined since, JPM Coin enables real-time, cross-border transfers of value between corporate clients using the bank's blockchain, built on Ethereum's Quorum network (Shevchenko & Lunsford, 2024). Unlike speculative cryptocurrencies, JPM Coin is pegged 1:1 to the U.S. dollar and used exclusively by JPMorgan clients. In October 2020, JPMorgan used this technology to complete a live, blockchain-based transaction for one of its large corporate clients, showing how settlement can be instant rather than taking days (Shevchenko & Lunsford, 2024).

The bank has continued evolving this infrastructure through its blockchain-based platform originally launched as Onyx in 2020. In 2024 it was rebranded as Kinexys, JPMorgan's next-generation financial infrastructure initiative (J.P. Morgan, 2024). This bank-led blockchain platform is designed to enable tokenized investments, accelerate cross-border payments, and streamline the movement of money, assets, and financial data. The rebranding reflects the platform's broader strategic role in reimagining capital markets through blockchain. As of 2024, Kinexys has processed over $1.5 trillion in total transaction volume, with more than $2 billion in average daily volume, highlighting its institutional adoption and operational maturity (J.P. Morgan, 2024). These developments place JPMorgan at the leading edge of institutional blockchain innovation, gradually narrowing the divide between traditional banking and decentralized finance.

The JPM Coin ecosystem is more than just a payment tool; it is part of JPMorgan's larger strategy to prepare for the tokenized future of finance. The system enables instant settlement, real-time liquidity management, and programmable payment functionalities tailored to institutional needs. Unlike public cryptocurrencies, JPM Coin operates on a private, permissioned blockchain, giving the bank full control over transaction validation, compliance, and risk management (Shevchenko & Lunsford, 2024). This approach allows JPMorgan to reap the benefits of blockchain without compromising regulatory standards. It also sets a precedent for how other banks can cautiously integrate digital assets into existing financial infrastructure without embracing the volatility and fragmentation of open crypto markets.

Other major financial institutions are also making cautious but strategic moves into the crypto world. Wells Fargo, for example, has adopted a conservative approach centered around Bitcoin ETFs (Exchange-Traded Funds). In 2024, the bank invested in products such as Grayscale's GBTC and the ProShares Bitcoin Strategy ETF to provide clients with indirect exposure to Bitcoin through regulated channels (Tan, 2025). These ETFs allow investors to gain exposure to Bitcoin's price movements without actually owning the cryptocurrency itself, by purchasing shares of funds that hold or track Bitcoin-related assets. It allows customers to benefit from the growth of digital assets without having to manage wallets or navigate volatile crypto exchanges. Wells Fargo's strategy appeals especially to risk-averse clients who prefer crypto services to be embedded within familiar financial structures. These ETF offerings are also easier for the bank to manage in terms of compliance and security, making them a low-friction entry point into digital asset services.

Meanwhile, Citibank has approached the crypto transition by building out custodial and compliance-focused digital asset services. While more conservative than JPMorgan, Citi is investing in blockchain and stablecoin research, as well as exploring tokenization strategies for institutional clients. Its emphasis has been on creating secure and compliant custodial infrastructure tailored to corporate and high-net-worth users, ensuring full KYC/AML procedures while still participating in digital finance innovation (Tan, 2025). These efforts allow the bank to serve clients interested in crypto assets without fully embracing the volatility and decentralization of public markets. Like Wells Fargo, Citibank's incremental adoption reflects how traditional banks are finding paths into the digital asset space that align with their regulatory posture and client expectations.

As Citibank's example shows, crypto custody is a key entry point for banks to engage with digital assets while leveraging their strengths in trust and compliance. Institutions like BBVA have received regulatory approval to offer Bitcoin and Ether trading and custody services in Spain, fully integrated into their digital banking platforms (BBVA, 2025b). As more customers demand secure and reliable ways to hold crypto, banks are turning to custody solutions that offer institutional-grade security features such as cold storage, insurance coverage, and robust internal controls. These services help banks meet client demand and expand their role in the crypto economy. Thus, banks are increasingly

positioning themselves as trusted intermediaries in a market still viewed by many as volatile and complex.

