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Digital currency and its implications for traditional banking systems: A qualitative inquiry

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ABSTRACT

The purpose of this study is to examine the transformative implications of digital currencies, with a particular focus on cryptocurrencies and central bank digital currencies (CBDCs), for the conventional banking system. The analysis aims to understand how these instruments affect banking operations, consumer trust, regulatory frameworks, and overall financial stability. The study applies a qualitative content analysis to a broad collection of peer-reviewed articles, policy documents, and industry reports. This approach makes it possible to identify recurring themes related to operational impacts on banks, adoption drivers, regulatory and compliance challenges, and macro-level stability concerns. The findings indicate that digital currencies are reshaping bank margins, raising the threat of disintermediation, and fueling shifts in consumer confidence, while regulatory design and policy choices remain critical for safeguarding stability. The evidence shows that the adoption of cryptocurrencies and CBDCs is not only influencing how banks manage payments and deposits but also altering the regulatory environment and competition within financial services. The practical implications of this research suggest that banks must enhance risk management practices, diversify strategies, and adopt a more balanced regulatory approach to survive in the evolving digital financial ecosystem. The study integrates fragmented evidence into a coherent framework that both contributes to theoretical understanding and provides policy recommendations for regulators and practitioners.

Contribution/Originality: This study contributes by synthesizing fragmented evidence on digital currencies and banking systems. Unlike descriptive reviews, it applies an organized coding system to include findings on operations, regulation, adoption, and stability. It advances theoretical knowledge and provides practical policy implications for banks and regulators navigating digital transformation.

1. INTRODUCTION

Digital currencies, including decentralized cryptocurrencies and central bank digital currencies (CBDCs), are continuously transforming the monetary environment and are creating new challenges for existing banking models (Bank for International Settlements, 2021; Cunha, Melo, & Sebastião, 2021). Cryptocurrencies use distributed ledgers to facilitate the exchange of value between countries without the involvement of traditional intermediaries, and CBDCs are sovereign debt instruments that aim to modernize payment systems under government control (Abdulhakeem & Hu, 2021; Cunha et al., 2021). These instruments are considered to have structural implications beyond their technological novelty, such as the way banks fund themselves, process payments, manage risk, and maintain and develop relationships with their customers (Broby, 2021; Vives, 2019). The risks are considered high,

as policy decisions on design and regulation will be directly transmitted to the well-being of banking intermediation and the efficiency of monetary policy in general (Allen et al., 2020; Bank for International Settlements, 2021; Bindseil, 2019). In the case of incumbent banks, they are seen as the direct pressure for the loss of traditional intermediation rent. Cheap digital training and programmable payments will squeeze margins on payments and deposits. Also, competition for customer data will intensify, and new competitors will appear on their platforms (Dharmadasa, 2021; Palmié, Wincent, Parida, & Caglar, 2020). Meanwhile, consumers are increasingly demanding instant and lower-priced omnichannel financial services, shifting to bank or non-bank providers that offer better digital experiences more quickly (Albayati, Kim, & Rho, 2020; Eriksson, Hermansson, & Jonsson, 2020). These changes are not only considered functional, but they also pose a threat to the reshaping of market power along the value chain, which even affects the prudential regulation of supervision and regulatory behaviour (Buchak, Matvos, Piskorski, & Seru, 2024; Odinet, 2021). Regulatory provisions are considered to be outpaced by innovation, so co-jurisdictional inconsistency in formulating coherent frameworks and policies on custody, disclosure, prudential treatment, and market integrity makes cross-border compliance and interoperability challenging (Lins & Praicheux, 2021; Nabilou, 2019; Schwarcz, 2022). In this way, a single focus on regulatory uncertainty may obscure the policy trade-offs that policymakers must make in how to stimulate innovation and ensure liquidity, resilience, and healthy competition (Allen et al., 2020; Kumhof & Noone, 2021). The stability of deposits and the liquidity profile of banks will be predetermined by CBDC decisions regarding remuneration, holding limits, access models, and on- and off-ramp risk, which in turn will determine consumer outcomes from crypto-asset regulation (Bank for International Settlements, 2021; Kiff et al., 2020; Kosse & Mattei, 2023).

The scientific literature has grown at a very high rate, but it still remains fragmented. There is a large number of studies investigating the market behavior of cryptocurrencies or the design of central bank digital currencies, but there is also a lack of those that combine these strands and assess their combined, practical implications for banks at a more operational level (Allen, Gu, & Jagtiani, 2022; Belke & Beretta, 2020; Cunha et al., 2021). In addition, very little is synthesized between the factors influencing their adoption at the consumer level and their origins at the level of perceived usefulness, literacy, and trust in bank-level balance sheet management and their overall regulatory architecture (El Chaarani, EL Abiad, El Nemar, & Sakka, 2024; Melnyk, 2024; Mendoza-Tello, Mora, Pujol-López, & Lytras, 2019). This disconnect makes it challenging for managers and regulators to translate high-level situations into specific decisions when it comes to implementation. It is to this gap that this paper responds through a qualitative investigation that integrates three perspectives that are often not seen together, such as the operational implications for banks (payments, funding, risk management), consumer confidence and behavioral factors in digital finance, and regulatory and policy-making trade-offs with prudential stability and competition. This study analyzes converging findings through structured qualitative content analysis of academic research, various policy documents, and industry reports to identify surface tensions where the evidence is somewhat mixed (Irvine et al., 2020; Lindgren, Lundman, & Graneheim, 2020). The method is appropriate because the discipline is new, diverse in approach, and characterized by institution-specific situations that are difficult to quantify using a single model (Allen et al., 2020; Genc & Takagi, 2024).

