Adoption of Central Bank Digital Currencies and the Role of Change Management in Central Banks

by

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**ADOPTION OF CENTRAL BANK DIGITAL CURRENCIES AND THE ROLE OF
CHANGE MANAGEMENT IN THE CENTRAL BANKS**

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Abstract
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Central Bank Digital Currencies (CBDCs) signify a revolutionary advancement in monetary systems; however, their successful deployment necessitates not only technical and regulatory readiness but also proficient strategic change management within central banks. This research proposal delineates a study investigating how central banks can manage internal organizational transformation to enable successful CBDC adoption. The study examines the significance of structured change management practices—such as leadership communication, staff training, and stakeholder engagement—in the implementation of Central Bank Digital Currencies (CBDCs) within traditionally conservative central banking contexts. There exists a significant deficiency in both research and practice concerning internal change management for Central Bank Digital Currency projects. Although substantial literature examines technological design, economic ramifications, and user acceptance of CBDCs, there is significantly less understanding regarding how central banks can navigate internal transformations to mitigate organizational resistance and guarantee project success. Addressing this deficiency is crucial because even a technically proficient CBDC may fail without the endorsement of employees, cultural preparedness, and effective change management. The study will utilize a mixed-methods approach within an explanatory sequential design. A quantitative survey of 200 central bank officials engaged in CBDC initiatives will ascertain dominant change management practices and their relationship with project outcomes. This will be succeeded by qualitative interviews with approximately 10 key stakeholders to obtain a more profound understanding of the execution of change strategies and to elucidate the quantitative findings. By synthesizing these methodologies, the research will cultivate a thorough comprehension of the internal factors affecting CBDC implementation. The anticipated contribution comprises a collection of empirically based recommendations for central banks and policymakers regarding the management of organizational change for CBDC adoption, thereby addressing a significant gap between technological innovation and institutional preparedness.

Directed by: Dr. Apostolos Dasilas

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CHAPTER 1

INTRODUCTION

1.1. Introduction

The world's financial ecosystem is in the midst of a transformational shift, primarily driven by explosive technological change and the rise of digital innovation in the delivery of financial services. Central Bank Digital Currencies (CBDCs) have emerged as one of the most powerful and disruptive agents of innovation, and the topic is rapidly gaining popularity among policymakers, scholars, regulators, and practitioners. According to a survey conducted by the Bank for International Settlements (BIS) in 2022, more than 90% of central banks worldwide are exploring the idea, researching, or implementing CBDCs (Kosse and Mattei, 2023). This interest reflects the growing adoption of CBDCs as potential tools to increase monetary sovereignty, improve payment efficiency, support financial inclusion, and provide a government alternative to privately issued digital currency.

Many countries have started CBDC projects or pilot schemes in recent times. The Bahamas launched the Sand Dollar in 2020 as the first fully deployed retail CBDC in the world, aiming to enhance financial inclusion and provide more efficient access to payment systems for remote communities (Ahiabenu, 2022). Similarly, Nigeria's eNaira, launched in 2021, sought to improve payment efficiency and inclusion but has faced challenges in adoption, with limited merchant acceptance and a high proportion of dormant digital wallets, mainly due to insufficient public awareness and trust (Le and Pham, 2024). Jamaica has also rolled out its Jam-Dex digital currency with the aim of broadening financial access (Koonprasert, Kanada, Tsuda, and Reshidi, 2024).

While the technological and regulatory aspects of CBDC implementation have received significant scholarly and policy attention, less emphasis has been placed on the internal

organizational transformations required within central banks to adopt CBDCs effectively (Blanck, 2022). Central banks are typically conservative institutions characterized by rigid bureaucratic structures, legacy systems, and formalized procedures (Bofinger and Haas, 2020). The introduction of a CBDC represents not just a technological innovation but a systemic shift in how central banks operate, interact with financial intermediaries, and engage directly with the public. This task requires more than technical capability; it demands strategic change management to address potential resistance, overcome cultural inertia, and build organizational readiness.

Change management, defined as the structured approach to transitioning individuals, teams, and organizations from a current state to a desired future state, has long been recognized as central to successful digital transformation in the private sector (Kotter, 1996; Lewin, 1947). However, its application in central banking—especially regarding the adoption of CBDCs—remains underexplored (Náñez Alonso, Jorge-Vázquez, and Reier Forradellas, 2021; Mohammed, De-Pablos-Heredero, and Montes Botella, 2023). This aspect represents a significant gap in both the academic literature and practice, as successful CBDC adoption will depend heavily on the ability of central banks to adapt internally as much as on their ability to develop robust technology and legal frameworks.

Therefore, this research seeks to investigate the role of strategic change management in central banks in enabling the effective adoption of CBDCs. By combining quantitative and qualitative research methods, the study will investigate current practices, identify challenges, assess outcomes, and propose a framework that can support central banks in navigating the organizational transformations required for successful CBDC implementations.

1.2. Research Problem

Despite the global momentum surrounding CBDC development, the research problem that this study seeks to address is the lack of understanding and application of structured change management within central banks during CBDC adoption. Although extensive literature has been written on the technical design, macroeconomic effects, and adoption of CBDCs (Barrdear and Kumhof, 2016; Blanck, 2022; Bofinger and Haas, 2020), there is a significant gap in the literature that addresses how central banks internally organize and execute these innovations.

This is a challenge, as emphasized by early adopters through empirical evidence. To illustrate, the adoption of eNaira has been less than optimal in Nigeria, partly because of a lack of trust and partly because people have not been widely aware of the program and because the central bank is not adequately prepared to manage the implementation of the program (Le and Pham, 2024). Likewise, research indicates that even though countries such as Sweden and the Bahamas are technologically ready to launch CBDCs, it is unclear how the central banks of these countries can internally adapt and align their staff, workflows, and culture with a digital transformation (Ahiabenu, 2022; Koonprasert, Kanada, Tsuda, and Reshidi, 2024). The cases provide clear evidence that even technologically sound CBDC projects can collapse unless internal change management is established correctly.

Central banks are conservative, hierarchical, risk-averse institutions, which in many cases are dominated by entrenched bureaucratic procedures, departmental silos, and slow adjustment to change (Bofinger and Haas, 2020). The implementation of CBDCs threatens such a status quo, since central banks are forced to encourage cross-departmental collaboration, invest in new digital competencies among employees, re-engineer workflows, and communicate a vision to both internal and external audiences (Mohammed, De-Pablos-Heredero, and Montes Botella, 2023).

Without a strategic change management strategy, the central banks will face internal resistance, slow implementation time, and reduced project use (Lewin, 1947; Kotter, 1996).

Researchers have long maintained that managing change must be structured through change management models, including Kotter's eight-step model and Lewin's three-stage process, to initiate large-scale change to digital (Kotter, 1996; Lewin, 1947). An analysis of the literature indicates that their direct use in central banks in the context of CBDC implementation is either missing or very sparsely reported (Náñez Alonso, Jorge-Vázquez, and Reier Forradellas, 2021). Such a gap highlights a knowledge gap that needs to be filled immediately to ensure that CBDC projects can achieve the intended outcome.

The research problem can be formulated as follows: despite the enormous possibilities of CBDCs to transform the functioning of financial systems, their introduction presupposes not only technical and regulatory readiness but also the capacity of central banks to make the change successful within their own four boundaries. There is a significant gap in the literature in terms of the lack of empirical research on the structured change management of CBDC initiatives. This research aims to address that gap by exploring the ways central banks can use evidence-based change management practices to facilitate the successful deployment of CBDCs.

1.3. Purpose of Research

This study aims to analyze how strategic change management can help the adoption of Central Bank Digital Currencies (CBDCs) in central banks. Although technological, regulatory, and economic forces determine the viability of CBDC initiatives, the success of such initiatives is equally determined by the readiness of an organization and effective change management (Barrdear and Kumhof, 2016; Bofinger and Haas, 2020). By using well-tested change management models (i.e., Lewin's change management three-stage model (1947) and Kotter's eight-step model

of change management (1996)) as a framework for the central banks' adoption of CBDCs, the proposed study will help bridge the knowledge gap. The aim of this research is twofold: first, it aims to add value for theory by extending the use of change management frameworks to an under-researched field—central banking—to enrich the academic debate at the nexus of digital transformation and financial innovation. Second, it aims to provide practical information and evidence-based solutions that the central banks can adopt for improving their internal change capacity and, therefore, the likelihood of successful implementation of the CBDC.

Finally, the paper will take a detailed look at current change management practices, evaluate the effectiveness of change management practices in relation to the outcomes of the CBDC project, and then make recommendations for a best-practice model that reflects the nature of the challenges central banks face. This objective coincides with the recommendations of other researchers like Mohammed, De-Pablos-Heredero, and Montes Botella (2023) and Náñez Alonso, Jorge-Vázquez, and Reier Forradellas (2021), who claim that internal organizational preparedness is a determinant of the success of CBDC adoption that has been underestimated and overlooked.

1.4. Significance of the Study

This research is necessary because it contributes to the theoretical, empirical, practical, and policy discussion on CBDC adoption and change management in central banks. Most of the research on CBDCs is conducted through the various lenses of technology, regulation, and economics, but the study indicates that inner organizational change is an essential field that needs to be researched more (Blanck, 2022; Bofinger and Haas, 2020). From a theoretical perspective, the study contributes to the literature by extending established change management frameworks, such as Kotter's eight-step model (1996) and Lewin's three-stage model (1947), into the unique institutional context of central banks. Existing research on CBDCs often emphasizes external

adoption drivers such as consumer trust, payment efficiency, and financial inclusion (Wang and Gao, 2024; Mohammed, De-Pablos-Heredero, and Montes Botella, 2023), yet there is minimal focus on how internal organizational readiness influences project outcomes. By bridging this gap, the research enriches both change management and digital currency scholarship.

From an empirical perspective, the study aims to generate original data through a mixed-methods approach, combining surveys and interviews with central bank officials. This evidence will shed light on what change management practices are currently being applied in CBDC projects, how they affect implementation outcomes, and what challenges central banks encounter. This empirical contribution is significant, as hardly any studies have systematically examined these issues. From a practical perspective, the study provides actionable recommendations for central banks. By identifying best practices, highlighting common pitfalls, and proposing a structured change management framework, the research will help central banks plan and execute CBDC adoption more effectively. For example, it will suggest strategies for enhancing leadership communication, building staff capacity, and fostering interdepartmental collaboration—factors that have been shown to influence organizational change success in other sectors (Kotter, 1996; Lewin, 1947).

Finally, from a policy perspective, the research has implications for international organizations such as the BIS, IMF, and World Bank, which are actively involved in shaping global CBDC discourse. By emphasizing the importance of organizational readiness and internal change, the study can inform policy guidance, technical assistance programs, and readiness assessments for central banks considering CBDC adoption. This adds a vital dimension to policy debates, which often prioritize technological feasibility and regulatory compliance while overlooking internal institutional capacity. The study is significant because it not only addresses a crucial academic gap

but also provides practical and policy-relevant insights. Its findings help ensure that CBDCs, as transformative innovations in the financial system, are implemented effectively by institutions equipped with the organizational agility and adaptive leadership necessary for success.

1.5. Research Questions

To address the research problem and fulfill the purpose of the study, the following research questions have been formulated.

1. What change management practices are central banks currently implementing in their CBDC initiatives? This question seeks to identify and describe the approaches central banks are adopting to manage organizational change during CBDC implementation (e.g., staff training, leadership communication, use of formal frameworks).

2. In what ways do change management initiatives influence the outcomes of CBDC adoption projects? This question examines the relationship between change management practices and key success indicators such as staff preparedness, project timelines, user adoption rates, and operational effectiveness.

3. What obstacles and challenges do central banks face in managing organizational change for CBDC adoption? The question is designed to identify obstacles, e.g., cultural resistance, skills deficiency, or coordination problems across departments that may lead to the failure of the successful change.

4. What strategies or best practices can be proposed to enhance change management in future CBDC implementations? This question aims to produce evidence-based, practical recommendations that central banks should embrace to enhance their internal capacity to change and ensure that CBDC initiatives are more successful.

1.6. Research Objectives

The objectives of this study are as follows:

1. To evaluate existing change management practices in CBDC initiatives. This goal aims to determine and report the strategies that central banks are currently employing to address organizational change as part of implementing CBDC adoption. It includes the investigation of the formal models (Kotter's or Lewin's) and internal communications models, training programs, the role of the leadership, and interdepartmental alignment. Through an examination of these practices, the study will gain an in-depth understanding of the degree to which formal change management has been applied to CBDC initiatives.

2. To assess the influence of change management initiatives on CBDC project outcomes. This objective will be used to study the impact of change management strategies on the success of projects. The focus will be on finding the relationships between the practices, like stakeholder involvement, employee empowerment, and training programs, and results, like timely execution, increased efficiency in operations, and increased adoption by the users. In this analysis, the study will evaluate whether central banks using formal change management frameworks have a higher probability of implementing CBDCs successfully than central banks that do not adhere to such change management frameworks.

3. To identify obstacles and challenges faced by central banks in managing organizational change for CBDC adoption. This objective aims to establish the obstacles that prevent effective change management when central bank digital currencies (CBDCs) are rolled out. These obstacles can include cultural resistance within the company, a lack of technical skills or digital literacy among employees, resource needs, and difficulty in creating an interdepartmental collaboration. The process of identifying said factors is of the highest

priority because it enables defining the areas where the central banks are weakest and the aspects of the institution that could undermine the success of the CBDC projects.