5.3 The Role of Central Banks and CBDCs in Shaping the Future

As commercial banks cautiously enter the crypto space, central banks are responding with a more systemic alternative: CBDCs. Unlike privately issued cryptocurrencies or stablecoins, CBDCs are state-backed and designed to modernize national monetary systems while preserving central control. Their goal is to match the convenience of digital assets in addition to restoring trust in regulated financial systems. In an ecosystem increasingly shaped by decentralization and real-time transactions, CBDCs provide a public anchor of stability and offer traditional banks new tools to stay relevant.

China is leading this transformation with the launch of the digital yuan (e-CNY), becoming the first major economy to roll out a functional CBDC. The People's Bank of China (PBOC) has piloted the e-CNY in cities like Shenzhen and Suzhou, using a dual-layer system where the central bank handles issuance while commercial banks manage distribution (Chen & Nesterov, 2023). The digital yuan enables offline payments, ensures data privacy, and allows for centralized oversight, offering a cash-like experience in digital form (Chen & Nesterov, 2023). Beyond convenience, it supports real-time policy implementation and enhances monetary sovereignty, especially in cross-border transactions. Besides being a domestic milestone, this development positions China strategically in the race for financial dominance in a digitized global economy.

The European Central Bank (ECB) is also actively pursuing its own digital currency, the digital euro. Unlike China’s centralized control model, the ECB is proposing a public-private partnership where supervised Payment Service Providers (PSPs) would distribute the digital euro to ensure pan-European accessibility (Witlox, 2024). Still under legislative review, the digital euro aims to complement physical cash, safeguard financial inclusion, and enhance the euro's resilience against non-European payment platforms (Witlox, 2024). By maintaining a balance between public control and private innovation, the ECB hopes to future-proof the eurozone's financial system while responding to declining cash usage and rising geopolitical concerns. The digital yuan and the forthcoming digital euro show how central banks can use digital currencies to modernize their financial systems and strengthen control over monetary policy in a rapidly changing global economy.

On the other end of the spectrum lies El Salvador, which in 2021 became the first country to adopt Bitcoin as legal tender. Framed as a strategy to boost financial inclusion and reduce remittance costs, the move involved launching a state-backed digital wallet (Chivo) and granting each citizen an initial Bitcoin balance (Gorjón, 2021). While the long-term outcome of this policy remains uncertain, it has already produced notable developments. The initiative has sparked international dialogue, led to the creation of a $150 million public fund to guarantee convertibility into U.S. dollars, and supported the rollout of a nationwide financial education campaign (Gorjón, 2021). Moreover, the Salvadoran

government implemented regulatory and technical safeguards to address money laundering, cybersecurity, and consumer protection concerns. Although the approach is unconventional, it represents a bold attempt to modernize a dollarized economy and address persistent gaps in financial inclusion. It also emphasizes the diversity of strategies countries are exploring, ranging from public-led CBDCs to decentralized assets, as they seek financial relevance in the digital era.

Ultimately, CBDCs are not just about technology, they are about redefining the future of money. They offer a middle ground between the innovation of crypto and the stability of fiat, creating new opportunities for banks to evolve within a sovereign framework. If properly implemented, CBDCs could strengthen the role of traditional banks by enabling programmable finance, improving payment efficiency, and reinforcing regulatory trust. In this sense, central banks are not just reacting to the crypto revolution, they are helping shape it.

5.4 Navigating Regulation in the Digital Financial Landscape

One of the biggest obstacles to digital financial transformation remains regulation. The rapid expansion of cryptocurrencies, tokenized assets, and decentralized platforms has far outpaced existing legal frameworks. While innovation continues to accelerate, regulatory systems are under pressure to evolve in ways that both support financial modernization and protect consumers. At the heart of this challenge is the need to strike a balance between fostering innovation, ensuring financial stability, and addressing emerging risks such as money laundering, fraud, and cyberattacks. As discussed in Section 5.3, state-led efforts like the digital euro or China's e-CNY are setting the pace from the public sector. But for private-sector banks to actively participate, clear and consistent regulatory guidance is critical.