Initially, an integrated framework is defined, linking adoption processes and customer trust with tangible banking activities and revenue generation, where digital currencies are seen to complement or replace existing roles (Eriksson et al., 2020; Vives, 2019). Next, the characteristics of regulatory design are superimposed on banks' balance sheet risks, including where CBDC and cryptocurrency policy are likely to be neutral, complementary, or in some way conducive to deposit and lending displacement (Bank for International Settlements, 2021; Kumhof & Noone, 2021). In addition, actionable governance, intelligence, cybersecurity, and data strategy implications are generated that would align managerial responses with policy direction (Adeniran et al., 2024; Catalini & Gans, 2020; Gerunov, 2022). The refocus on narrower and cross-cutting mechanisms, as opposed to generalizations, is also seen as contributing to the study of digital currencies that reconnect banking intermediation in a deeper way. In this study,

the well-known arguments regarding uncertainty or general trust are not re-argued; rather, the focus is on operational channels that can be identified, customer experience drivers that can be measured, and policy levers that can be tracked over time. In this way, this orientation aims to help banks prioritize investments and risk controls and to help regulators prioritize reforms to preserve their stability and facilitate efficient innovation (Allen et al., 2020; Bank for International Settlements, 2021; Wang, 2024).

2. LITERATURE REVIEW

2.1. Operational Implications for Banks

Banking operations are continuously being transformed by the use of digital currencies. One of the most notable impacts is the decline in payment margins and the shift of customer services to data-driven platforms (Palmié et al., 2020; Vives, 2019). Tokenized settlement is also faster and easier to reconcile, and thus helps to bypass traditional payment systems, which further increases the risk of bank run-off (Catalini & Gans, 2020; Dharmadasa, 2021). The design of CBDCs by central banks, such as the existence of holding limits, the issue of interest, and their availability to anyone, is likely to significantly affect the stability of deposits and intraday liquidity (Bank for International Settlements, 2021; Bindseil, 2019). If these features are not well designed, deposits can easily be withdrawn from banks within seconds due to stress, while commercial banking models that maintain the involvement of commercial banks can reduce the risk of run-offs (Allen et al., 2020; Bank for International Settlements, 2021). As observed in China, a significant portion of value is shifting to technology platforms that have greater digital capabilities, which poses a challenge for banks that are less developed in this area (Allen et al., 2022; Vives, 2019). Such changes not only impact the payments business but also influence the form of bank funding and risk management, which would affect margins and fee income (Dharmadasa, 2021; Palmié et al., 2020). In this way, the literature remains consistent regarding the main direction of such effects, but at the same time shows that the results depend on policy decisions, as well as on the strength of the banks themselves (Allen et al., 2022; S. Allen et al., 2020). The only aspect that has not been sufficiently researched is how different CBDC models would respond to the profit and loss of banks in various categories of organizations (Bank for International Settlements, 2021; Bindseil, 2019).

2.2. Consumer Behaviour, Trust, and Adoption

Based on the existing literature, there are several reasons that influence individuals' decisions to adopt financial technologies. Among these, perceived usefulness and ease of use are considered essential factors, while trust in the security of the system and the level of financial knowledge also significantly impact adoption (El-Chaarani, Mawad, Mawad, & Khalife, 2023; Mendoza-Tello et al., 2019). Research shows that trust is considered multidimensional: technological, where protocol and security come into play; institutional, where issuer credibility and market behavior are relevant; and exposure to fraud, which also influences trust. These levels react differently to product design and regulation (Albayati et al., 2020; Eriksson et al., 2020). There is evidence of usability and literacy as indicators of greater transactional and investment use, particularly among younger or digital native groups (Melnyk, 2024; Mendoza-Tello et al., 2019). Regulatory certainty generally appears to increase institutional trust in CBDCs and decrease privacy, and private cryptocurrencies appear to score high on convenience characteristics but weak on trustworthiness and consumer protection outcomes (Ballaschk & Paulick, 2021; Nabilou, 2019). Macro volatility was associated with a high uptake of cryptocurrencies by survey respondents, suggesting that it is context-dependent (El-Chaarani et al., 2023; El Chaarani et al., 2024). It is important to note that not many articles link the sub-components of trust to bank-related variables, including deposit retention and cross-selling elasticity in some way (Eriksson et al., 2020; Vives, 2019). This disconnect is considered to hinder targeting product features, disclosures, and guarantees towards the behavioral intention objective, which is likely to translate into sustainable relationships with banks (Albayati et al., 2020; Odinet, 2021).