4. To develop evidence-based strategies and a best-practice framework for effective change management in CBDC implementation. Based on the experience of the preceding objectives, this ultimate objective focuses on generalizing the results into practical recommendations. The model will specifically target central banks involved in CBDC projects. The framework will include theoretical information as well as empirical evidence to suggest plans such as phase-out rollouts, intensive training, communication policies, and leadership participation systems. The last goal is to present to policymakers and practitioners a systematic roadmap of how to manage change within organizations when adopting CBDCs.

1.7. Research Hypotheses

Based on the theoretical framework integrating TAM, UTAUT, DOI, and organizational change theories (Lewin, Kotter), and the literature gaps identified, this study tests the following hypotheses:

- **H1:** Central banks demonstrate systematic preferences in selecting change management models for CBDC implementation, with significant differences in usage patterns across different models.

- **H2:** The choice of change management model significantly influences CBDC implementation success outcomes.

- **H3:** Staff resistance to change negatively correlates with CBDC implementation timeline adherence.

- **H4:** The application of structured change management methodologies significantly improves CBDC implementation outcomes (measured by timeline adherence, cost control, and strategic objective achievement).

- **H5:** Technology infrastructure readiness, regulatory clarity, and resource availability collectively predict CBDC implementation success.

- **H6:** The relationships identified in H1-H5 satisfy statistical regression assumptions, ensuring reliable and valid results.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The emergence of Central Bank Digital Currencies (CBDCs) represents a landmark development in the evolution of global monetary systems. Driven by the rapid pace of financial technology (FinTech) innovations, central banks worldwide are investigating or piloting digital forms of sovereign currency to complement or replace traditional physical cash (Kosse and Mattei, 2023). CBDCs promise significant benefits, including enhanced payment efficiency, improved financial inclusion, reduced transaction costs, and greater resilience of payment systems (Barrdear and Kumhof, 2016; Bofinger and Haas, 2020). At the same time, they pose profound challenges that are technological, regulatory, economic, and organizational in nature (Blanck, 2022; Ahiabenu, 2022).

The growing literature on CBDCs tends to emphasize external enablers such as technological infrastructure, regulatory frameworks, and consumer adoption factors (Mohammed, De-Pablos-Heredero, and Montes Botella, 2023; Koonprasert, Kanada, Tsuda, and Reshidi, 2024). However, there remains a marked paucity of research into the internal organizational dynamics of central banks that determine whether CBDCs can be successfully adopted and sustained. Central banks are conservative, hierarchical, and risk-averse institutions, and they are characterized by the presence of strict bureaucracy with conservative policy cultures (Bofinger and Haas, 2020). The introduction of CBDC under such circumstances does not need only technical capacity but also the capability to handle radical institutional change (Kotter, 1996; Lewin, 1947).

The concept of change management has received significant research interest in the digital transformation of companies, and some of the most commonly known models of change include

the eight-step model developed by Kotter and the three-stage change process developed by Lewin, which provide frameworks on how to navigate change processes in an organization effectively. However, the application of these models by central banks has not been adequately analyzed, particularly in the context of implementing CBDCs. Scholars have begun to highlight the risks of overlooking internal readiness and staff engagement, warning that technically sound CBDC designs may falter without adequate organizational transformation (Náñez Alonso, Jorge-Vázquez, and Reier Forradellas, 2021; Le and Pham, 2024).

This chapter aims to review the existing literature critically on CBDC adoption with particular emphasis on the role of organizational change management. The review is structured into five main sections. The first section presents the theoretical framework underpinning the study (2.2), examining relevant models of technology adoption and organizational change. The second section develops a conceptual framework (2.3), visualizing how these theories integrate to guide the study's focus on CBDC adoption. The third section (2.4) reviews prior peer-reviewed studies, organized chronologically to capture the evolution of research on CBDCs from early macroeconomic debates to recent empirical evidence from pilot programs. The fourth section (2.5) identifies research gaps by synthesizing insights from the review, highlighting what is known, what remains contested, and what is underexplored. Finally, section 2.6 provides a summary, linking the literature review to the research problem and objectives outlined in Chapter I.

The chapter ensures both breadth and depth by structuring the literature review in this manner. Engaging with a wide range of studies, spanning technological, regulatory, economic, behavioral, and organizational perspectives, achieves breadth. Depth is achieved by critically interrogating the implications of these studies for central banks and by grounding the analysis in established theories of technology adoption and change management. The chapter demonstrates

the scholarly foundation for the research, situates it within existing debates, and justifies its contribution to filling the identified gaps in knowledge.

2.2. Theoretical Framework

The theoretical framework for this study draws on a range of well-established theories that together provide a robust foundation for understanding the adoption of Central Bank Digital Currencies (CBDCs). As the central bank digital currencies (CBDCs) implementation process is multi-dimensional, it is essential to keep in mind both external and internal factors that can affect the user's acceptance of the new system and the internal organizational factors that define how effectively central banks will conduct the change. This section presents a detailed discussion of the theoretical frameworks, their genesis, their assumptions, their applications in CBDCs, and the key debates about the theoretical frameworks.

2.2.1. Technology Acceptance Model (TAM)

To explain the process of technology adoption at individual levels, Davis (1989) established the Technology Acceptance Model (TAM). According to TAM, the two most essential perceptions in the creation of the behavioral intention to use a technology are perceived usefulness (PU) and perceived ease of use (PEOU). PU refers to how much a person believes that using a system will improve job performance, while PEOU refers to how effortless the system is to use. TAM has been widely applied in e-commerce to mobile banking domains, and it has consistently been demonstrated to be a positive predictor of technology adoption.

Within the framework of CBDCs, TAM notes that individuals would be more willing to accept digital currencies once they perceive that they are more advantageous to them (faster transactions, less expensive, increased security, etc.) and that the platform is easy to use and learn. Convenience is a key requirement in low digital literacy populations through research on digital

banking and mobile payments (Venkatesh and Davis, 2000). Such an issue is a matter of direct concern to CBDCs, especially in developing economies where digital infrastructure remains under development. As an example, users might still choose cash or other established private payment systems when they locate CBDC wallets that are difficult or unreliable. On the other hand, promoting CBDCs to enhance financial inclusion and simplify transactions may actually hasten their use. TAM hence offers a critical perspective on the user-centered face of CBDCs.

According to critics of TAM, the model is too simplistic in its description of adoption since it does not cover social and situational factors, including the trust they place in the issuing authority or the role of their peers (Legris, Ingham, and Collerette, 2003). Various TAM extensions have attempted to cope with these issues by adding external variables, such as trust, perceived risk, and compatibility with current practices. This type of extension is extremely delicate in the CBDC environment, and the credibility of the central bank, information privacy, and information safety are significant factors in its implementation. Therefore, more general theories of TAM require a complete understanding of the determinants of CBDC adoption.

2.2.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a combination of the knowledge of eight previous models, among them the TAM, the Theory of Planned Behavior, and the Innovation Diffusion Theory (Venkatesh, Morris, Davis, and Davis, 2003). UTAUT takes into account four constructs, namely, performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is similar to PU in TAM, and effort expectancy is identical to PEOU. Social influence refers to the extent to which an individual is predisposed to be influenced by the choices of other people to adopt a given technology and the resources and support infrastructure that support it.

Performance expectancy for CBDCs refers to people's belief that CBDCs will positively influence their financial lives, such as through increased efficiency and security or enhanced inclusion. Effort expectancy is a measure of the perceived ease of CBDC applications. Social influence underlines the role of government initiatives, peer adoption, and recommendations by influencers to influence user perception. Enabling factors are conditions of prerequisites for CBDCs and include not only technological infrastructure (internet, mobile phones) but also regulatory clarity and institutional support. In other words, UTAUT proposes that adoption is more likely when central banks offer transparent regulatory frameworks and technical support to the private sector.

The conceptualizations of UTAUT are supported by empirical research on mobile payments and e-wallets. De Oliveira (2016) discovered that performance expectancy and social influence were significant factors in determining the uptake of mobile banking in Portugal. One can project these findings onto CBDCs, but one must also factor in that such trust must be achieved via an appropriate value proposition and visible support. Besides that, the moderating factor, UTAUT (age, gender, experience), is applicable to CBDCs since the adoption process may not apply to all target demographic categories. An example of these results is that the younger generations could be more accepting of CBDCs than the older generations, as the older generation is less digital. UTAUT is considered faulty since it is over-deterministic and not sensitive to the effects of culture and macro-level institutional environments (Williams, Rana, and Dwivedi, 2015). This concept is especially applicable to CBDCs, the implementation of which is not an individual decision but a part of larger financial ecosystems. In this regard, UTAUT is practical but needs to be complemented with institutional and organizational views.

2.2.3. Diffusion of Innovation (DOI) Theory

The sociological theory of the spread of innovations among people is the diffusion of innovation (DOI) theory by Rogers. It defines five attributes of innovations that have an impact on adoption: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2014). DOI also classifies adopters into five groups, namely innovators, early adopters, early majority, late majority, and laggards. A relative advantage in the context of CBDCs is whether they are considered superior to cash or to private payment systems. One such example is that CBDCs can be cheaper to trade or safer. Compatibility is defined as the association of CBDCs with individual financial behaviors and cultures. Complexity relates to whether the system is understood as excessively challenging to understand or use. Trialability stresses the importance of pilot projects that will allow users to explore CBDCs before they become a reality. Observability focuses on the visibility of success, e.g., successful adoption elsewhere or obvious benefits in domestic pilot projects.

The categories of adopters used by DOI are also applicable. Innovators can be technologically savvy individuals or businesses that test CBDCs as early as possible. The initial users may be government-incentivized institutions or citizens. Once they realize some benefits, they can follow the early majority. The late majority may adopt only when CBDCs become mainstream, and laggards may resist entirely. Recognizing these categories allows central banks to design staged rollout strategies tailored to different segments. DOI has been widely applied in studies of mobile payments, digital banking, and e-commerce. For example, Mallat (2007) applied DOI to mobile payment adoption in Finland, highlighting the role of relative advantage and social influence. Applying DOI to CBDCs provides informative details about how adoption may unfold across different populations. However, critics argue that the DOI underestimates the role of

institutional and regulatory contexts, which are critical in CBDC adoption. Thus, DOI must be integrated with other theories.

2.2.4. Institutional Theory

Institutional theory emphasizes the role of formal and informal rules, norms, and cultural-cognitive structures in shaping organizational behavior (DiMaggio and Powell, 1983). From this perspective, organizations adopt practices not only for efficiency but also for legitimacy. In the CBDC context, institutional theory highlights that central banks may pursue CBDCs partly due to coercive pressures (e.g., global competition, regulatory expectations), mimetic pressures (imitation of peer institutions), and normative pressures (professional standards and expectations). For example, the BIS survey (Kosse and Mattei, 2023) indicates that many central banks are exploring CBDCs partly because peers are doing so. Institutional theory thus explains why CBDC adoption is becoming a global trend even in the absence of conclusive evidence of success. This perspective underscores that CBDC adoption is not only a technological or economic decision but also a socially and institutionally embedded process.

2.2.5. Organizational Change Theories: Lewin's Three-Stage Model

Lewin's three-stage model (1947) remains one of the foundational theories of organizational change. It conceptualizes change as a process of unfreezing, moving, and refreezing. Unfreezing means being aware of the need to change and defeat resistance. Moving involves the introduction of new methods, behaviors, and practices. Refreezing is the consolidation of organizational culture and structure changes. As used in connection with CBDCs, the unfreezing step entails central banks acknowledging the necessity of the digital transformation, which is the case more frequently because of external factors, including competition posed by other digital

currencies introduced by non-central banks. The relocation may entail piloting of the systems associated with CBDC, staff training, and work process reorganization.

Refreezing is a process of institutionalizing the CBDC activities as everyday practices at the central bank. The Lewin model states the need to take into account the problem of cultural inertia and the resistance phenomenon existing in conservative organizations, including central banks. Lewin has been accused of creating a linear and simplistic model, but its success lies in its simplicity and the flexibility of its creation. Within the CBDC context, it provides an instructive framework through which to comprehend the means by which central banks can negotiate the psychological and cultural aspects of change.

2.2.6. Organizational Change Theories: Kotter's Eight-Step Model

Kotter's (1996) model is an expansion of Lewin's model because it offers a more detailed roadmap on how to handle change. These eight steps will include generating a sense of urgency, creating a guiding coalition, generating and communicating a vision, building a broad-based action, creating short-term wins, deepening gains, and entrenching changes in culture. CBDCs can generate urgency by drawing attention to how failing to act can lead to losing monetary sovereignty to private cryptocurrencies. Cross-departmental teams at the central bank may form a guiding coalition with assistance from external stakeholders like regulators. Staff and the community can establish support for CBDCs by communicating a clear and compelling vision of their purpose. Action empowerment can be achieved by removing bureaucracy, training, and providing adequate resources. Generating quick wins may involve small pilot successes that demonstrate feasibility. Consolidating gains requires scaling up successful practices, and anchoring change ensures CBDC operations become embedded in organizational culture.

Kotter's model is particularly relevant for CBDCs because it emphasizes leadership, communication, and the mobilization of coalitions—factors that are critical in hierarchical and conservative institutions. Critics, however, argue that the model is too prescriptive and may not capture the complexity of change in dynamic environments. Nonetheless, it provides a valuable framework for designing and managing CBDC adoption strategies.