A prime example of forward-thinking regulation is the European Union's MiCA framework, which was formally adopted in 2023 and entered into force in 2025 (CACEIS, 2023). MiCA establishes a single licensing regime for crypto-asset issuers and service providers across all EU member states, providing much-needed regulatory clarity. It mandates capital requirements, business conduct rules, and transparency obligations, especially for stablecoins and crypto trading platforms (Adani et al., 2025). For banks, MiCA represents a turning point. By defining legal pathways for custody services, token issuance, and crypto-related partnerships, it enables traditional institutions to innovate without falling into compliance grey zones. The framework also restricts high-risk players like Tether (USDT), favoring more transparent and regulated stablecoins like USDC, which in turn has opened the door for banks to partner with vetted entities. In short, MiCA reduces uncertainty and levels the playing field, allowing traditional financial institutions to build crypto strategies with greater confidence.

This regulatory clarity has already begun to reshape the European banking landscape. Banks such as BBVA, Deutsche Bank, and Société Générale are actively developing digital asset services under the MiCA framework (Zulhusni, 2025). According to Ahmed et al. (2025), MiCA has prompted a significant rise in stablecoin integration by EU banks, enabling faster payments, tokenized deposit

products, and experimentation with blockchain-based capital markets. By creating a harmonized set of rules, MiCA not only facilitates cross-border activity but also helps ensure that financial innovation does not come at the expense of consumer protection. In doing so, it positions the EU as a global leader in digital finance regulation and has set an important precedent for jurisdictions struggling with fragmented or unclear approaches.

Parallel to these developments, the regulation of digital payments is also evolving rapidly, particularly in Europe. As contactless and mobile transactions have become the norm, regulators and banks are working together to build secure, and competitive payment systems. The European Payments Initiative (EPI), for instance, aims to establish a unified payment solution that reduces dependence on non-European providers while reinforcing data protection and payment sovereignty (Danzer et al., 2024). This transition is not just about efficiency but also about ensuring strategic autonomy in retail payments. Banks that adapt to these evolving standards will be better positioned to integrate new digital services, meet consumer expectations, and remain competitive in a landscape increasingly defined by seamless, real-time financial experiences.

Outside the EU, regulators are also beginning to address the gap between legacy banking laws and digital finance. In the United States, the Federal Deposit Insurance Corporation (FDIC) has issued updated guidance clarifying how insured banks can engage in crypto-related activities. The 2025 guidelines emphasize the importance of detailed risk assessments, ongoing recordkeeping, and transparent communication with regulators. These requirements aim to ensure that banks participating in digital asset markets do so responsibly and without undermining systemic stability (FDIC, 2025). This kind of regulatory engagement helps reduce uncertainty and encourages responsible innovation, giving traditional institutions the tools they need to move forward.

Ultimately, navigating the regulatory landscape will remain one of the most critical factors shaping the future of banking in the digital era. As banks move toward hybrid models that blend traditional services with digital asset offerings, legal clarity will become a competitive advantage. Initiatives like MiCA and evolving frameworks from institutions like the FDIC represent early but essential steps toward building trust in a financial system that is increasingly fast, borderless, and decentralized. For banks, effective regulation is no longer just a hurdle to clear, it is the foundation that will determine who thrives in the digital age.

5.5 Hybrid Banking and the Rise of Digital Financial Ecosystems

As banks adapt to a rapidly evolving regulatory and technological landscape, a new model of financial services has emerged: hybrid banking. Following the regulatory advances discussed previously, many institutions are no longer choosing between traditional finance and digital innovation. Instead, they are integrating both, creating digital financial ecosystems that combine the trust and infrastructure of legacy banks with the speed and flexibility of fintechs and DeFi. This convergence marks a structural

transformation in global finance, where collaboration and interoperability are becoming the new competitive edge.