2.3. Regulatory and Legal Architecture

Digital finance is considered to be heavily influenced by law. Issues such as the legal categorization of assets, the criteria used to determine custody, the prudential treatment of exposures, and even AML/CFT requirements are cumulative and contribute greatly to increasing compliance costs and barriers to entry and the competitive environment, as discussed by Schwarcz (2022) and Girasa (2018). There are also certain trade-offs in the design decisions regarding central bank digital currencies (CBDCs). The choice of privacy protection versus the degree of programmability and the degree of competition in the market must be carefully balanced. When the parameters are not well calibrated, the system can foster the nature of banks' deposit-taking and can strengthen the power of incumbents (Allen et al., 2020; Ballaschk & Paulick, 2021). The comparative literature also highlights how jurisdictions are following different paths, and this discrepancy poses challenges for interoperability, particularly between cross-border arrangements and supervision (Kosse & Mattei, 2023; Nabilou & Prum, 2020). Retail CBDC designs have been listed by IMF reviews, and furthermore, these reports are unlikely to link design features to the micro-dynamics of bank liquidity management or outcomes at the level of the organization's customers (Bouza et al., 2024; Kiff et al., 2020). Other recent EU/EEA experiments also show how legal rules, e.g., regulating identity layers or conceptualizing settlement completion, create opportunities to reshape operational risks between different financial actors (Girasa, 2018; Lins & Praicheux, 2021). Significantly, deposit stability and the possibility of financial inclusion are directly related to regulatory decisions, such as the introduction of portfolio limits or the establishment of specific access models. However, Bank for International Settlements (2021) and Allen et al. (2020) explain that comparative empirical studies in this area are scarce, and according to the literature, there is a high demand for research on risk design studies that directly link regulatory parameters to measurable outcomes in bank balance sheets and financial intermediation (Kumhof & Noone, 2021; Nabilou, 2020).

2.4. Financial Stability and Monetary Policy

Central bank digital currencies (CBDCs) have the potential to improve the stability of payment systems and make monetary policy more effective, which can be achieved through safer settlement instruments and the use of programmable policy tools (Bank for International Settlements, 2021; Kumhof & Noone, 2021). At the same time, the way in which rewards and access are designed matters greatly, as these features can divert retail deposits away from banks, which can alter the management of their assets and liabilities and, in times of stress, reduce the capacity to expand credit (Belke & Beretta, 2020; Bindseil, 2019). The interaction with crypto-assets also adds another layer of complexity, as due to their volatility and cyclical use of leverage, changes in crypto markets can affect collateral values and the cost of funding, raising concerns about pro-cyclical effects (Catalini & Gans, 2020; Charfeddine, Benlagha, & Maouchi, 2020). From a macroprudential perspective, scholars highlight the risk of a "flight to CBDCs," yet there is still little operational guidance on how to manage liquidity buffers, set pricing frameworks, or design deposit clearing mechanisms (Bank for International Settlements, 2021; Kumhof & Noone, 2021). Cross-country evidence suggests that central banks are moving in different directions, which results in different stability outcomes for them and makes international interaction more challenging in general (Kiff et al., 2020; Kosse & Mattei, 2023). Recent policy papers, among others, increasingly highlight that the main risks for banks are likely to emerge during the transition phase to CBDCs rather than after the system has stabilized (Bank for International Settlements, 2021; Belke & Beretta, 2020). The research frontier now lies in empirical work, as there is a need to calibrate CBDC design choices against measurable indicators such as liquidity coverage, probabilities of customer withdrawal from banks, and the elasticity of lending across different types of banks (Allen et al., 2020; Kumhof & Noone, 2021).

2.5. Cybersecurity, Data Governance, and Financial Crime

The operational resilience of digital finance relies on a number of safeguards, which are interdependent, among others. According to Gerunov (2022) and Catalini and Gans (2020), efficient key management, strong storage

schemes, the reliability of smart contracts, and standards for sharing privacy-sensitive data are considered essential aspects. The presence of ongoing fraud and frequent hacking cases in cryptocurrency markets speaks to the great need to introduce more security, since, according to regulators and researchers, proportionate monitoring, transparent consumer disclosure, and appropriate compensation mechanisms should protect users without hindering legitimate activity (Financial Action Task Force, 2023; Fletcher, 2022). Another area of concern is the dependence on third-party vendors and Oracle providers, where these external players present additional vulnerabilities to which financial institutions are subject. Security processes, governance mechanisms, and contingency planning are increasingly seen as resources that should be used to help mitigate such risks (Gerunov, 2022; Wronka, 2023). The academic literature has listed numerous threats, but it may not be sufficient to prioritize which controls are more effective than others in reducing risk, depending on the cost of the controls. In this way, this disparity is seen as limiting the ability of banks to seek and implement action plans (Catalini & Gans, 2020; Efijemue, Obunadike, Olisah, & Taiwo, 2023). Meanwhile, regulators are converging on some standard expectations, such as readiness to respond to incidents, governance of model risk in AML and analysis, and strategies for data minimization that are considered to meet privacy standards (Financial Action Task Force, 2023; Gerunov, 2022). The most obvious gaps in capabilities are most evident when considering institutions that provide distribution or storage of digital assets but do not have a developed security infrastructure or a security operations center for processes (Efijemue et al., 2023; Wronka, 2023). This is considered one of the reasons why developing a better evidence base on the effectiveness of different control options is also an important priority for both researchers and regulators in general (Catalini & Gans, 2020; Financial Action Task Force, 2023).