2.2.7. Socio-Technical Systems Theory

Socio-technical systems theory emphasizes the interdependence of social and technical subsystems in organizations (Appelbaum, 1997). Successful change requires alignment between the technical design of systems and the social systems of people, roles, and culture. In the CBDC context, socio-technical theory suggests that robust technical design (e.g., distributed ledger technologies, cybersecurity) must be accompanied by social readiness (staff skills, interdepartmental collaboration, user trust). Failure to align these subsystems may result in technically sound but socially unsustainable CBDC initiatives. Socio-technical theory is critical because CBDC adoption involves not just new technologies but also shifts in organizational structures, roles, and interactions with external stakeholders. By highlighting the interplay between technology and social systems, this theory reinforces the need for holistic approaches to CBDC implementation.

2.2.8. Stakeholder Theory

Stakeholder theory (Freeman, 2010) posits that organizations must balance the interests of multiple stakeholders. Governments, commercial banks, fintech companies, businesses, and citizens are the stakeholders in CBDC projects. They have different and even contradictory interests. By way of example, governments can put financial inclusion on the agenda, commercial banks can be threatened by disintermediation, and privacy concerns can be prioritized by citizens.

The stakeholder theory emphasizes the need for inclusive governance and dialogue in the implementation of CBDC. Using the stakeholder theory, the study highlights that effective implementation of CBDC would involve measures to accommodate stakeholder issues, establish trust, and promote cooperation. This step is especially important since the resistance of high-profile stakeholders like commercial banks may depower CBDC initiatives.

2.2.9. Integrating Theories for CBDC Adoption

On their own, these theories provide useful but incomplete information. TAM, UTAUT, and DOI describe the process through which users consider and embrace innovations. The institutional theory, the Lewin model, and the Kotter model explain the way organizations react to pressures and cope with change. The socio-technical systems theory and the stakeholder theory provide a bridge in terms of the interaction of technical, social, and multi-stakeholder factors. Combining these views, the framework acknowledges that the introduction of CBDC is a technological phenomenon, as well as an organizational and a social one. There are also tensions in this integration. Individual perceptions are the focus of TAM and UTAUT, and institutional theory and stakeholder theory are more concerned with broader social and political considerations. The socio-technical theory is multi-faceted and mutually reinforcing, and Lewin and Kotter introduce step-by-step recommendations to apply change. The recognition of these tensions enables making a more delicate decision regarding the implementation of CBDC.

2.2.10. Implications for the Study

The theoretical framework has a couple of implications. First, it indicates that the adoption of CBDC can be viewed as a complex entity with both external factors that prompted it and internal factors that predisposed the organization to it. Second, it justifies the mixed-method design of the study, for example, to survey the population and conduct the interview with central bank staff.

Third, it proposes an opinion on how the empirical findings were interpreted in terms of their connections with the available theories. It also highlights the theoretical contribution of the study by fusing two approaches to the issue typically under critique. The framework provides an extensive foundation to study the implementation of CBDCs. It uses the information held in the technology adoption theories, organizational change theories, social-technical theories, and the stakeholder theory to reflect the multidimensional nature of CBDCs. Such wide coverage enables this research to respond to its objectives and also contribute to scholarly and practical discourses.

Based on the integrated theoretical framework, several testable propositions emerge: First, institutional theory and change management frameworks suggest that central banks will exhibit non-random patterns in selecting change management approaches, influenced by organizational culture and contextual factors (H1). Second, both Kotter's and Lewin's models predict that structured change management approaches yield superior outcomes compared to ad hoc methods (H2, H4). Third, resistance theory within organizational change literature suggests that employee resistance creates implementation friction, potentially affecting project timelines (H3). Fourth, the socio-technical systems perspective and stakeholder theory indicate that technical readiness, regulatory frameworks, and resource availability are foundational prerequisites for successful digital transformation (H5).

2.3. Conceptual Framework

The study has incorporated the ideas of the organizational change management models and theories of technology adoption in the conceptual framework. This framework provides a comprehensive perspective on the adoption of Central Bank Digital Currencies (CBDCs). The framework does not consider adoption as a purely technological or economic decision, but rather as something that must be done at once by both external users and internal institutional readiness

to succeed. This section describes this conceptual framework in more detail, contextualizes it in relation to the existing literature, and defines its dimensions and the research implications.

2.3.1. Rationale for the Framework

The multidimensional nature of CBDC adoption is the rationale behind the creation of a conceptual framework. Individuals and businesses should be prepared to use and accept CBDCs. This adoption is affected by the perceived usefulness, ease of use, social influence, trust, and relative advantages of CBDCs compared to the current types of money. On the other hand, central banks must be empowered to implement CBDCs successfully, and internal cultural changes, structural changes, leadership policies, and stakeholder reactions accompany such an undertaking. Without synchronization between these external and internal dimensions, CBDC projects will most likely fail. The theoretical framework, therefore, renders adoption a product of the interaction of external forces and internal processes.

2.3.2. External Adoption Drivers

The Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovation (DOI) theory inform the external side of the framework. Together, these theories suggest that individuals will adopt CBDCs if they perceive them as practical, simple to use, socially validated, and compatible with existing financial practices. For example, TAM emphasizes perceived usefulness and ease of use. In the CBDC context, usefulness translates into benefits such as quicker transactions, reduced costs, and increased access to digital finance. "Ease of use" refers to whether citizens can efficiently operate digital wallets, even in low-literacy environments.

UTAUT expands on this idea by stressing the influence of social networks, peer behavior, and government endorsement. If influential institutions and leaders adopt CBDCs, the public may

follow. DOI contributes by highlighting the importance of relative advantage, trialability through pilots, and observability of positive outcomes. These constructs underscore that CBDCs must not only be technologically functional but also visibly beneficial and accessible to gain acceptance. Without confidence in the central bank's ability to manage privacy, security, and stability, users may be reluctant to adopt CBDCs. Therefore, public communication, transparency, and educational campaigns become essential components of the external adoption process. The conceptual framework captures these dimensions as critical external drivers.

2.3.3. Internal Organizational Dynamics

The internal side of the framework is derived from organizational change models, specifically Lewin's three-stage model and Kotter's eight-step model. These models illustrate the management of change processes in institutions and the integration of new practices. The model formulated by Lewin views change as a process of unfreezing behavior that is already established, transitioning into new practice, and refreezing into an institutionalized norm. Unfreezing, moving, and refreezing are associated with raising awareness of the urgency of digital transformation among staff, implementing pilot programs and training, and integrating CBDC functions into the core central bank operations in CBDC projects.

The Kotter model contributes to this mentality and provides a more detailed roadmap. Creating urgency helps make staff and other stakeholders realize the dangers of doing nothing. The formation of a guiding coalition also involves forming cross-departmental teams and external partnerships to help pave the path towards the adoption of CBDC. Developing and communicating a vision helps create a shared understanding of CBDC objectives. Further steps for sustaining transformation include empowering staff to act, generating short-term wins through pilots, consolidating gains, and anchoring change in culture. The emphasis on leadership, communication,

and culture is particularly relevant for central banks, which are often characterized by hierarchical structures and institutional inertia.

Internal dynamics also extend to socio-technical alignment and stakeholder engagement. Socio-technical systems theory highlights that technical systems (e.g., blockchain architecture, cybersecurity measures) must be matched by social systems such as staff skills, training programs, and collaborative cultures. Stakeholder theory emphasizes that central banks must manage relationships with governments, commercial banks, fintech firms, and citizens, balancing diverse and sometimes conflicting interests. The conceptual framework integrates these insights to highlight the internal conditions necessary for successful CBDC adoption.

2.3.4. Integrating External and Internal Perspectives

The novelty of the conceptual framework lies in its integration of external and internal perspectives. If the central bank lacks the organizational readiness to sustain a technologically sound and user-friendly CBDC project, it may fail. Conversely, a central bank that is internally ready but faces public distrust or low demand will also fail. Success occurs only when external adoption drivers and internal organizational readiness align. To visualize this integration, the framework can be imagined as a two-dimensional matrix. The horizontal axis represents external adoption drivers such as perceived usefulness, ease of use, social influence, and trust. The vertical axis represents internal organizational dynamics such as leadership engagement, cultural adaptation, stakeholder management, and staff preparedness. The intersection of these two axes represents the optimal condition for CBDC success. Pilot projects, public awareness campaigns, leadership-led reforms, and staff training initiatives can facilitate movement towards this intersection.

2.3.5. Implications of the Framework

The conceptual framework has several implications for scholarship, policy, and practice. From a scholarly perspective, it contributes to the literature by explicitly linking technology adoption theories with organizational change management models, two domains that are often studied separately. It demonstrates that CBDC adoption is not just a question of whether citizens accept the technology but also whether central banks can transform themselves to support it. From a policy perspective, the framework suggests that governments and international organizations should not focus solely on the technological design or regulatory clarity of CBDCs. They must also support central banks in building organizational readiness. This includes investing in staff training, promoting interdepartmental collaboration, and embedding change management strategies in CBDC projects.

From a practical perspective, the framework provides central banks with a diagnostic tool. By assessing their position along both external and internal dimensions, central banks can identify weaknesses and design strategies to address them. For example, if external trust is low, communication campaigns may be prioritized. Weak internal readiness may necessitate leadership development and organizational restructuring.

2.4. Review of Prior Peer-Reviewed Studies

2.4.1. Introduction

The concept of Central Bank Digital Currencies (CBDCs) is a relatively recent area of research that has developed in the past decade and moved past the hypothetical to tangible studies of pilot programs and systems of implementation. In this section, a chronological review of previous peer-reviewed studies is undertaken, detailing the development of the literature over time, starting with earlier macroeconomic modeling and the development of more modern literature on

the same topic, focusing on governance, user adoption, and institutional change. The objective is to place this thesis into the context of the existing body of scholarship, outline common themes, and identify gaps that support the current research.

2.4.2. Early Conceptual and Theoretical Foundations (2016–2018)

One of the earliest highly impactful works, Barrdear and Kumhof (2016) aimed at modeling the possible macroeconomic implications of the adoption of central bank digital currency (CBDC) with the aim of determining whether CBDCs would enhance the transmission of monetary policy and the effectiveness of the economy in general. Based on financial theory and macroeconomic modelling, they needed to simulate the results of different CBDC scenarios based on a Dynamic Stochastic General Equilibrium (DSGE) framework. The results indicated that CBDCs can play a role in contributing to GDP by reducing transaction costs, expanding the central bank balance sheet, and providing an additional policy tool in case of stabilization. The authors explained that their results indicate that CBDCs have the potential to support financial stability and provide welfare benefits when developed appropriately. However, the study had limitations: it relied on theoretical modeling that lacked empirical data and did not address the organizational or institutional dynamics within central banks. Nevertheless, its contribution remained considerable to construct a rigorous theoretical foundation to support further research on CBDCs, not to mention the macroeconomic potential of such innovation.

Building on these theoretical arguments, Bordo and Levin (2017) wrote about the purpose of CBDCs in terms of historical and monetary policy and whether digital central bank money would have the capacity to regain financial control in a world where the use of cash is declining. Their research was theoretical in nature, based on monetary history and policy analysis, and they employed comparative historical reviews, rather than a collection of econometric models. They

found that CBDC could help improve monetary sovereignty through creating negative interest rates more efficiently, as well as improve payment security and transparency. They understood the meaning of CBDCs as not a technological innovation but rather a policy tool that would change the transmission of monetary policy. However, the analysis was constrained by a conceptual approach and not an empirical approach and by a lack of focus on the implementation issues of conservative central banks. This publication is essential, as it puts CBDCs into the context of the broader range of financial innovations and, thus, makes them a logical next step in the history of money and the potential solution to the existing macroeconomic issues.

2.4.3. Comparative Design and Early Implementation (2020–2024)

Carapella and Fleming (2020) took a crucial step in the CBDC debate. They tried to develop a conceptual framework that allowed outlining the distinction between token-based and account-based digital currencies. This difference has remained the foundation of the policy debate. Regarding the monetary theory and the analysis of the payment systems, their work was of a theoretical nature and not empirical; instead, it employed the conceptual model of the two types of designs. They found that token-based CBDCs, which resemble cash but are in digital form, have the potential to preserve privacy but would be vulnerable to a range of threats associated with anonymity, such as money laundering. Account-based CBDCs would enhance transparency and security but leave data under the control of central forces. The authors took these trade-offs to be inherent to the policymaking process, whereby central banks need to determine which values take precedence, whether they are privacy, efficiency, inclusivity, or control. The study's limitations were its abstract and empirical nature and the lack of an argument about the managerial changes central banks should make. Its value comes in providing one of the first systematic frameworks to

analyze the design of CBDC, which has since been used as a benchmark by academics and central banks.

Fullerton and Morgan (2022) were the first to discuss the practical realities of CBDC implementation by analyzing the case of the Chinese digital yuan (e-CNY) project in detail to identify the factors that influence adoption and how the project is perceived. The research was based on the digital trust and surveillance capitalism theory. Although it was not directly formulated in the models, like in TAM or UTAUT, the research still relied on performance expectations, usability, and trust, albeit informally. The authors embraced a case study design, where they reviewed government reports, secondary sources, and the general conversation about the e-CNY. The e-CNY was well-done and convenient, yet its spread was undermined by the widespread fears of privacy and surveillance, they found. Their interpretation also underscored that we should view the implementation of CBDC not only as a technical challenge but also as a governance and legitimacy issue. The investigation had limitations, such as the use of secondary data, and the scope of the study was restricted to China without a more exhaustive comparative study. However, their input was critical in proving that privacy and trust are as decisive as technical design, and the present is a turn in the literature where there is no longer an economic debate but rather a sociopolitical one.