One visible trend in this hybrid evolution is the strategic acquisition of neobanks by traditional institutions. A notable example is Bankinter's full acquisition of Evo Banco in 2025 (Bankinter, 2025). Evo Banco, a digital-native institution known for its intuitive app design and AI-enhanced customer services, had already established itself as a strong competitor in the Spanish fintech space. By fully integrating Evo into its core banking operations, Bankinter not only streamlines its digital portfolio but also positions itself to attract younger, tech-savvy clients who expect 24/7 mobile banking and seamless digital transactions. In a financial landscape where neobanks and crypto platforms are redefining customer expectations, this acquisition reflects Bankinter's proactive adaptation. Rather than building from scratch, the bank leverages Evo's digital strengths to reinforce its competitiveness in an ecosystem increasingly defined by real-time payments, platform-based services, and tokenized assets. It is a clear example of how banks can respond to fintech and crypto-driven disruption by absorbing innovation and evolving from within.

Strategic partnerships between banks and technology firms are also reshaping financial ecosystems. One prominent example is the Goldman Sachs and Apple partnership, which launched the Apple Card in 2019, an app-based credit card fully integrated into the Apple Wallet (Goldman Sachs, 2019). For Goldman Sachs, this collaboration marked a major move into retail banking, allowing it to diversify beyond investment banking by accessing a broad consumer base without building physical infrastructure. Meanwhile, Apple leveraged Goldman's regulatory expertise to offer a credible financial product that matched its smooth and user-first digital ecosystem. The Apple Card's features, such as real-time transaction tracking, no fees, and daily cashback, mirrored neobank offerings, making the product a powerful example of what hybrid banking can deliver. Such alliance exemplifies how banks can gain speed and flexibility by joining forces with agile tech firms.

In Europe, BNP Paribas has embraced a similar strategy by collaborating with fintechs to enhance investment banking operations and client experiences. Through its CIB (Corporate and Institutional Banking) unit, BNP Paribas has launched initiatives to streamline KYC compliance, accelerate onboarding, and provide AI-enhanced data analytics by integrating fintech platforms directly into its service models (BNP Paribas, 2024). For instance, partnerships with firms like Cashforce have helped BNP digitize and optimize treasury management processes (BNP Paribas, 2018). This shows how traditional banks can stay competitive by using new technology in their operations while keeping the trust and scale that make them reliable. These collaborations not only improve efficiency but also allow BNP to respond more rapidly to market changes and client expectations.

The hybrid trend is also playing out through bank participation in blockchain-based market infrastructure. Institutions such as SIX Digital Exchange (SDX) in Switzerland and Securitize in the

U.S. are building fully regulated platforms that allow banks to issue and trade tokenized securities. These platforms offer benefits like instant settlement, improved liquidity, and operational transparency. Its blockchain ecosystem is designed to integrate seamlessly with existing banking infrastructure, allowing for hybrid systems where digital asset trading coexists with traditional financial operations. By participating in these networks, banks retain their core functions while tapping into the efficiency of blockchain technology. In early May 2025, Citi partnered with SDX to expand access to tokenized private market assets for global calients, marking a significant step toward institutional adoption of blockchain-powered capital markets (Citi, 2025).

Ultimately, the rise of hybrid financial ecosystems reflects a deeper shift in how financial value is created and delivered. No longer confined to legacy infrastructure, the most forward-thinking banks are positioning themselves as platforms responsive to both market trends and regulatory demands. As tokenization, APIs, and embedded finance become standard features, hybrid banking will not just become dominant, it will redefine what it means to be a bank in the 21st century.

6. Conclusions

6.1 Key Findings from the Study

Over the past decade, the financial sector has experienced a profound shift away from bank-dominated models toward more decentralized, technology-driven systems. One of the clearest indicators of this transformation is the rapid decline in bank-controlled transactions. Consumers and businesses increasingly rely on digital wallets, mobile apps, and peer-to-peer platforms that bypass traditional intermediaries. As this study has shown, the global growth of digital payments, accelerated by innovations in mobile technology and the COVID-19 pandemic, has weakened the reliance on physical branches and reshaped how value is transferred in the modern economy.