2.6. Investment and Portfolio Perspectives

Recent studies highlight that the diversification potential of crypto assets does not remain constant over time, but rather, this potential varies according to market regimes and times of financial stress (Abdelmalek, 2024; Charfeddine et al., 2020). For banks that want to include such assets in their portfolios, the main issues are considered not only financial but also institutional. Governance and behavioral requirements are considered suitability testing, the detection of irreversible risks and liquidity issues, as well as effective custody and valuation systems that are mandatory constraints (Catalini & Gans, 2020; Odinet, 2021). Research also shows that ignoring the regime mindset is likely to distort the assessment of risk contribution, which consequently makes it difficult to design retail investment products (Abdelmalek, 2024; Charfeddine et al., 2020). In addition to market risk, there are operational frictions in determining oracle pricing, settlement completion, and secure key management, which impose other vulnerabilities that banks need to accommodate within internal constraints and supervisory procedures (Catalini & Gans, 2020; Gerunov, 2022). There is still insufficient comparative evidence on bank-distributed products versus exposures directly brokered with exchanges, and questions of customer outcomes remain open, as well as the reputational implications for banks (Abdelmalek, 2024; Odinet, 2021). Thus, in the absence of proven sustainability, supervisors are inclined to promote a conservative strategy and prefer to introduce products gradually and openly rather than widely (Catalini & Gans, 2020; Odinet, 2021). For this reason, the research agenda further emphasizes that future studies should focus on evidence regarding the long-term customer welfare and equity implications of different governance arrangements (Abdelmalek, 2024; Charfeddine et al., 2020).

2.7. Integrated Gaps and Agenda

A number of common gaps can be identified in the literature, one of which is related to integration, where despite the growing amount of research on factors driving adoption at the individual or firm level, these processes are rarely linked to macro-level indicators of bank profitability, liquidity, or balance sheet stability in a clear CBDC/crypto-asset situation, where due to this, planning tools are often incomplete (Bank for International Settlements, 2021; El Chaarani et al., 2024). Another limitation is related to design and risk, where numerous policy documents describe a

range of CBDC models, but few studies seek to translate options such as payment schedules, portfolio, and access models into measurable deposit stability and bank competition. The lack of such empirical mapping also leaves some important questions unanswered (Allen et al., 2020; Kumhof & Noone, 2021). Another difficulty relates to competencies, where the list of potential threats and vulnerabilities is long, and little priority is given to cybersecurity or governance practices that are considered more effective in minimizing risks without harming customer trust and usability (Adeniran et al., 2024; Gerunov, 2022). These gaps require robust research designs that are primarily behaviorally based, but also balance sheet-based, and cross-jurisdictional policy experimentation in general. This would help regulators and banks to identify complementarities and trade-offs more accurately and move away from descriptive surveys in favor of practical design decisions and structured capability plans (Allen et al., 2020; Bank for International Settlements, 2021; Genc & Takagi, 2024; Lindgren et al., 2020).

3. METHODOLOGY

3.1. Research Design

This research was based on the qualitative research method to consolidate the different results regarding digital currencies and their impact on conventional banks. It focused on three main dimensions: the application of instruments, factors influencing adoption behavior, and policy frameworks affecting their implementation (Irvine et al., 2020; Lindgren et al., 2020). The qualitative method was considered appropriate because the available literature is not homogeneous and employs different approaches, also based on radically different national and institutional contexts, which complicates the introduction of a standardized quantitative meta-analysis (Allen et al., 2020; Genc & Takagi, 2024). The study used an inductive approach rather than coming up with rigid hypotheses, where the evidence gathered in the reviewed studies was used to derive theories and models and to identify recurring themes and mechanisms with the help of coding (Mandavilli, 2023; Palmié et al., 2020). This meant that the analysis was more attentive to how the results could be linked, how different strands of evidence could be related to each other, and where gaps persist. This method is consistent with the principles of qualitative content analysis, where a strong emphasis is placed on interpretation, comparison, and theory development (Lindgren et al., 2020). The advantage of this approach is considered to be that it elevates the discussion beyond purely descriptive reviews, where the procedures of previous studies tended to explore issues of payment efficiency, consumer adoption, or regulatory structure individually without demonstrating the relationships between them. Thus, through the use of a structured coding procedure, this study could categorize the evidence into practically relevant categories for banks and policymakers, while also focusing on areas where research remains underrepresented (Genc & Takagi, 2024; Irvine et al., 2020).

3.2. Data Collection and Sources

The research relied on a combination of academic articles, policy briefs, and industry reports, finding that the academic literature included empirical and conceptual research on cryptocurrencies, CBDCs, and their effects on banks (Broby, 2021; Cunha et al., 2021; Vives, 2019). Institutions such as the IMF, BIS, and NBER also provided policy content that offered insights into regulatory crisis coverage and design decisions (Allen et al., 2020; Kiff et al., 2020) while reports on compliance, market behavior, and crypto crime were found in industry reports, such as those published by (Financial Action Task Force, 2023) and Chainalysis Team (2024). Source identification was based on structured searches using Scopus, Web of Science, and Google Scholar databases, employing keywords such as digital currencies, CBDC, banking, and regulation. Studies were selected if they were relevant to adoption, regulation, operations, or stability, published within the last ten years, and provided methodological clarity (Luft, Jeong, Idsardi, & Gardner, 2022). The last group of materials touched on topics such as financial disintermediation (Broby, 2021; Vives, 2019) adoption and trust (Melnyk, 2024; Mendoza-Tello et al., 2019) regulatory and legal issues (Girasa, 2018; Schwarcz, 2022) and systemic risk (Belke & Beretta, 2020; Kumhof & Noone, 2021) cybersecurity (Fletcher, 2022;

Gerunov, 2022) and portfolio effects (Abdelmalek, 2024; Charfeddine et al., 2020) which made the diversity of perspectives related to digital currencies and banks.