To find out why certain countries were pursuing wholesale CBDCs and others retail, Maryaningsih, Nazara, Kacaribu, and Juhro (2022) took a broader comparative perspective. Their theoretical foundation drew on diffusion of innovation and financial development theories, positing that structural economic conditions shape CBDC design choices. Methodologically, the study employed cross-country regression analysis using data from multiple economies at different stages of CBDC exploration. Their findings suggested that advanced economies with sophisticated

financial infrastructures were more inclined towards wholesale CBDCs aimed at improving interbank efficiency. In contrast, developing economies prioritized retail CBDCs to promote financial inclusion. The authors interpreted this as evidence that CBDC adoption pathways are context-dependent, reflecting economic structures and policy priorities. Limitations included potential measurement errors in cross-country indicators and the absence of qualitative insights into institutional decision-making. Their contribution was to empirically validate the hypothesis that CBDCs are not monolithic but differ according to national contexts, thereby enriching the comparative literature on digital currencies.

Additionally, the most valuable empirical studies of early implementation were produced by Branch, Ward, and Wright (2023), who focused on the Bahamas' Sand Dollar, the first retail CBDC to be fully launched. The study sought to assess the potential of CBDCs to enhance financial inclusion in small island economies. The study, rooted in financial inclusion theory and digital payment adoption frameworks, employed a case study methodology that integrated policy document analysis and available usage data. Branch, Ward, and Wright (2023) found that the Sand Dollar expanded financial access in remote communities where banking infrastructure was limited but also faced challenges such as low merchant acceptance, limited public awareness, and technological barriers related to internet coverage and digital literacy. The interpretation highlighted the fact that, although the geographic barrier to inclusion was removed by the CBDCs, adoption activities in other spheres, including education and awareness and ecosystem development, are to be pursued as well. The limitations included a lack of long-term adoption data and a focus on a small economy that is not representative. Nevertheless, the contribution was also significant, providing the first and complete empirical foundation of CBDC implementation, where success is not only defined by design but also by institutional and social support systems.

The other crucial conceptual contribution was given by Genc and Takagi (2024), who tried to describe what the design of CBDC issuance by central banks should focus on. They were to explore the tradeoffs between different CBDC structures: retail or wholesale, token-based or account-based, and to base their discussion on theories of payment systems and central bank policy structures. They also used a descriptive analytical method to consider potential CBDC models and evaluate their consequences regarding efficiency, privacy, and resilience. The implications of such a design choice, depending on the effects, are enormous: the retail CBDCs may positively affect the promotion of financial inclusion, and the wholesale CBDCs may positively affect the general population but have no impact on improving interbank efficacy. They are convinced that such outcomes require central banks to create a balance between efficiency, security, and inclusivity. Their shortcomings were that they had no empirical case studies, and they did not concentrate on internal organizational preparedness. Nevertheless, they were critical in mapping out the conceptual landscape of CBDC design and helping policymakers perceive the structural possibilities that existed.

2.4.4. Governance and Technological Infrastructure (2022–2025)

With the debate on Central Bank Digital Currencies (CBDCs) becoming more mature, scholarship has changed focus from abstract conceptualizations to more pressing issues of how they will be governed, what they will look like in technical designs, and whether institutions are prepared. Between 2021 and 2024, a series of articles researched the infrastructural backbone required by CBDCs and the governance mechanisms that might ensure confidence, protection, and long-term resilience. This pattern is reflected in four large-scale studies: Jin and Xia (2022), Rafiee and Hupel (2024), Durigan Junior, Goncalves, and Silva (2024), and Carvalho Silva and Mira da Silva (2025).

The purpose of the Jin and Xia (2022) research was to create a systematic evaluation and verification framework (the CEV model) of the technical design of CBDCs. The authors were aware that policy deliberations with little technical scrutiny prevailed in debates about CBDCs and thus aimed to offer a rigorous approach to the comparison of alternative consensus algorithms and system structures. They were theoretically based on distributed consensus models of information systems theory and computer science models of blockchain-based ledgers. The methodology of the study followed an analytical and conceptual approach based on available distributed ledger technologies, including proof-of-work, proof-of-stake, and hybrid consensus mechanisms. The key finding was that there is no universal optimum design. Instead, tradeoffs between scalability, latency, energy efficiency, and cyberattack resistance should be made. One such example is that account-based systems can offer regulatory control but have a bottleneck in situations with significant volumes of transactions, compared with token-based systems, which are similar but have identity checks that are laborious to perform. The authors considered these findings as a sign that the technical design decisions will create a strong influence on the efficiency and safety of CBDCs and, therefore, the degree of trust individuals will place in their applications. The primary constraint of their work was its conceptual modeling foundation, which lacked empirical testing through real-world CBDC pilot projects. Nevertheless, they played a significant part since the CEV framework provides a systematic procedure through which the central banks would follow in the assessment of other technological models before dedicating massive resources to their widespread applications.

Rafiee and Hupel (2024) analyzed the technical background of the public key infrastructure (PKI) in the CBDC ecosystems. They aimed to test the possibility of digital identity and certificate management systems to create trust in CBDCs. They relied on the cryptographic trust theory and

institutional trust theory and applied a conceptual methodology to assess the existing PKI design and its applicability to CBDC systems. As per their findings, a robust PKI is essential in authentication, fraud protection, and cyber threat protection. They framed these findings as an indication that CBDCs cannot be successful unless there are practical and robust identity and security frameworks that present technical systems with social trust. Limitations are the lack of empirical testing of proposed PKI models, since the research was primarily theoretical. However, their input was quite valuable to underline the importance of trust infrastructure to the success of CBDCs and to underscore the role that central banks play in constructing and operating such systems. Together, these studies on governance and infrastructure highlight the importance of strong technical design, conceptual clarity, and governance provisions for the effective implementation of CBDC. They show that central banks are not only challenged to create efficient and secure systems but also to create institutional frameworks that are resilient and can uphold trust. However, the neglect of organizational and change management processes within central banks themselves remains a recurring limitation. This reinforces the importance of the present study's focus on integrating technology adoption theories with change management models, ensuring that both external and internal dimensions of adoption are considered.

Durigan Junior, Gonçalves, and Silva (2024) addressed the question of IT governance in CBDC systems. Their purpose was to understand how central banks could build the technological and governance infrastructures needed to implement CBDCs effectively. Drawing on information systems governance theory, they argued that CBDCs are not merely technical projects but socio-technical systems that require strong governance to ensure security, transparency, and resilience. The authors carried out a systematic literature review (SLR) of the literature on the design, governance, and implementation of CBDC, considering the application of the concepts of IT

governance to the digital currency projects. They found that, although most central banks are trying technical prototypes, few have created extensive governance systems to deal with risks, including cyberattacks, fraud, and software malfunctions. The authors characterized the outcome as a severe weakness and cautioned that technical preparedness cannot work without governance systems. The drawbacks of the research were the use of published academic literature to determine the most recent pilot experience and an additional focus on organizational change management. However, the value of the study is that it brings to light IT governance as a significant and uncharted aspect of CBDC readiness.

A similar issue has been the lack of common vocabulary and conceptual clarity in CBDC research. To fill this gap, Carvalho Silva and Mira da Silva (2025) developed a detailed concept map of the terminology related to CBDC. They aimed to rationalize the variety of concepts adopted by scholars, regulators, and practitioners in the CBDC debate, which are sometimes contradictory. Their work was based on theoretical foundations inspired by knowledge management and ontology design, with the aim of developing a single framework capable of promoting more open communication. Methodologically, they conducted a systematic review of published studies, extracting and categorizing key terms such as "retail CBDC," "wholesale CBDC," "synthetic CBDC," and "hybrid models." Their findings revealed substantial semantic ambiguity and conceptual overlap, with different studies often using the same terms in inconsistent ways. The authors saw these results as a serious impediment to the unification of CBDC research, as good policy demands conceptual clarity. Their study has weaknesses, as they examined published academic literature rather than paying as much attention to policy papers and central bank reports. Their contribution, however, cannot be denied: their clarification of the conceptual terrain provides a platform on which more specific scholarly debates and more coherent policymaking can rest.

2.4.5. Empirical Determinants and Adoption Trends (2021–2025)

As CBDC initiatives transcended theoretical suggestions and became real-life pilots, the focus in the academic community began to shift towards empirical investigation of adoption and determinants of behavior. This section of the literature has been influenced by the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), diffusion of innovation (DOI) models, and cross-country research focusing on macroeconomic and institutional factors. These literature reviews (as of 2021-2025) prove that the use of CBDC is not solely qualitatively determined by the technical viability but also by the perception of the users, trust, regulation systems, and socio-economic aspects.

Nanaz Alonso, Jorge-Vazquez, and Reier Forradellas (2021) conducted well-designed research and attempted to define the most prepared countries to introduce CBDCs in general and specifically regarding financial inclusion and technology-readiness. They founded their work on the concepts of economic innovation and inclusion. They utilized a comparative quantitative approach based on country-level measures of digital literacy rates, mobile phone penetration, and regulatory quality. Findings showed that the retail CBDCs were best suited for the technologically progressive and highly financially marginalized small economies, for example, those residing on an island. The authors interpreted such findings as indicators that CBDCs might serve as a means of promoting financial inclusion when properly contextualized. The weaknesses of the study were based on the use of secondary indicators that do not include direct user information. Nevertheless, its contribution was to provide one of the earliest empirical roadmaps for identifying where CBDCs might yield the most significant societal benefits.

Building on this macro-level work, Mohammed, De Pablos-Heredero, and Montes Botella (2023) applied a more sophisticated methodology by employing partial least squares structural

equation modeling (PLS-SEM) to analyze the determinants of blockchain-enabled CBDC adoption across 67 countries. Their theoretical foundation integrated innovation diffusion theory with institutional economics, recognizing both technological and institutional drivers. They found that technological readiness, legal frameworks, and institutional trust were critical predictors of adoption, while macroeconomic size and financial development were less decisive. The interpretation emphasized that institutional alignment and trust are as important as technological capability. Limitations included reliance on country-level aggregates that may obscure micro-level adoption dynamics. The contribution of this study lies in offering robust empirical support for the claim that CBDCs require not only technological infrastructures but also trustworthy and aligned institutions.

Cross-country variation in adoption stages was further analyzed by Le, Tran, Nguyen, and Ngo (2023), who aimed to measure the degree of CBDC adoption across 55 economies. Anchored in innovation diffusion theory, they employed multinomial logit regression to identify determinants of whether a country was at the exploration, pilot, or implementation stage. Their findings highlighted that internet penetration, mobile payment adoption, and financial inclusion were significant predictors of adoption progress. Their interpretation was that CBDCs are more likely to progress where digital infrastructures and inclusive financial ecosystems are already in place. Limitations included reliance on publicly available data that may under-report pilot activity and the inability to capture informal drivers of adoption. Nevertheless, their contribution was crucial in demonstrating empirically that CBDC progress is systematically associated with digital readiness and inclusion indicators.

Ozili and Alonso (2024) turned attention to the role of communication and perception by investigating how media sentiment shaped adoption in Nigeria and the Bahamas. Using sentiment

analysis of media coverage, their study linked negative public narratives to low adoption rates. They argued that technical soundness alone cannot overcome poor public perceptions and that communication strategies are therefore critical to adoption. Their findings interpreted CBDC adoption as a legitimacy contest as much as a technological or economic one. Limitations included reliance on media sources, which may not capture nuanced citizen attitudes. Nevertheless, the contribution of this work was to highlight the decisive role of narrative and legitimacy in CBDC adoption, expanding the literature beyond purely economic or behavioral factors.

Going a step further to the more general structural determinants, Wang and Gao (2024) carried out an international study of the cost and efficiency of CBDCs. Their research was based on the theory of economic efficiency and the application of cross-country statistical analysis of transaction costs and financial infrastructures. They found that, despite the tendency of CBDCs to reduce the costs of transactions and payouts and enhance their efficiency, payoffs do not have an equal distribution. Those countries that have well-developed financial systems will benefit more than those that have poor institutions. Their reading reflected the dangers of worsening the disparities between developed and developing economies. Limitations included challenges in comparing transaction costs across jurisdictions. Still, their contribution was to demonstrate that institutional and infrastructural capacity are crucial for reaping the efficiency benefits of CBDCs.

Tang, Liu, and Yang (2024) focused on emerging economies, asking why CBDCs have developed so rapidly in these contexts. Drawing on regulatory quality and digital development theories, they used cross-country statistical models to analyze the drivers of adoption. They found that strong regulatory frameworks and high digital penetration were decisive, while macroeconomic size was less important. Their interpretation was that CBDC adoption reflects institutional capacity and digital readiness rather than economic scale. Limitations included

reliance on publicly available data and the difficulty of isolating causality. Nonetheless, the contribution was to challenge assumptions that CBDCs are primarily a response to advanced economy pressures, instead showing that emerging markets may lead in adoption due to their digital ecosystems.

At the micro-level, An, Wang, Yan, and Ma (2024) examined the adoption of e-CNY in China by focusing on the role of emotional and psychological factors, extending the TAM framework. Their purpose was to test whether traditional TAM constructs—perceived usefulness and ease of use—could be enriched by adding variables related to emotional engagement and credibility. Using a survey-based quantitative design with structural equation modeling, they found that emotional responses and perceived credibility were as influential as traditional TAM constructs in shaping adoption intentions. Their interpretation underscored that CBDC adoption is not purely rational but also affective, shaped by citizens' trust in government institutions and their emotional connection to new technologies. Their greatest weakness was the narrowness of one national setting that might not be applicable across cultures. Nevertheless, this work has made an essential contribution to the behavioral studies of CBDCs and to the ability to show the relevance of the emotional and trust dimensions in adoption models.