The rise of cryptocurrencies and DeFi has further disrupted the central role of traditional banks in financial intermediation. By enabling users to store, transfer, and invest value without centralized oversight, these technologies have introduced a parallel financial system with its own infrastructure and logic. Stablecoins, in particular, are emerging as a serious challenge to banks' deposit base, remittance services, and role in international payments. At the same time, DeFi protocols offer new lending and yield-generation tools that compete directly with core banking functions. Trust in decentralized alternatives is rapidly increasing, signaling a fundamental change in how financial trust is established and shared.

Despite these disruptions, the study also reveals that traditional banks are not standing still. They are undergoing a deep reinvention, technologically, strategically, and culturally. Institutions like JPMorgan, BBVA, and Bankinter are embracing digital tools such as AI-powered apps, blockchain infrastructure, and cloud-native architectures to streamline operations and improve customer experience. Additionally,

banks such as JPMorgan, Citi and Wells Fargo, are cautiously entering the crypto space through ETF offerings, custody services, and private blockchain integrations. This transformation is being driven not just by competitive pressures, but also by a recognition that future relevance depends on building flexible, digital-first financial ecosystems.

Regulation has emerged as a central theme in enabling or constraining these innovations. The European Union's MiCA framework and the U.S. FDIC's updated crypto guidelines represent two key examples of how legal clarity can empower banks to innovate responsibly. These regulatory shifts have created space for traditional banks to participate in crypto markets without compromising compliance. In parallel, central banks are shaping the future of monetary systems through the exploration of CBDCs, which aim to modernize payments while preserving state control. Also, these regulatory frameworks help create a secure environment where traditional banks and fintech companies can collaborate, supporting the growth of hybrid financial ecosystems that balance innovation with compliance.

6.2 Concluding Reflections on the Future of Banking

The financial sector is undergoing a revolution that, in my view, is both necessary and ultimately beneficial. Just as medicine, education, and transportation have evolved through technology and global change, banking too is entering a new era. These transformations challenge traditional institutions, yes, but they also open up space for renewal and reinvention. What we are witnessing is not the decline of banks, but their opportunity to evolve into something more dynamic, efficient, and customer oriented. Like other industries that have embraced innovation, the financial sector is moving toward models that better reflect the pace and expectations of the modern world.

From my perspective, the changes we are seeing, such as the rise of digital payments, the emergence of decentralized finance, and the development of central bank digital currencies, are not isolated phenomena. They are part of a broader shift in how societies interact with value, trust, and control. Importantly, I believe that both banks and regulators are responding to this transformation with increasing competence. Initiatives like the European Union's MiCA framework or the ongoing development of the digital euro demonstrate that public institutions are not ignoring disruption, they are integrating it. Similarly, private banks like JPMorgan, BBVA or Bankinter, which are actively exploring digital asset services or acquiring neobanks, show that adaptation is possible when the right strategy meets the right moment.

One of the most fascinating developments, in my opinion, is the success of neobanks. These digital-native institutions have proven that banking can be fast, and user-centered without sacrificing security or trust. Neobanks like Evo Banco, Revolut and Monzo, or platforms like Apple Card represent a new generation of financial services that resonate with modern lifestyles. Rather than simply replacing traditional banks, this new wave is reshaping expectations and demonstrating that the banking experience can be seamless and always accessible. Whether through partnerships, acquisitions, or in-

house innovation, traditional institutions are actively reimagining their role in a financial world defined by constant change.

One of the most beneficial outcomes of this entire transformation has already become visible: financial inclusion. Digital finance has expanded access to financial services in previously underserved or marginalized regions. This is not just a byproduct of innovation, it is a powerful, transformative achievement that should be prioritized in banks' long-term strategies and global development efforts. However, alongside this progress, it's also clear that the transformation is exposing serious regulatory gaps. The current legal landscape remains fragmented and inconsistent across jurisdictions, creating systemic risks and uncertainty around innovations like DeFi and stablecoins. These gaps must be addressed through more harmonized and forward-looking regulations. While frameworks like MiCA are promising, I believe much more coordinated international effort will be required to create a stable and inclusive digital financial ecosystem.