3.3. Coding Framework and Thematic Analysis

This was analysed in three stages of coding, open, axial and selective (Lindgren et al., 2020). Initially, descriptive codes such as margin compression, deposit flight, and exposure to fraud were assigned, while these were then divided into larger groups such as banking operations, adoption and trust, regulation, and financial stability (Albayati et al., 2020; Bank for International Settlements, 2021; Catalini & Gans, 2020). The categories were then reduced in the final step to four main themes, namely: implications for banks in their operations, consumer behavior, regulatory structures, and financial stability. Portfolio diversification and cybersecurity were also considered themes that affected all other themes (Abdelmalek, 2024; Gerunov, 2022). Again, a coding review was conducted to increase the level of reliability, resolve such issues by discussing them, and maintain an audit trail to remain transparent (Irvine et al., 2020).

Table 1. Coding framework: From open codes to themes.

Open code (Example)	Category	Theme
Payment margin compression	Banking operations	Operational implications for banks
Wallet caps, tiered remuneration	Regulatory design & compliance	Regulatory and legal architecture
Flight-to-CBDC during crises	Stability & liquidity	Financial stability and policy
Issuer credibility, fraud exposure	Adoption and trust drivers	Consumer behaviour and adoption

Table 1 shows the development of open codes into larger categories and finally, general themes, where an example would be codes such as payment margin compression; this was part of Banking Operations, which was then linked to the topic of operational implications for a bank. In this way, this chronological arrangement shows how a systematic organization of individual observations into the main themes of analysis was made.

3.4. Theoretical Frameworks

Three theoretical perspectives were used to develop the analysis, among which the dynamics of adoption of cryptocurrencies and CBDCs were explained using the Diffusion of Innovation Theory due to utility, ease of use, and trust attributes (Melnyk, 2024; Mendoza-Tello et al., 2019; Rogers, Singhal, & Quinlan, 2019). The Financial Stability Framework clarifies the impacts of CBDC design decisions, rewards, access, and restrictions on liquidity, deposit stability, and credit provision (Bank for International Settlements, 2021; Kumhof & Noone, 2021) while the Disruption Theory highlighted the role of digital currencies in disrupting traditional intermediation, compressing margins, and shifting competition towards data-driven paradigms (Broby, 2021; Odinet, 2021; Vives, 2019).

3.5. Ethical Considerations and Limitations

The research relied solely on secondary data, which included academic, policy, and industry sources (Head, 2020; Suri, 2020) while triangulation and cross-coding checks were used to increase validity (Irvine et al., 2020). However, there is also a risk of author bias based on the published literature, and it did not allow for quantitative analysis due to the lack of uniform data sets (Saha & Ray, 2021) also, due to the dynamism in CBDCs and regulation, some of the findings may even become outdated over time (Kosse & Mattei, 2023).

4. RESULTS

4.1. Operational Implications for Banking Systems

The results show that digital currencies are beginning to transform conventional banks in ways that reduce their reliance on deposits and squeeze margins. With CBDCs and stablecoins, there is an opportunity to transfer money

between consumers and merchants without using banks as intermediaries (Bindseil, 2019; Broby, 2021). Figure 1 illustrates the extent of digital adoption in emerging economies, with 57 percent of emerging economy adults claiming to have made digital payments using their accounts, compared to only a quarter claiming to use accounts to save or borrow money. This shift is forcing banks to rethink their models and invest more in digital services and infrastructure (Allen et al., 2022; Vives, 2019).