Abdullahi and Abdullah (2025) offered a complementary behavioral approach to the study of determinants of intention to adopt the eNaira in Nigeria. In particular, they added TAM and UTAUT to the research and utilized a structured survey to measure the constructs of performance expectations, effort expectations, and social influence on a scale. Their results revealed that performance expectancy was a significant factor affecting adoption intention, but the social impact and facilitating conditions were equally substantial. Confidence in the central bank was identified as an important mediating variable. The authors took this conclusion as a sign that institutional

trust is decisive in the acceptance of CBDCs in developing economies. The small sample size and the first phases of the eNaira implementation were also weaknesses: these factors might not be regarded as long-term trends. Nevertheless, the paper also provided beneficial empirical results of behavioral adoption within an African context that highlight the applicability of the adoption models, such as TAM and UTAUT.

2.4.6. Financial Stability and Macro-Level Implications (2022–2024)

In addition to determinants of adoption, researchers have also begun to focus on the macroeconomic and financial stability impacts of CBDCs. Yang and Zhou (2022) also aimed to test the effects of the Chinese e-CNY on economic stability and monetary policy transmission. They sought to ascertain whether CBDCs enhance or diminish the central bank's control over the money supply. They used policy analysis and econometric modeling based on macroeconomic theory and monetary policy theory. The researchers endorsed that CBDCs would help to improve the success of monetary policy by promoting the ability of central banks to convey an interest rate but also amplify the threats associated with disintermediation in case commercial banks were deprived of deposits to the CBDCs. The understanding was that, to prevent destabilization of the banking system, the design characteristics of CBDC must be carefully calibrated, including the interest-bearing structure or the restriction of the holding. The negative was that simulation-based models were used instead of long-term adoption data. Nevertheless, the paper made an essential contribution to the field of monetary policy by placing CBDCs at the center of the conversation and emphasizing that they can both stabilize and destabilize economies, based on their design decisions.

Luu, Nguyen, and Nasir (2023) also carried out a similar study to explore empirically the effects of CBDCs on financial stability in emerging economies. The purpose was to investigate

whether retail and wholesale CBDCs have different systemic implications. Drawing on financial stability theory, the authors employed panel regression analysis across multiple emerging economies. The findings revealed that retail CBDCs were generally associated with improved stability, especially where they reduced reliance on volatile cash systems and enhanced transaction traceability. By contrast, wholesale CBDCs sometimes exacerbated instability by disrupting interbank liquidity patterns. The interpretation was that CBDC effects are context-dependent and mediated by national banking structures. Limitations included data availability and the difficulty of isolating CBDC-specific effects. The contribution of this study lies in providing empirical evidence that complements theoretical models, demonstrating that CBDCs can be stabilizing or destabilizing depending on their design and institutional context.

A similar concern shaped the research of Ahnert, Hoffmann, Leonello, and Porcellacchia (2024), who developed a theoretical model to analyze the systemic financial stability implications of CBDCs in Europe. Their purpose was to test whether CBDCs increase the likelihood of bank runs by offering a safe-haven digital asset. The study was grounded in financial intermediation theory and systemic risk modeling and employed formal economic simulations. Results showed that without appropriate safeguards, CBDCs could amplify deposit outflows from banks in times of crisis. However, policy tools such as tiered remuneration systems and caps on CBDC holdings could mitigate these risks. The authors interpreted these findings to mean that CBDCs are not inherently destabilizing but require careful design and regulatory frameworks. The limitations of the study lie in its abstract modelling, which may not fully reflect behavioral responses in real-world settings. Still, its contribution was vital in highlighting the importance of linking CBDC designs to financial stability objectives.

2.4.7. Synthesis

The overall literature examined in this section follows a path emerging in early macroeconomic models, through design and implementation research, research on governance and infrastructure, research on adoption and behavioral determinants, and is capped off by macro-financial research and systematic reviews. This development demonstrates the scope as well as the discontinuity of CBDC studies. In these various works, three main insights become apparent. First, the adoption of CBDC is not solely a matter of technology or macroeconomics but a multifaceted interaction of the perception of the users, their trust in institutions, the organization of the governance process, and communication strategies. Second, although the application of theories like TAM, UTAUT, DOI, and institutional theory has been productive, these theoretical approaches have been mainly applied to explain external adoption drivers, but not internal readiness of the organization. Third, the systematic reviews validate that the topic of organizational change management in central banks is a research gap. These lessons support the current research interest to combine technology adoption theories and change management theories to develop a comprehensive picture of CBDC adoption.

2.5. Research Gaps

The literature review has helped to illuminate how the research surrounding the Central Bank Digital Currency (CBDC) has been accelerating, transitioning away from conceptual debate on the topic and into an empirical study of pilot projects and macroeconomic effects of this concept. In spite of the range of new scholarship, much is still unknown, especially with regard to the inner world of central banks and the organizational functions that must be operational to facilitate successful adoption. The following section describes the conclusions drawn during the

review of literature and the critical gaps in knowledge in terms of theoretical, methodological, empirical, and practical levels.

The first clear gap is the theoretical framing of the adoption of CBDC. Much of the literature before this, including that of Barrdear and Kumhof (2016) and Bordo and Levin (2017), was based on macroeconomic theory, focusing on transmitters of monetary policy and systemic stability. These studies approached CBDCs as technical means of increasing efficiency or allowing negative interest rates. They did not incorporate adoption into more general theories of organizational change or innovation diffusion. Although later studies by other researchers have used behavioral models such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), the theoretical scope is still fragmented. Specifically, user-based adoption theories and organizational change frameworks, e.g., the three-step framework proposed by Lewin (1947) or the eight-step process by Kotter (1996), are not well integrated.

This fragmentation means that although the literature captures individual-level determinants such as perceived usefulness and trust (An, Wang, Yan, and Ma, 2024), it largely omits the internal institutional reforms required for central banks to deliver and sustain CBDCs. This gap directly underlines the relevance of the present study, which seeks to bridge these theoretical domains by developing a conceptual framework that unites technology adoption and change management perspectives.

A second gap concerns the limited attention to organizational readiness and change management in empirical research. Studies such as Fullerton and Morgan (2022) and Branch, Ward, and Wright (2023) highlight privacy, trust, and inclusion issues, but rarely investigate how central banks themselves adapt internally to meet these challenges. For instance, the Bahamian

Sand Dollar project has been praised for enhancing financial inclusion (Branch, Ward, and Wright, 2023). Nevertheless, the organizational processes that enabled the Central Bank of the Bahamas to implement and manage the system remain underexplored. Similarly, Maryaningsih, Nazara, Kacaribu, and Juhro (2022) provide valuable cross-country comparisons of retail versus wholesale adoption drivers. Still, their regression analysis treats central banks as homogeneous actors, without recognizing the profound differences in institutional capacities, change-readiness, and organizational culture across jurisdictions. The absence of a systematic study of how central banks manage resistance, develop new capabilities, and reconfigure internal workflows represents a substantial gap in the literature.

A third gap relates to the methodological approaches employed in CBDC research. Much of the early literature is conceptual or relies on theoretical modeling, as in Barrdear and Kumhof (2016) and Genc and Takagi (2024). Even when empirical methods are used, as in the studies by Maryaningsih, Nazara, Kacaribu, and Juhro (2022), the data are largely cross-sectional and based on macro-level indicators. These approaches, while providing valuable comparative insights, struggle to capture the complex, long-term dynamics of adoption within institutions or societies. Only a handful of studies, such as Branch, Ward, and Wright (2023) on the Bahamas and An, Wang, Yan, and Ma (2024) on the e-CNY, engage directly with real-world pilot data or survey users, and even these are limited in scope and generalizability. Furthermore, systematic reviews such as Prodan et al. (2024) have confirmed that the literature lacks methodological diversity, with few longitudinal case studies, limited use of mixed-method approaches, and an over-reliance on secondary data. Such a situation indicates the need for more robust empirical designs, including qualitative interviews with central bank officials and mixed-method studies that combine user surveys with organizational case analysis—an approach this thesis adopts.

A fourth gap emerges in relation to the balance of research themes across external and internal drivers of CBDC adoption. The reviewed studies overwhelmingly privilege external determinants such as technological readiness, financial inclusion, and public trust. For example, Mohammed, De-Pablos-Heredero, and Montes Botella (2023) identify technological capacity and regulatory frameworks as critical adoption drivers, while Ozili and Alonso (2024) highlight the role of media sentiment in shaping public perceptions of CBDCs in Nigeria and the Bahamas. These studies provide beneficial observations about user-side adoption, yet they rarely engage with the question of how central banks themselves prepare organizationally. Even the governance-focused studies of Jin and Xia (2022) and Rafiee and Hupel (2024), which provide frameworks for technical evaluation and PKI systems, do not address the managerial or cultural transformations needed within central banks to support implementation. This imbalance in the literature indicates a significant gap in understanding the internal dimension of CBDC adoption, which the present research seeks to fill by exploring change management in central banks.

A fifth gap is related to the disconnection between financial stability studies and organizational studies. The papers by Yang and Zhou (2022), Ahnert, Hoffmann, Leonello, and Porcellacchia (2024), and Luu, Nguyen, and Nasir (2023) illuminate the issue in an attempt to shed light on risks and policy implications of CBDCs at the systemic level. These articles rely on macroeconomic models and panel regressions to demonstrate that CBDCs can support or destroy financial stability depending on their construction. Nevertheless, they fail to discuss how these systemic risks require central banks to build organizational capacities to help them. To illustrate, Ahnert, Hoffmann, Leonello, and Porcellacchia (2024) propose caps on the holdings of CBDC as a stabilizer. Still, they do not preconceive the organizational reforms or communication policies needed to introduce such caps. Similarly, Yang and Zhou (2022) note the risk of disintermediation

but do not explore how central banks can adapt their internal structures to manage such risks. This gap is significant, as systemic stability depends not only on technical design but also on organizational capacity and governance.

A sixth gap is the limited engagement with socio-technical systems and stakeholder perspectives. Socio-technical theory emphasizes the interdependence of technical and social subsystems, yet most studies focus on the technical side of CBDC design. For example, Junior, Spinola, Gonçalves, and Laurindo (2024) highlight the importance of IT governance and cybersecurity but provide little discussion of how central bank staff and organizational culture can adapt to new technological infrastructures. Similarly, Rafiee and Hupel (2024) stress the importance of PKI for CBDC trust but do not address how to manage stakeholder resistance to centralized identity systems. Stakeholder theory suggests that commercial banks, fintech firms, and the general public have divergent interests in CBDC adoption. Yet apart from Fullerton and Morgan (2022) and Ozili and Alonso (2024), relatively few studies have examined how central banks can manage these tensions through inclusive governance. This absence of stakeholder and organizational perspectives represents another critical research gap.

A final gap concerns the geographical distribution of empirical studies. As Le and Pham (2024) observed, CBDC research is unevenly distributed across regions, with a strong focus on China, the Bahamas, and a handful of advanced economies. While these cases are essential, they do not capture the diversity of contexts in which CBDCs are being considered. Many emerging economies in Africa, Asia, and Latin America are actively exploring CBDCs as tools for financial inclusion and monetary sovereignty, yet they remain underrepresented in the academic literature. The implication is that existing findings may not be generalizable to diverse contexts, reinforcing the need for case studies from less-studied regions. This thesis, focusing on Cambodia, responds

directly to this gap by contributing empirical evidence from a Southeast Asian context that has received relatively limited scholarly attention. The identified gaps enable the formulation of specific testable hypotheses. The limited empirical research on change management effectiveness in CBDC contexts justifies examining whether structured approaches yield measurable improvements (H2, H4). The underexplored role of organizational readiness supports investigating how staff resistance affects timelines (H3) and how infrastructure, regulatory clarity, and resources collectively influence outcomes (H5). The fragmented theoretical landscape justifies testing whether systematic patterns exist in model selection (H1) and whether statistical relationships satisfy methodological assumptions (H6).

The literature review shows that there are several layers of gaps. Adoption models have not been incorporated into the theoretical literature on change management. The empirical research has concentrated on external drivers of adoption but has overlooked internal readiness in the organization. The scope of methodologies is small, given that the vast majority of the work is based on the intensive use of conceptual methods and cross-sectional designs and has not adequately determined the connections between the macro-financial analyses and the institutional capacities needed to implement the transformation. Global generalizability is hampered by the underutilization of the stakeholder and socio-technical view of the world, as well as the concentration of a large amount of empirical evidence within a few countries. Research that examines the organizational processes in central banks and links them to the external forces driving adoption is necessary to bridge these gaps. The research effectively bridges this gap by incorporating theoretical perspectives, utilizing a variety of methods, and providing fresh data from developing economies.

2.6. Summary

The literature reviewed in this chapter has offered a detailed overview of the scholarship on Central Bank Digital Currencies (CBDCs) in all of their theoretical foundations, conceptual knowledge, empirical practices, and systemic consequences. The review was designed to capture the chronological development of the field and the thematic cluster of research. This framework of discussion adopted has enabled the chapter not only to trace the evolution of CBDC scholarship from how it was first conceived to nowadays, in terms of empirical study and systematic reviews, but also to provide an overview of the existing gaps in the field.

The background of the literature review was defined in the introduction (2.1), which noted that CBDCs have gained momentum in the monetary policy and financial innovation debate. The introduction has explained why this type of structured review is necessary and pointed out that the multidimensional scope of this review should not be limited to only technological and economic but also behavioral, organizational, and institutional aspects. This framing was also key to contextualizing the study in relation to the academic literature and the practical interests of any policymaker and central bank.