All of this suggests that the future of banking will not be defined by a binary choice between old and new, centralized or decentralized. Instead, what we are seeing is the emergence of a hybrid model. One in which legacy infrastructure coexists with digital innovation, where compliance meets flexibility, and where trust is distributed across both institutions and technology. This future will be shaped by both public and private actors working within a shared digital infrastructure. The evolution of money and banking is no longer theoretical. It is unfolding right now, and those who embrace it will shape the next financial paradigm.

Ultimately, this study has led me to a hopeful and confident conclusion: the banking sector is not being left behind, it is evolving. The real question now is not whether banks can survive the digital revolution, but how effectively they can transform to serve both traditional expectations and digital demands. From the evidence presented, it is clear that many institutions are responding proactively, positioning themselves to thrive rather than simply endure. While some banks still face challenges in embracing this shift, the overall trajectory is encouraging. Therefore, the future of banking should not be feared but actively shaped and embraced.

6.3 Directions for Future Research

While this study has provided insights into the ongoing transformation of the banking sector amid digital innovation, there remain several promising lines for future research. One key area is the long-term impact of CBDCs on traditional banking models and monetary policy effectiveness. Although early pilots like China's digital yuan have demonstrated operational feasibility, more research is needed on how CBDCs influence bank deposit bases, lending behaviors, and overall financial stability in different economic contexts (Kiff et al., 2020). Comparative studies across countries experimenting with CBDCs would help illuminate best practices and potential risks.

Another important direction is the evolving regulatory landscape, especially in jurisdictions outside Europe and the U.S. As digital finance expands globally, understanding how different regulatory frameworks shape innovation and market behavior will be crucial. For instance, the EU's MiCA framework sets a strong precedent, but how other emerging markets or developing economies balance innovation with consumer protection remains less explored. Research focusing on the interaction between regulation, fintech ecosystems, and financial inclusion could offer valuable policy recommendations to promote sustainable growth (Anagnostopoulos, 2018).

Finally, future studies should investigate deeper into hybrid banking models and the integration of neobanks with traditional financial institutions. This includes exploring the cultural and organizational challenges banks face when adopting fintech innovations, as well as consumer acceptance and trust in hybrid services. Additionally, further research is needed to understand the environmental and social implications of digital financial ecosystems, including the energy consumption associated with blockchain technologies and the challenges related to data privacy. Understanding these complex dynamics will be essential for designing banking systems that are innovative, responsible, and resilient in the decades to come.

Declaration of Use of Generative Artificial Intelligence Tools in Undergraduate Thesis

I, Lucia Rosa Campo, a student of Business Administration and Management with an International Mention at Universidad Pontificia Comillas, hereby declare that in the submission of my Undergraduate Thesis titled "Impact of Digital Payments and Cryptocurrencies on the Banking World", I have used the Generative Artificial Intelligence tool ChatGPT or other similar AI tools solely within the context of the activities described below:

1. **Research Idea Brainstorming:** Used to generate and outline possible research areas.
2. **References:** Used in conjunction with other tools, such as Science, to identify preliminary references which I then reviewed and validated.
3. **Language and Style Editing:** Used to improve the linguistic and stylistic quality of the text.
4. **Summarizer and Interpreter of Complex Literature:** Used to summarize and understand complex academic texts.
5. **Reviewer:** Used to receive suggestions for improving and refining the work at different levels of depth.
6. **Translator:** Used to translate texts from one language to another.

I affirm that all the information and content presented in this thesis are the result of my individual research and effort, except where otherwise indicated and where appropriate credit has been given (I have included the relevant references in the thesis and specified the use of ChatGPT or similar tools). I am fully aware of the academic and ethical implications of submitting non-original work and accept the consequences of any violation of this declaration.

Date: 04/06/2025

Signature: Lucia Rosa Campo

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