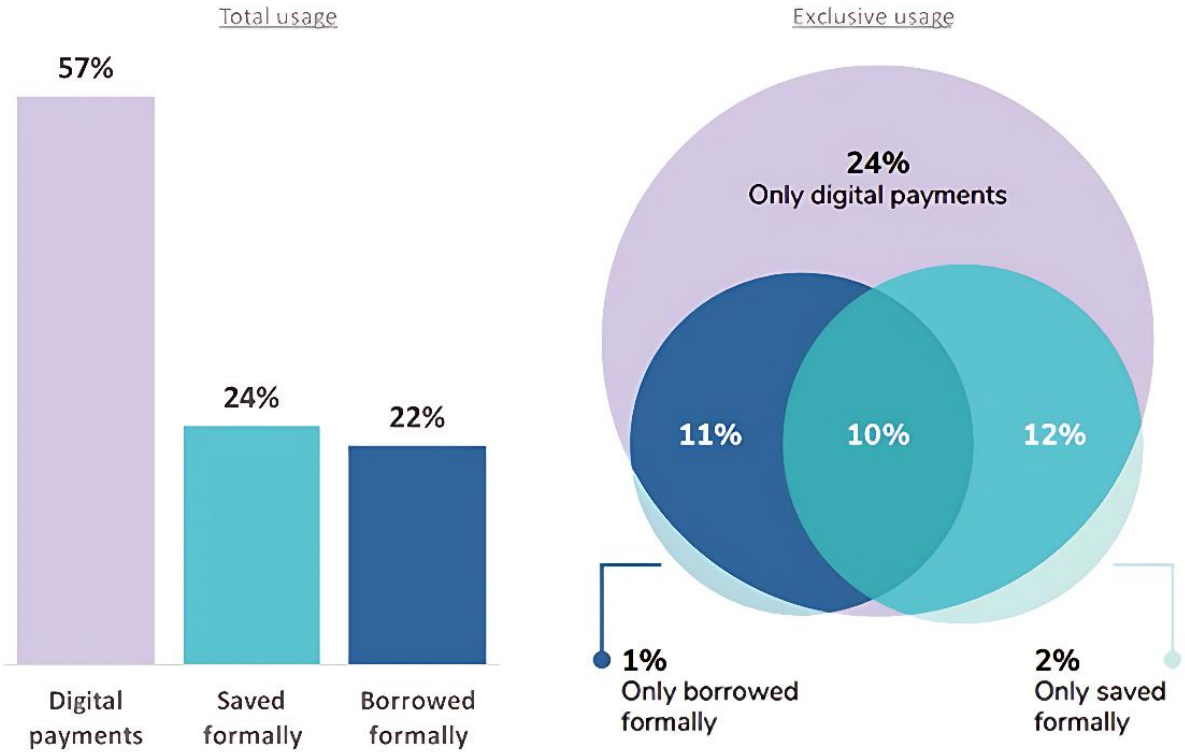


Figure 1. Adults Using Accounts for Digital Services in Developing Economies in 2021 (Lannquist & Tan, 2023)
Additionally, peer-to-peer platforms and blockchain-based lending options are also providing alternative means of credit distribution (Afolabi & Olanrewaju, 2023; Kumari & Mohanty, 2024).

4.2. Consumer Adoption and Trust Drivers

The implementation of cryptocurrencies and CBDCs relies heavily on the element of trust, which depends on the perception of security, regulation, and the reputation of the issuer (Albayati et al., 2020; Melnyk, 2024). Exposure to fraud, digital skills, and personal attitudes toward risk are other important considerations (El-Chaarani et al., 2023). Customization can help achieve financial inclusion and, at the same time, marginalize individuals with low digital access (Abdulhakeem & Hu, 2021; Lannquist & Tan, 2023). It has also been demonstrated that the rate of use is more likely to increase in the event of economic instability, when CBDCs are considered a safer option (Eriksson et al., 2020; Mendoza-Tello et al., 2019).

4.3. Risks of Financial Crime and Cybersecurity

Digital currencies have also increased the risks of financial crime, including fraud, ransomware, and illegal market operations (Fletcher, 2022; Wronka, 2023). With a significant increase, reported cases have risen from approximately 12 million in 2018 to 680 million in 2021, and then levelled off to 329 million during the first quarter of 2022 (see Figure 2).

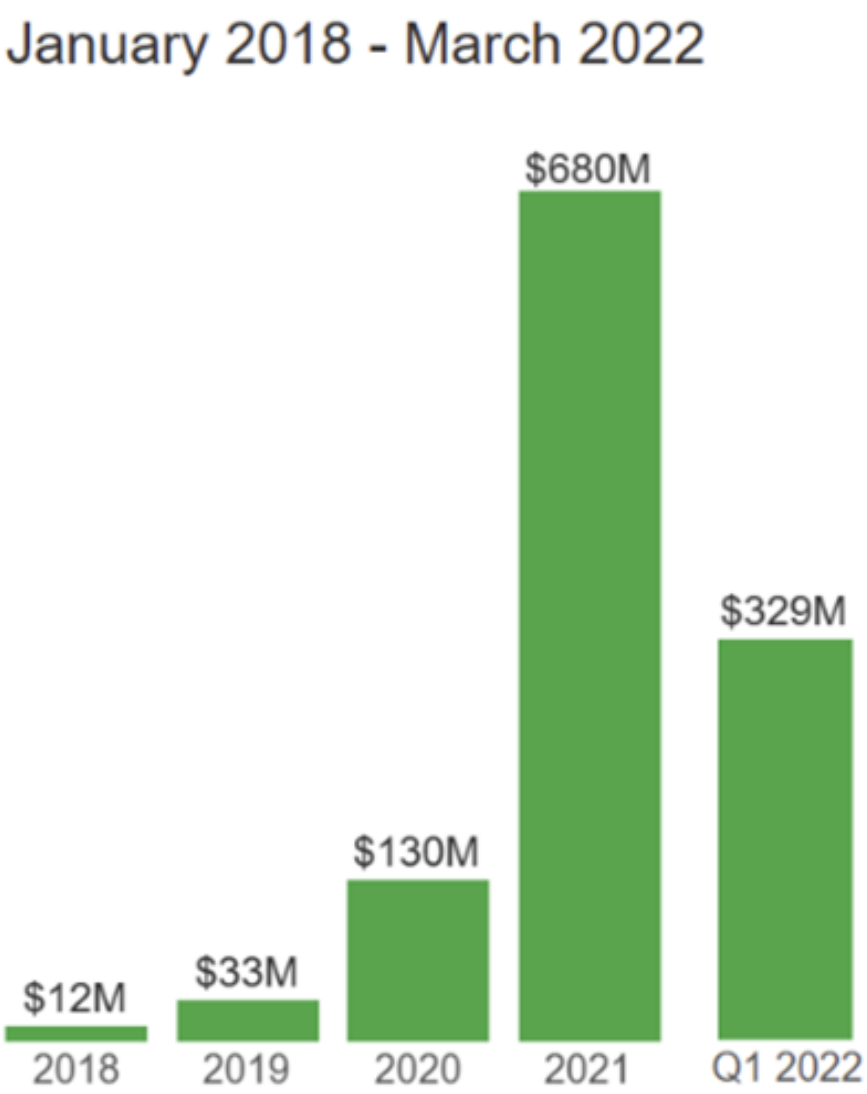


Figure 2. Reported cryptocurrency crimes in the last few years (Fletcher, 2022).

The key issues are maintaining a safe market and building user trust, as research shows that effective risk management frameworks and closer global cooperation between regulators are required (Adeniran et al., 2024; Efijemue et al., 2023). In the absence of this coordination, the safe introduction of digital currencies into the financial system will not be a simple task to accomplish.