The theoretical framework (2.2) has explained the diverse frameworks that provide analytical perspectives on the adoption of CBDC. The study examined the technology adoption theories, such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Diffusion of Innovation (DOI) theory, to find out the perceptions and behavioral intentions. Meanwhile, the organizational change models, which are the three-step model by Lewin and the eight-step model by Kotter, were assessed regarding their applicability to the concept of how the central banks themselves think of the institutional changes that they need to implement in order to implement the CBDC. To effectively capture the greater

socio-political and organizational contexts in which CBDCs are embedded, other complementary views, such as institutional theory, socio-technical systems theory, and stakeholder theory, were also incorporated. These theories formed an ambiguous foundation on which to research the issue of CBDC adoption as a technological and organizational phenomenon.

These theoretical bases form the conceptual framework (2.3), which proposes an integrative model that situates the adoption of CBDC at the intersection of external and internal motivators. Externally, the factors of adoption include user perceptions of usefulness, ease of use, trust, and social influence, in addition to macroeconomic and wider infrastructural factors. Internally, adoption depends on central banks' readiness to manage change, including leadership, culture, governance, and stakeholder management. The conceptual framework, therefore, visualized CBDC adoption as the outcome of alignment between external acceptance and internal institutional preparedness. The framework guided the empirical components of the research, capturing both user-side and institutional dynamics.

The review of prior peer-reviewed studies (2.4) provided a chronological and thematic account of CBDC scholarly studies. Section 2.5 synthesized the study findings to identify research gaps. The review showed that while CBDC scholarship has expanded across macroeconomic, technological, and behavioral dimensions, it remains fragmented. Theoretical gaps include the absence of integration between adoption models and change management frameworks. Empirical gaps involve the neglect of internal organizational readiness within central banks and the limited use of qualitative and mixed-method research. Methodologically, the literature is dominated by conceptual models and cross-sectional analyses, with few longitudinal or in-depth institutional studies. Practically, while CBDCs are often proposed as tools for inclusion or stability, little is known about the managerial processes central banks must enact to ensure successful

implementation. Geographically, research has been concentrated on a few high-profile cases such as China and the Bahamas, leaving many emerging economies underrepresented. The chapter demonstrates that CBDC adoption is a complex, multidimensional process that requires more than technological design or macroeconomic modelling. Success depends on aligning external adoption drivers—user trust, technological readiness, and inclusion—with internal institutional readiness, including leadership, culture, governance, and stakeholder management.

CHAPTER 3

METHODOLOGY

3.1. Introduction

This methodology chapter outlines the philosophical, epistemological, and procedural underpinnings of the study, guaranteeing transparency and credibility in addressing the research questions. Given the complexity of Central Bank Digital Currencies (CBDCs), which span technology adoption, monetary policy, and organizational transformation, the methodology must capture both behavioral and institutional dimensions. As identified in Chapter I, the research problem lies not only in understanding external adoption drivers but also in examining how central banks themselves manage organizational change to implement CBDCs. The literature review (Chapter II) confirmed this gap, showing that while theories such as the Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh and Davis, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, and Davis, 2003) explain user adoption, they are rarely integrated with change management frameworks such as Lewin's (1947) three-step model or Kotter's (1996) eight-step framework.

To address this gap, the study adopts a pragmatic mixed-methods methodology, which prioritizes problem-solving over adherence to a single paradigm (Creswell and Clark, 2017). Pragmatism enables the combination of positivist and interpretivist traditions, allowing quantitative surveys to test theoretical propositions while qualitative interviews provide deeper contextual insights. The approach is particularly suitable for the implementation of CBDC because external acceptance of users and internal institutional readiness must be evaluated simultaneously. This research uses the abductive reasoning process (Dubois and Gadde, 2002) that involves repetition of the theoretical concepts and empirical data. The survey phase is based on a deductive

orientation. It investigates pre-existing constructs, including usefulness, trust, and change practices. In contrast, the qualitative one is based on an inductive orientation and allows new themes to appear due to stakeholder viewpoints. Such integration allows findings to be theoretically based but still sensitive to empirical reality.

The methods of data collection are then described. The questionnaire was distributed to 200 central bank officials who have direct involvement in the CBDC initiatives in different jurisdictions, which is a vast and diverse sample. A total of 163 responses were received out of these. This survey was administered and received in January-March 2025, providing a cross-sectional perspective of what is occurring worldwide regarding CBDC adoption. To carry out the qualitative phase, 10 semi-structured interviews were held with senior central bank officials, policymakers, and experts in the financial sector. Purposive sampling was used to ensure that the participants would possess relevant knowledge and direct experience with the implementation of CBDC. Policy reports, working papers, and published journal articles were also reviewed as secondary sources of data to put findings in context. In this chapter, the research philosophy, research approach, research design, method selection, data collection procedures, and data analysis techniques are outlined, followed by the limitations and ethical considerations of the research. Collectively, they offer a sound methodological framework to investigate the adoption of CBDC at the junction of technology acceptance and organizational change.

3.2. Research Philosophy

The research philosophy defines the assumptions that guide the whole research and that influence the definition of knowledge, the collection of data, and the interpretation of the results. The philosophical approach should allow varying levels of reality in the context of Central Bank Digital Currencies (CBDCs), where not only the individual use of digital currency by the user but

also the process of institutional change is studied. This part describes the key philosophical paradigms, assesses their applicability to the research, and explains why pragmatism is the best philosophy to be applied to confront the research goals.

The philosophy of research is often defined in ontological and epistemological standpoints. Ontology deals with reality, which is reality, and epistemology deals with how reality can be known (Saunders, Lewis, and Thornhill, 2009). In the domain of the social sciences, two major paradigms are positivism and interpretivism. Positivism believes that reality is objective and measurable and that knowledge can be produced in a way that is similar to the methods of the natural sciences. In comparison, interpretivism presupposes that reality is constructed by society and needs to have approaches that define meanings, experiences, and interpretations. In between these two traditions is pragmatism (Creswell and Clark, 2017), which holds that the worth of a philosophical position ought to be determined by how well it helps to solve a research problem.

Traditionally, positivism has been associated with quantitative methods like surveys and experiments, where statistical analysis tests hypotheses. Its advantage lies in its ability to generate generalizable results and identify relationships between the variables. An example can be seen in the quantitative survey of 200 central bank officials in this study, which represents a positivist orientation, in the attempt to quantify the relationships between change management practices and the results of the CBDC project. As Hair et al. (2006) note, positivist methods are particularly effective for testing theoretical constructs such as perceived usefulness, trust, or stakeholder engagement in adoption frameworks. However, positivism has been criticized for ignoring the subjective dimensions of organizational life, including values, beliefs, and power dynamics (Bryman, 2016). These are critical when studying central banks, which are embedded in unique institutional and cultural contexts.

Interpretivism, by contrast, emphasizes understanding reality through the perspectives of participants. It is commonly associated with qualitative methods such as interviews and case studies, which enable researchers to capture rich, contextual insights. In this study, the semi-structured interviews with 10 senior stakeholders align with an interpretivist orientation. These interviews are designed to explore how decision-makers perceive change management strategies, how organizational resistance is navigated, and how institutional legitimacy is maintained during CBDC adoption. As Denzin and Lincoln (2011) explain, interpretivism allows researchers to go beyond surface-level measurements to uncover meanings and narratives. However, interpretivism has also been criticized for its limited generalizability and susceptibility to researcher bias.

Given these strengths and limitations, a single-paradigm approach is insufficient for this study. CBDC adoption is simultaneously a technical, behavioral, and organizational phenomenon. It requires a strategy that can capture measurable patterns across a large population of officials while also eliciting the lived experiences of key stakeholders. For this reason, the study adopts pragmatism as its overarching philosophical stance. Pragmatism rejects the dichotomy between positivism and interpretivism, instead prioritizing the use of methods that best answer the research questions (Morgan, 2014). Creswell and Clark (2017) note that pragmatism is one of the most suitable approaches to mixed-methods research since it enables a researcher to integrate both quantitative and qualitative methods within a logical framework.

Pragmatism is not only a process of paradigmatic synthesis but also a result-oriented, action-oriented, and practical approach to problem solving. Its ontology is pluralistic, accepting that reality is objective and social. It has a dynamic epistemology that enables the generation of knowledge through measurement and interpretation. Pragmatism, in the current context of the study, justifies the optimistic application of a sequential explanatory mixed-methods design, in

which the quantitative survey findings determine the general patterns, and in-depth explanation and description are achieved through qualitative interviews. This method ensures that neither statistical generalities nor contextual intuition is ignored.

Another important implication of pragmatism is its alignment with an abductive reasoning process. While positivist research is typically deductive (testing hypotheses against data) and interpretivist research is inductive (building theory from data), pragmatism encourages abductive reasoning, which moves iteratively between theory and evidence (Dubois and Gadde, 2002). In this study, adoption and change management theories inform the design of the survey and interview instruments, but emerging findings are also expected to refine and extend these theoretical models. For example, while TAM and UTAUT predict that usefulness and ease of use influence adoption, qualitative interviews may reveal additional institutional factors, such as interdepartmental collaboration or leadership style, which then feed back into theoretical understanding.

Pragmatism also provides flexibility in addressing the practical challenges of researching central banks and CBDCs. As Saunders, Lewis, and Thornhill (2009) argue, researchers must often balance methodological ideals with real-world constraints. Pragmatism, in this instance, helps us justify the selection of a cross-sectional time horizon, as it does not compromise the practical constraints of data gathering and, instead, allows one to conduct meaningful analysis. Similarly, triangulating the survey data, interview results, and secondary sources strengthens the study.

Lastly, the philosophical position of this paper is pragmatism, as it allows the positivist and interpretivist traditions to be combined in such a manner that it is both theoretically sound and practically applicable. The study operates under a mixed-methods design, utilizing quantitative surveys to identify patterns and qualitative interviews to explore meaning. It also admits abductive

reasoning so that the study is responsive to empirical knowledge but based upon an existing theory. The chosen philosophy is particularly appropriate for studying the adoption of CBDC, given the importance of both objective behavioral patterns and subjective organizational experiences. In pragmatism, the study is sure that its approach meets the requirements of the complexity of the phenomenon and can produce rigorous and practically significant results.

3.3. Research Approach

The research methodology used indicates the transition of the study between philosophical premises and practical knowledge construction and test plans. Generally, there are three research approaches, namely, deductive, inductive, or abductive. The two approaches represent the different relations of theory and data. Deduction starts with current theory and tests hypotheses using empirical evidence; induction starts with observations and data to construct an explanation; abduction switches back and forth between theory and evidence, refining the explanation as new findings are made available (Saunders, Lewis, and Thornhill, 2009). This type of study, where the adoption of Central Bank Digital Currency (CBDC) is examined using both external user adoption theory and internal organizational change frameworks, necessitates an approach that capitalizes on the advantages of each of the three traditions.

Primarily, the deductive approach of research aligns with positivist philosophy and quantitative research. The research builds upon previous theories, assuming and demonstrating them through information collection and statistical operations (Bryman, 2016). The quantitative survey of 200 central bank officials involved in the CBDC initiatives in this study demonstrates the deductive strand. It is based on the Technology Acceptance Model (TAM) (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, and Davis, 2003), and change management models, including the eight-step model of Kotter (1996).

The hypothesis demonstrates the deductive process, suggesting a positive relationship between the perceived usefulness of CBDCs and the organizational support for their implementation. Change management theory also deduces the expectation that project success correlates with leadership commitment. The empirical rigor of these hypotheses is that they could be tested using descriptive statistics, correlation, and regression with the survey data.

An inductive approach is most closely related to interpretivism and qualitative methods. It produces theory based on observations and attempts to discover the meanings in specific contexts (Denzin and Lincoln, 2011). The qualitative interviews with 10 top stakeholders, including officials of the central bank and policymakers, are the inductive aspect of this study. These interviews investigate the lived experiences of leading change within organizations when adopting CBDC and extract themes that might otherwise not have been identified in the theories. To illustrate the point, TAM and UTAUT focus on user perceptions, but inductive analysis can discover other elements of the organization, such as interdepartmental cooperation, regulatory culture, or politics as influencers of CBDC results. These themes are captured automatically through thematic analysis (Braun and Clarke, 2006), which means that the research does not force a strict theoretical perspective on the views of the participants.

Nevertheless, this study would not be adequate with either deduction or induction alone. A pure deductive approach is too narrow and lacks the input of context; a pure inductive approach is too narrow and cannot interact with the existing theories. In response to this, the study takes an abductive research methodology that fits its pragmatic philosophy. Abduction is an integration of deduction and induction because the process moves back and forth between theory and data, with new knowledge correcting previous constructs (Dubois and Gadde, 2002). Practically, the hypotheses will be tested deductively using survey data. However, the qualitative interviews will

be used to refine or expand theoretical models using insights from real-world knowledge. To illustrate, imagine that the results of the survey indicate that perceived usefulness is a factor in CBDC adoption, yet the interview also shows that political trust is equally a factor. In that regard, the process of abduction enables the study to incorporate this new variable into its theoretical framework.

Using an abductive methodology is also consistent with the linear explanatory design of the study. The first step is to gather and process quantitative data to take a general view of the determinants of adoption as well as organizational practices. The qualitative phase then employs interviews to explain, clarify, and enhance comprehension of the quantitative results. This chronological logic ensures that the work possesses both the virtues of deduction and induction, and the unity of the entire work is supplied by abduction. It is not a linear process but a cyclic process in that data collection is guided by theory, empirical results guide theory, and interpretation is guided by improved theory.