4.4. Regulatory, Legal, and Compliance Perspectives

The regulation of digital currencies in different countries varies, but most focus mainly on compliance, privacy, and financial stability. Portfolio limits and graduated rewards are considered some of the measures that central banks are trying to implement to mitigate the risks of disintermediation and systemic shocks (Allen et al., 2020; Kumhof & Noone, 2021). Legal controversies also mention the existing conflicts between privacy rights and anti-money laundering regulations (Ballaschk & Paulick, 2021; Schwarcz, 2022). There are different adoption trends, among which large economies continue with CBDCs, but small and weaker states face significant challenges. For example, Pacific Island countries face small-scale economies, high debt levels, and dispersed geography, as illustrated in Figure 3, which limits their ability to set up the infrastructure to support CBDCs (Zhou et al., 2024).

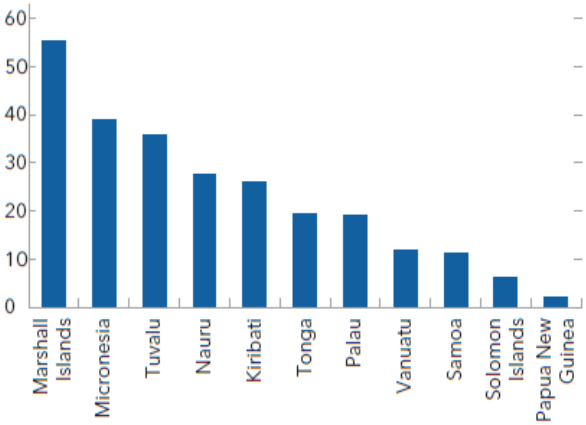
1. Size of Economy in 2021

Country	Nominal GDP (millions of US dollars, 2021)	Population (thousands, 2021)
Tuvalu	63	11
Nauru	133	13
Kiribati	207	122
Palau	218	18
Marshall Islands	257	55
Micronesia	407	105
Tonga	470	100
Samoa	844	200
Vanuatu	927	312
Solomon Islands	1,632	700
Fiji	4,296	905
Papua New Guinea	27,339	8,964
Pacific Islands Total	**36,794**	**11,504**
Pacific Islands excluding Papua New Guinea	**9,455**	**2,540**

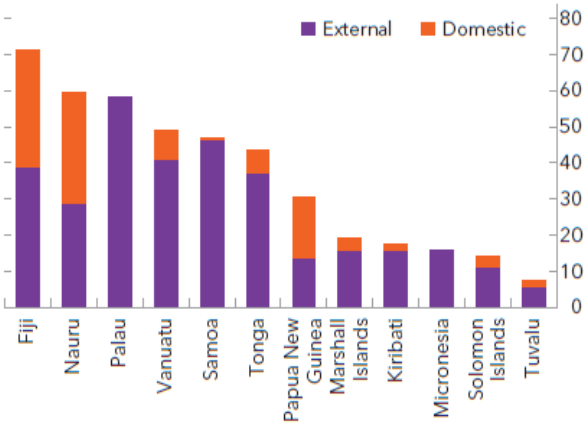
2.

Country	Nominal GDP per capita (US dollars, 2021)	Human Development Index Rank (out of 189 countries, 2019)
Kiribati	1,706	134
Solomon Islands	2,333	151
Vanuatu	2,970	140
Papua New Guinea	3,050	155
Micronesia	3,880	136
Samoa	4,225	111
Marshall Islands	4,637	117
Tonga	4,701	104
Fiji	4,749	93
Tuvalu	5,834	...
Nauru	10,139	...
Palau	12,331	50

3. Pacific Islands : External Grants
(Percent of GDP, 2021)



4. Pacific Islands: Composition of Public Debt
(Percent of GDP, 2020)



5. Terrain of Pacific Island Countries

Country	Land area (sq. kms)	Arable land (as a percent of total land area)	Average sea distance between two habitants of the country[1] (kms)	Maritime area - exclusive economic zone (sq. kms)
Tuvalu	26	..	177	751,672
Marshall Islands	200	11.1	280	1,992,022
Palau	500	0.7	14	604,253
Micronesia	700	2.9	706	2,992,415
Tonga	700	27.8	105	664,751
Kiribati	800	2.5	691	3,437,132
Samoa	2,800	11.5	19	131,535
Vanuatu	12,200	1.6	210	827,626
Fiji	18,300	9.0	71	1,281,703
Solomon Islands	28,000	0.7	267	1,596,464
Papua New Guinea	452,900	0.7	..	2,396,575

Figure 3. Economic size, financial dependence, and geographic dispersion: Barriers to digital currency in small economies (Zhou et al., 2024).

This evidence underscores the importance of tailoring CBDC frameworks to national contexts rather than applying uniform models (Bouza et al., 2024; Foster, Blikstad, Gazi, & Bos, 2021).

4.5. Portfolio Diversification and Market Implications

From an investor's perspective, digital currencies offer diversification, among other benefits, but they are highly volatile. Research also shows that cryptocurrencies can serve as a shock absorber during times of crisis such as COVID-19 (Abdelmalek, 2024; Charfeddine et al., 2020). However, they cannot be used as reliable stores of value due to their volatility (Agarwal, Agarwal, Agarwal, & Agarwal, 2020). Financial institutions are also experimenting with the tokenization of blockchain assets to generate new revenue streams and remain competitive (Catalini & Gans, 2020; Gashi, Tafolli, & Vardari, 2025). In this way, such a combination of conventional and innovative tools is considered the reason why stronger governance and risk management structures are absolutely necessary (Adeniran et al., 2024; Kayani & Hasan, 2024).

5. DISCUSSION

5.1. Integrating the Findings Across Lenses

The results show that digital currencies simultaneously affect banking transactions, consumer behavior, and political decisions, confirming that the outcomes will be based less on technology and more on how systems work and banks' ability to evolve (Allen et al., 2020; Vives, 2019). Data, identity, and third-party service integration, especially in payments, margin pressure, and potential deposit substitution, indicate that banks can compete more with data, identity, and third-party service integration (Broby, 2021; Catalini & Gans, 2020). Furthermore, consumer adoption is uneven, with the level of trust in the technology, issuing institutions, or market behavior being one of the factors determining usage and, consequently, variation across countries with similar payment characteristics (Albayati et al., 2020; Melnyk, 2024; Roussou, Stiakakis, & Sifaleras, 2019). CBDC regulatory decisions, including tiered compensation, holding limits, and access, are considered to have a direct impact on deposit stability, liquidity risks, and competition, implying that regulators can modify these levers to mitigate transition risks (Bank for International Settlements, 2021; Bindseil, 2019; Kumhof & Noone, 2021).

5.2. Theoretical Implications

The findings contribute to diffusion theory as they show, among other things, that trust in CBDCs is not only related to their utility and compliance but also to the clarity of the rules and the credibility of governance (El-Chaarani et al., 2023; Rogers et al., 2019). While, regarding financial stability, the evidence shows that design options such as portfolio limits or graduated rewards create opportunities to smooth deposit flows, but some transition risks still remain (Bank for International Settlements, 2021; Belke & Beretta, 2020). According to the disruption angle, the study shows that data, networks, and user experience are gaining value, where banks that are more adaptive, i.e., those that focus on identity, governance, and integrated services, are more likely to cope with disintermediation (Odinet, 2021; Vives, 2019).

5.3. Implications for Bank Strategy and Governance

Banks are advised to redirect part of their revenues to fee-based and data-driven offerings in order to minimize the effects of margin squeeze (Broby, 2021). Stress situations related to CBDCs should also be considered within the framework of liquidity planning, as deposits may become more flexible and changes in lending models may occur (Bindseil, 2019).

There should be a high level of transparency, efficient complaint systems, and privacy guarantees to build trust, which makes it a key component of digital products (Melnyk, 2024). More effective protection against cyberattacks and financial fraud should also be provided in an effort to reduce fraud, scams, and ransomware attacks (Fletcher, 2022; Wronka, 2023). Whereas, the risks associated with oracles, valuation, and the suitability of tokenized products for retail investors need to be addressed through proper data and model governance (Adeniran et al., 2024).

5.4. Policy and Regulatory Implications

Findings suggest that regulation of CBDCs and cryptocurrencies should follow a risk-by-design approach, with graduated rewards and portfolio limits being among the tools that can be used to stabilize deposits when implemented flexibly (Bank for International Settlements, 2021; Kumhof & Noone, 2021). At the same time, cross-border standards are required to reduce fragmentation and regulatory arbitrage (Bouza et al., 2024; Zhou et al., 2024), where they need to strike the right balance, as privacy and recourse systems need to ensure users' safety without violating AML/CFT regulations (Abdulhakeem & Hu, 2021; Schwarcz, 2022). Closer cooperation in terms of supervision, data transfer, and fraud prevention remains essential (Financial Action Task Force, 2023; Wronka, 2023). According to portfolio studies, the diversification effect of crypto assets is only temporary and varies according to market regimes (Abdelmalek, 2024; Charfeddine et al., 2020). This requires smart structures that not only consider volatility but also governance aspects such as custody, valuation, and oracle risk (Agarwal et al., 2020; Catalini & Gans, 2020). The tokenization of assets can lead to increased liquidity and collateral options; however, it also introduces new risks related to smart contracts and data integrity, and accordingly, the responsibilities of issuers and custodians will become essential (Gashi & Vardari, 2025; Kayani & Hasan, 2024).

6. CONCLUSION

Analysis shows that the effects of digital currencies on the banking industry are more a matter of institutional design and banking capacity than simply technology. The structure of CBDCs is determined by the boundaries, reward and access models, and the quality of the regulations (Allen et al., 2020; Bank for International Settlements, 2021). Cross-country variations in preparation mean that the same technologies can have very different outcomes in different jurisdictions (Genc & Takagi, 2024; Kosse & Mattei, 2023). Trust is the determining factor for a consumer. Reasons for adoption include security, privacy, issuer credibility, and clear remediation options, while drivers of distrust include fraud and weak oversight (Albayati et al., 2020; Financial Action Task Force, 2023; Melnyk, 2024). The benefits of incorporating CBDCs or DeFi (IN) are only possible if such safeguards are in place (Abdulhakeem & Hu, 2021; Lannquist & Tan, 2023). At the banking level, digital currencies are shifting revenue models from margin-based to data- and fee-based services. This includes preparing for liquidity and interest rate risks in a CBDC environment to prevent volatility in credit supply (Belke & Beretta, 2020; Bindseil, 2019). Finally, crypto-assets can provide diversification in the short term, but they are extremely volatile, and their use, governance, and custody need to be handled with care (Abdelmalek, 2024; Charfeddine et al., 2020). The benefits of tokenization come with the cost of introducing new risks that require strong regulation (Adeniran et al., 2024; Kayani & Hasan, 2024).

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