This research employs an abductive approach, combining deduction and induction in a practical manner. Deduction tests hypotheses based on adoption and change management theories, while induction tests them based on qualitative interviews. Abduction integrates these two forms of logic, ensuring the study is both theoretically grounded and open to emerging knowledge. This method is specifically appropriate when considering the adoption of CBDC, in which both quantifiable organizational practices and subjective institutional experiences are to be studied concurrently. Through adopting an abduction, the research attains the empirical rigor as well as the sensitivity of the context, which correlates with the complexity of the research problem.

3.4. Research Design

Research design is a plan of how a study will be conducted and relates philosophical assumptions and research methods to the specific methods of data collection and analysis. It outlines the relationship between the various elements of the research process in answering the research objectives and responding to the research questions (Yin, 2018). The research design needs to reflect the quantifiable relationships and also capture the subtle institutional experiences while studying the adoption of Central Bank Digital Currency (CBDC), which involves considering the behaviors of individuals and the practices of organizations. This section explains the study's design, rationale, structure, and how it fits the research philosophy and approach.

3.4.1. Quantitative survey design

The survey in this study was developed to test the six hypotheses formulated in Chapter 1. Specifically, it measures patterns in selecting change management models (H1), their relationship with project outcomes (H2), staff resistance levels and timeline performance (H3), structured change management effectiveness (H4), and the collective influence of infrastructure, regulatory, and resource factors (H5).

The central bank survey of central bank officials involved in the CBDC initiatives is considered the first leg of the research design. The study employs a traditional deductive research design, allowing for large-scale testing of hypotheses (Bryman, 2016). The survey in this study was developed to identify relationships between change management practices and CBDC project outcomes and attitudes toward the drivers of adoption, including usefulness, trust, and organizational support. Central bank officials working on CBDC projects were sent 200 questionnaires, and the responses were collected in January–March 2025. This period allowed the collection of information that captured current trends in CBDC initiatives. The survey used closed-

ended Likert-scale questions, which made it possible to quantify them and later statistically analyze these questions. The cross-sectional survey design allowed the research to generate an image of practices and perceptions at a given moment.

The reason why the survey is conducted is that it can lead to general patterns and relationship tests based on the already developed theories, like the Technology Acceptance Model (Davis, 1989) and the Kotter (1996) model of change management. To illustrate, it is possible to statistically test the hypothesis about the relationship between leadership commitment and project success. The survey is also comprehensive, including the views of large numbers of officials employed in different central banks, which increases the external validity of findings.

3.4.2. Qualitative interview design

The study used qualitative semi-structured interviews with 10 senior stakeholders (policymakers, senior central bank officials, and financial regulators) to supplement the survey. Interviews suit the inductive research design, which allows for the exploration of participant experiences and interpretations (Denzin and Lincoln, 2011). The interviews took place in the second quarter of 2025, when the initial survey analysis had been undertaken. The sequential explanatory design applied qualitative data to explain and elaborate the quantitative results. The interviews focused on organizational challenges in implementing CBDCs, leadership strategies, stakeholder management, and cultural resistance. Semi-structured interviews were chosen because they allow for comparability across respondents while leaving space for participants to introduce themes that the researcher may not have anticipated. This flexibility is essential in capturing the complexity of organizational change processes, which often involve informal dynamics and tacit knowledge. The qualitative design thus provides depth and contextual richness, complementing the survey's breadth.

3.4.3. Cross-sectional time horizon

The study adopts a cross-sectional time horizon, as both survey and interview data were collected within a defined period in 2025. A longitudinal design was considered but judged impractical given the time and resource constraints of doctoral research. Nonetheless, the abductive approach ensures that cross-sectional findings are interpreted in light of broader theoretical and empirical developments. The cross-sectional design provides a valid snapshot of ongoing CBDC initiatives, capturing the state of adoption and organizational readiness at a critical moment in their evolution.

3.4.4. Integration of quantitative and qualitative designs

The integration of survey and interview designs reflects the pragmatic philosophy underpinning the study. By combining a survey with semi-structured interviews, the research design balances generalizability with contextual sensitivity. This mixed-methods integration occurs at three stages: design, data collection, and analysis. At the design stage, the survey precedes the interviews, ensuring that the quantitative findings guide the themes explored qualitatively (Fetters, Curry, and Creswell, 2013). During data collection, purposive sampling for interviews ensured that participants had expertise directly relevant to interpreting survey patterns. During analysis, thematic findings from interviews were used to contextualize and explain statistical relationships, a process known as triangulation.

This integrative logic follows a sequential explanatory mixed-methods design, which is particularly appropriate for research problems where broad patterns must be explained in detail. For example, if the survey reveals that trust significantly predicts adoption outcomes, interviews offer clues about how trust is built or undermined within central banks. This integration strengthens

both the validity and utility of the findings, ensuring that they contribute to both theory and practice.

3.4.5. Alignment with research philosophy and approach

The chosen research design is fully aligned with the study's pragmatic philosophy and abductive approach. Pragmatism allows for the combination of surveys and interviews, recognizing that both objective measurement and subjective interpretation are necessary. Abduction is operationalized through the sequential design: hypotheses derived from theory are tested through surveys, while unexpected patterns are explored through interviews, feeding back into theoretical refinement. The design is therefore coherent across philosophical, theoretical, and procedural levels.

3.4.6. Limitations of the design

While the survey and interview design provide a robust foundation, it is not without limitations. The cross-sectional horizon means that causal inferences are limited; findings represent correlations at one point rather than longitudinal dynamics. Survey responses may also be subject to social desirability bias, particularly given the sensitivity of central banking practices. Interviews, while rich in insight, involve a small sample size and may not capture the full diversity of global experiences. Triangulation, careful instrument design, and transparent reporting mitigate these limitations. The research design combines a cross-sectional survey with semi-structured interviews within a sequential explanatory mixed-methods framework. This design ensures that the study captures both broad patterns of adoption and profound insights into organizational change. It is aligned with the pragmatic philosophy, the abductive approach, and the complex nature of CBDC adoption, providing a coherent and rigorous blueprint for addressing the research objectives.

3.5. Research Choice/Technique

Research choice is the process of selecting methodological strategies to establish whether a study will apply one particular approach or combine various methods to address research questions. Saunders, Lewis, and Thornhill (2009) argue that there are three main options open to social science researchers: mono-method, multi-method, and mixed-methods. This choice is based on the research goals and philosophical approach and the type of problem under investigation. In this thesis, the authors reasonably and operationally select a mixed-methods approach to explore how central banks adopt Central Bank Digital Currencies (CBDCs) and the organizational change processes that facilitate this adoption.

The mono-method option implies the employment of a single data collection and analysis method, either quantitative or qualitative. It can narrow and restrict the focus, and consequently, it can narrow the range of thinking, particularly in the cases of investigation wherein the phenomenon of interest is multidimensional (Bryman, 2016). The quantitative design, such as a mono-method, would only establish correlations between drivers of adoption and project outcomes but would not present the lived experiences of central bank officials engaged in introducing the change. In contrast, the mono-method qualitative design may be used to describe the organizational dilemma in considerable detail but would fail to test the generalizable hypotheses.

The multi-method option involves employing an alternative method in addition to the primary method of a single methodological strand (e.g., the use of surveys and experiments in a quantitative study). While this approach may enhance its robustness, it does not restrict the study to a single philosophical orientation. Since CBDC integration is an objective behavioral phenomenon as well as a subjective institutional process, this narrow methodology would not be sufficiently detailed to reflect it.

The mixed-methods option combines a quantitative and qualitative strand of study. This choice aligns well with the pragmatic philosophy of the study, as it avoids strict adherence to a specific paradigm and instead promotes practical solutions (Creswell and Clark, 2017). This study operationalizes the mixed-methods option through a sequential explanatory research design, prioritizing the collection and analysis of quantitative data over qualitative data. Such sequencing ensures that a range of the survey findings will inform the depth of the interview inquiry, creating a complementary and coherent process.

In terms of methodology, the quantitative strand will be a survey design in which the data will be analyzed through descriptive statistics, correlation, and regression analysis (Hair et al., 2006). Hypotheses based on theories of adoption and change management can be tested using these techniques, and a quantifiable relationship can be established between the practices adopted in organizations and the results of the CBDC project. The qualitative strand examines semi-structured interviews through thematic analysis (Braun and Clarke, 2006). Thematic coding helps identify common patterns within the accounts of participants and captures the dynamism of organizational change. Collectively, these methods operationalize the abductive reasoning process of the study, where qualitative findings clarify quantitative findings.

The advantage of this mixed-methods option is that it helps to balance the scope and depth. The survey provides generalizability to a large population of central bank officials, and the interviews offer contextual richness and insight into the organizational and cultural influences behind the adoption. These approaches together will render the study more legitimate and will help refine the theoretical scope of the study and also produce practical policy recommendations. In short, the research design adopted in this paper is mixed-methods, which can be operationalized as a sequential explanatory design, a combination of both a quantitative survey and a qualitative

interview. This decision embodies a pragmatic philosophy and an abductive methodology, ensuring that the research accurately reflects the complexity of CBDC adoption. The combination of descriptive and inferential statistics and thematic analysis offers a suitable methodological instrument that can respond to the research aims, whether rigorously or deeply.

3.6. Data Collection

Data collection is one of the key elements of the research design, as it identifies the way the study will reach the evidence needed to test hypotheses and make discoveries. In this research, which examines the implementation of Central Bank Digital Currencies (CBDCs) and the organizational change-related processes that support them, a mixture of quantitative surveys and qualitative interviews was used. The design is sequential explanatory in nature; that is, quantitative data were first collected and analyzed, followed by qualitative data to explain and contextualize the results of the survey. This section describes the data collection plans, such as sampling, distribution, and processes of the two strands and secondary data.

3.6.1. Quantitative data collection

A structured survey was administered to 200 central bank officials across 45 jurisdictions actively engaged in CBDC research, pilot programs, or implementation phases. The target sample size of 200 was determined through power analysis using G*Power 3.1 software, assuming a medium effect size ($f^2 = 0.15$), significance level ($\alpha = 0.05$), and desired statistical power ($1-\beta = 0.85$) for multiple regression analysis with eight predictors. This calculation indicated a minimum required sample of 160 participants, with 200 targeted to account for potential incomplete responses and ensure robust statistical analysis.

3.6.1.1. Geographic and Institutional Distribution

The sampling frame encompassed central banks representing diverse economic contexts and CBDC development stages:

- Advanced Economies (n=80, 40%)**:** Including representatives from the European Central Bank, Sveriges Riksbank (Sweden), Bank of England (UK), Bank of Canada, Reserve Bank of Australia, Swiss National Bank, and central banks from Japan, Singapore, and South Korea.

- Emerging Markets (n=70, 35%)**:** Including officials from the People's Bank of China (e-CNY project), Reserve Bank of India, Central Bank of Brazil, South African Reserve Bank, Bank of Thailand, and central banks from Malaysia, Indonesia, the Philippines, and Vietnam.

- Developing Economies (n=50, 25%)**:** Including the Bahamas (Sand Dollar), Jamaica (Jam-Dex), Eastern Caribbean Central Bank (DCash), Central Bank of Nigeria (eNaira), Bank of Ghana, and representatives from other African, Latin American, and Pacific Island nations.

3.6.1.2. Stratification Strategy

A stratified random sampling approach was implemented across three key dimensions:

1. **CBDC Development Stage**

   - Research/Exploration phase: 70 officials (35%)

   - Pilot/Testing phase: 80 officials (40%)

   - Implementation/Deployment phase: 50 officials (25%)

2. **Professional Role and Seniority**

   - Senior policymakers/Executive levels: 32 officials (16%)

- Project managers: 32 officials (16%)

- Middle management/Department heads: 56 officials (28%)

- Technical specialists: 52 officials (26%)

- Consultants/Advisors: 28 officials (14%)

3. **Functional Department**

- Digital innovation/FinTech divisions: 60 officials (30%)

- Payment systems departments: 55 officials (27.5%)

- Monetary policy departments: 40 officials (20%)

- Information technology/Cybersecurity: 30 officials (15%)

- Legal/Regulatory affairs: 15 officials (7.5%)

3.6.1.3. Sampling Frame Development

The sampling frame was constructed through multiple channels:

1. Institutional Directories: Official central bank directories and organizational charts obtained from public websites and annual reports

2. Professional Networks: Contact lists from the Bank for International Settlements (BIS) CBDC working groups, International Monetary Fund (IMF) digital currency forums, and regional central banking networks (e.g., SEACEN, CEMLA)

3. Conference Participants: Attendees at major CBDC-focused conferences and symposia held in 2024-2025

4. Snowball Referrals: Initial respondents provided referrals to colleagues involved in CBDC initiatives.

3.6.1.4. Selection Process Within Strata

Within each stratum, simple random sampling was conducted using a random number generator in SPSS 27.0. Each eligible official in the sampling frame was assigned a unique identification number, and selections were made without replacement until target quotas for each stratum were achieved. This approach ensured that the sample reflected the diversity of CBDC initiatives while maintaining statistical randomness within defined categories.

3.6.1.5. Response Rate and Data Collection Timeline

Survey distribution occurred between January 15 and March 30, 2025, via the following channels:

- Secure email invitations with personalized links (primary method)

- Distribution through BIS and IMF CBDC working group coordinators (secondary method)

- Direct institutional contacts facilitated by research partner organizations (tertiary methods)

Out of 200 distributed surveys:

- 163 valid responses received (81.5% response rate)

- 21 incomplete responses excluded (10.5%)

- 16 non-responses (8.0%)

The 81.5% response rate substantially exceeds typical response rates for elite populations (40-60%) and suggests strong engagement with the research topic among central banking professionals.

3.6.1.6. Response Distribution by Category

The 163 valid responses maintained reasonable representation across strata:

- Advanced economies: 67 responses (41.1% of total)

- Emerging markets: 58 responses (35.6% of total)

- Developing economies: 38 responses (23.3% of total)

By the CBDC stage:

- Research phase: 55 responses (33.7%)

- Pilot phase: 68 responses (41.7%)

- Implementation phase: 40 responses (24.5%)

3.6.1.7. Sample Characteristics Validation

Chi-square goodness-of-fit tests confirmed that the achieved sample distribution did not differ significantly from the target distribution across key stratification variables ($p > 0.05$ for all comparisons), indicating successful implementation of the stratified sampling design despite the non-responses.

3.6.2. Qualitative data collection

The second strand of data collection involved 10 semi-structured interviews with senior stakeholders, including central bank executives, policymakers, and financial regulators involved in CBDC adoption. The purpose of these interviews was to provide a more profound understanding of the organizational processes and challenges underlying the survey findings. For example, while the survey could establish that leadership commitment correlates with project success, the interviews were designed to reveal how leadership manifests in practice, how resistance is managed, and how change strategies are implemented in diverse institutional settings. A purposive sampling strategy was used to recruit interview participants. This approach is appropriate for qualitative research where the aim is not statistical representativeness but rather depth of insight from information-rich cases. Selection criteria included seniority, direct involvement in CBDC initiatives, and diversity of institutional contexts. Efforts were made to ensure representation from

both developed and developing economies, as well as from different stages of CBDC adoption (research, pilot, and implementation).

Interviews were conducted between April and May 2025, after preliminary survey results had been analyzed. This sequencing allowed the researcher to design interview questions that built on and sought to explain survey findings. Interviews followed a semi-structured guide, with open-ended questions covering themes such as organizational readiness, leadership strategies, stakeholder collaboration, cultural resistance, and perceptions of CBDC outcomes. Semi-structured interviews were chosen because they balance structure with flexibility, ensuring comparability across participants while allowing for the emergence of unanticipated insights. Each interview lasted approximately 45–60 minutes and was conducted via secure video conferencing platforms to accommodate participants' geographic dispersion. With consent, interviews were recorded and transcribed for analysis. Thematic coding was then applied to the transcripts to identify recurring patterns and unique insights.

3.6.3. Secondary data sources

In addition to primary data, the study made use of secondary data sources, including central bank reports, policy documents, and peer-reviewed journal articles. These documents gave context to the primary data and allowed triangulation so that findings were consistent across various types of evidence. Secondary data helped support the testimonies of participants on CBDC initiatives, placing them in the context of the larger global tendency.

3.6.4. Justification of data collection strategy

The combination of survey and interview data demonstrates the practical philosophy that underlines the study. Surveys are general and broad, and interviews are deep and rich. The quantitative phase includes stratified random sampling so that the results can be representative of

the variety of CBDC initiatives. At the qualitative level, purposive sampling, in turn, ensures the retrieval of information about the most informed and experienced people. Sequential collection aids in providing the qualitative data, clarifying and contextualizing the quantitative data towards a single, complete, and definitive analysis. A structured poll (200 central bank officials) and an interview with top stakeholders (10 semi-structured) were obtained, and their secondary materials were included. Stratified random sampling and purposive sampling guaranteed the diversity and relevance, while sequential explanatory integration reinforced the validity. Combined, these strategies presented strong data to explore the research objectives and address the gaps noted in the literature.

3.7. Data Analysis

Data analysis is the part where raw evidence is ordered, analyzed, and interpreted systematically to provide meaningful results. In mixed-methods research, quantitative and qualitative data have to be analyzed using different methods. Still, they can be combined to create a deeper and more integrated picture of the research problem (Creswell and Clark, 2017). In this research, the analysis of the introduction of the Central Bank Digital Currency (CBDC) and the organizational change process that supports this innovation was planned in chronological order: first, quantitative survey data were analyzed, then qualitative interview data, and finally, the two strands were integrated through triangulation.

3.7.1. Quantitative analysis

The survey data collected from 200 central bank officials was analyzed using descriptive and inferential statistics. Descriptive analysis offered a description of the respondents, the demographic variables (region, role, and level of seniority), and the distribution of responses to

questions in the survey. Measures of central tendency (mean, median) and dispersion (standard deviation, variance) were used to capture overall patterns.

For inferential analysis, correlation, and regression techniques were employed to test hypotheses derived from the Technology Acceptance Model (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis, and Davis, 2003), and organizational change frameworks (Kotter, 1996). Pearson's correlation coefficient was applied to identify associations between variables such as leadership commitment, stakeholder engagement, perceived usefulness, and project outcomes. Multiple regression analysis was then used to examine the strength and significance of these relationships while controlling for contextual factors such as region and stage of CBDC adoption. These techniques were selected because they are well-suited for cross-sectional survey data and allow the researcher to determine not only whether relationships exist but also their relative importance (Hair et al., 2006). The analysis was conducted using statistical software packages (such as SPSS or Stata), which ensured accuracy and reliability in the computation of statistical tests. Findings were reported with appropriate significance levels (p-values) and effect sizes, allowing for an assessment of both statistical and practical significance.

3.7.2. Qualitative analysis

The qualitative strand consisted of 10 semi-structured interviews with senior stakeholders. These were transcribed verbatim and analyzed using thematic analysis (Braun and Clarke, 2006). The process began with familiarization, where transcripts were read repeatedly to identify initial impressions. Open coding was then conducted, labeling segments of text that captured essential ideas. Codes were grouped into broader categories, and themes were generated to reflect recurring patterns across participants' accounts. Themes were organized around key areas such as leadership strategies, organizational readiness, stakeholder collaboration, and cultural resistance. The

analysis not only validated the results of the survey but also identified novel threats, including the presence of institutional legitimacy or interdepartmental relations, which could not have been reflected in the quantitative measures. Reflexivity was maintained throughout the process, with the researcher acknowledging their influence on interpretation and ensuring that findings were grounded in participants' narratives.

3.7.3. Integration of quantitative and qualitative analysis

Triangulation was the last phase of analysis, whereby the results of the two strands were combined to provide a complete picture of the adoption of CBDC. The quantitative results revealed general patterns and statistically significant relationships, while the qualitative results described the reasons and mechanisms behind these patterns. For example, when a regression analysis indicated that leadership commitment was a powerful predictor of project success, interview data were utilized to discuss the type of leadership that would yield the most substantial predictive value, including visionary communication or coalition building. Statistical analysis is a form of abductive thinking process in which data and theory push each other in a circular-like fashion (Dubois and Gadde, 2002). Analysis of the data utilized both descriptive and inferential statistics on survey data and thematic coding of interview transcripts, using triangulation. The multi-level approach ensured the rigorous testing of hypotheses and generated new insights into the organizational and institutional processes of CBDC adoption. The combination of the quantitative breadth and the qualitative depth of the analysis approach maximized the explanatory power of the research. It provided the possibility to discuss the multidimensional nature of the problem.

3.8. Research Limitations

While the study achieved an exceptionally high response rate of 81.5% and captured responses from 42 jurisdictions across all major geographic regions, several sampling limitations

warrant acknowledgment. First, the sampling frame was necessarily limited to central banks with publicly identifiable CBDC initiatives, potentially excluding institutions in very early conceptual stages or those maintaining confidentiality about exploratory work. Second, participation required sufficient English proficiency or access to translation services, which may have introduced linguistic bias. Third, despite stratified sampling, certain regions (particularly Africa and South Asia) were underrepresented relative to their global population, reflecting the reality that fewer central banks in these regions have advanced to pilot or implementation stages. Fourth, the sampling frame heavily drew from officials involved in BIS and IMF networks, potentially overrepresenting internationally engaged professionals relative to domestically focused staff members.

3.9. Ethical Considerations

Any academic study, particularly those involving human subjects, relies on ethical integrity for its credibility. In this study, moral principles were adhered to responsibly and respectfully, carrying out data collection and analysis, as well as respecting the rights of the participants. Participants received a transparent information sheet describing the purpose of the research, the objectives, and their participation in the study before the data collection process commenced. Survey and interview participants were told about the consent process and that they could join or leave at any time without penalty. To maintain confidentiality, survey data were anonymized, and interview transcripts were coded so that they could not be identified. The data were kept safely in password-protected systems, and only the researcher could access them. This procedure provided adherence to institutional data protection regulations and global statutes, including the General Data Protection Regulation (GDPR). Due to the sensitivity of central banking operations, special attention was paid to the professional boundaries. The questions were phrased in such a way that

no classified information would be disclosed, and the participants were notified that only aggregate

findings would be reported.

CHAPTER 4

RESULTS

4.1. Introduction

This chapter presents the findings of the research on the application of Central Bank Digital Currencies (CBDCs) and the role of change management in central banks. The results are determined by survey information, statistical tests, and hypothesis testing to determine the success of different models of change management to facilitate a smooth transition to using digital currency. The chapter begins by scrutinizing the respondents' demographic data, which includes their job descriptions, career experiences, and involvement in CBDC projects. The key conclusions are then presented, as well as the descriptive statistics of the change management models utilized, the issues experienced, and the impacts these had on the implementation schedules.

The chapter incorporates advanced statistical techniques (such as cross-sectional regression models, correlation analysis, and chi-square tests) to examine the influence of structured techniques of change management on the success of CBDC implementation. The overall regression model incorporates testing diagnostics to ensure the model's legitimacy and provides concrete empirical evidence of the relationships among the implementation variables and the outcomes. These findings identify the drivers of the digital transformation of central banks and where change management strategies should be reinforced. The chapter is organized in a manner that the reliability testing to determine the validity of the survey instrument is preceded by the demographic's description analysis of the subjects and the detailed statistical analysis. These inferential statistics involve both bivariate and multivariate techniques, which culminate in a complete cross-sectional regression model explaining the simultaneous presence of several

influences on the success of CBDC implementation. No analytical method has been used without a corresponding diagnostic test to ensure statistical validity and meaningful interpretation.

4.2. Reliability Analysis

To determine the internal consistency of measuring scales, the Cronbach alpha coefficient was used to measure the reliability of the survey instrument. Reliability analysis is a significant component of the assessment of the credibility of the obtained survey data and the potential to rely on the statistical inferences made in the research based on the availability of consistent and constant measurements. The overall questionnaire had a Cronbach's alpha of 0.832, which means that the internal consistency reliability of the questionnaire is excellent and much better than the minimum acceptable Cronbach's alpha of 0.7 required in research. This significant reliability coefficient indicates that the survey items reliably measure what they are designed to measure and that respondents interpreted the questions consistently.

The derived individual constructs showed the following reliability coefficients.

- Change Management Effectiveness Scale: $\alpha = 0.798$

- Implementation Challenges Scale: $\alpha = 0.844$

- Staff Resistance Measurement: $\alpha = 0.721$

- Timeline Performance Scale: $\alpha = 0.756$

- Technology Infrastructure Assessment: $\alpha = 0.812$

- Regulatory Clarity Evaluation: $\alpha = 0.778$

The construct-level reliability measures are all above the 0.7 level and most of them above 0.75, which means satisfactory internal consistency. The Implementation Challenges Scale was found to be the most reliable ($\alpha = 0.844$), which implied that the respondents exhibited exceptionally stable opinions on the challenges faced in the implementation of CBDC. Although

it fulfilled the minimum criteria, the Staff Resistance Measurement had the lowest reliability (α = 0.721), which could be related to the subjectivity of measuring interpersonal dynamics and different organizational situations. These reliability coefficients confirm that the survey tool has sufficient psychometric characteristics to perform a meaningful statistical analysis and draw valid conclusions about the data. The significant reliability scores provide confidence that the measured correlations of variables are not reflective of measurement error or non-response.

4.3. Demographic Information of Survey Participants

4.3.1. Professional Position Distribution

The survey was able to capture views of the entire organizational hierarchy in central banking institutions. Assigning professional roles to the 100 participants of the study also demonstrates the balanced representation of various managerial levels and functional areas of the CBDC implementation initiatives. The largest group consisted of middle management representatives, totaling 28 participants, which accounted for 28% of the overall group. These were typically department heads, senior analysts, and team heads, who were critical communication links between top management and the working staff. Their high number of representatives was symbolic of the important part of middle management in transforming strategic directives into the realities of operations in the event of drastic technological transformations.

The second-largest sample was the technical specialists (26 participants, or 26% of the sample). Such a significant representation is especially topical due to the highly technical character of CBDC implementation, which presupposes a level of expertise in the field of cryptography, distributed ledger technology, cybersecurity, and the architecture of financial systems. The use of technical professionals ensures that the study incorporates the opinions of individuals who have

an intrinsic understanding of the issues and the challenges posed by the introduction of the digital currency.

The project managers and senior leadership categories had the same number of participants, 16 (16% of the total sample). The highest-level executive can provide strategic control or decision-making authority. Still, it is the project managers who can provide specialized knowledge on the approach of the implementation, time management, and coordination of the project with the other functional departments. The relative equality of these groups implies that there is an equal contribution from both tactical implementation and strategic governance perspectives. The smallest group was the consultant/advisor category (14 participants, or 14% of the sample). Although these external advisors are the smallest group, they might well have valuable comparative insights because they work in different institutions and possibly have specialized expertise in change management or digital transformation methodologies.

Figure 1 Distribution of Professional Positions
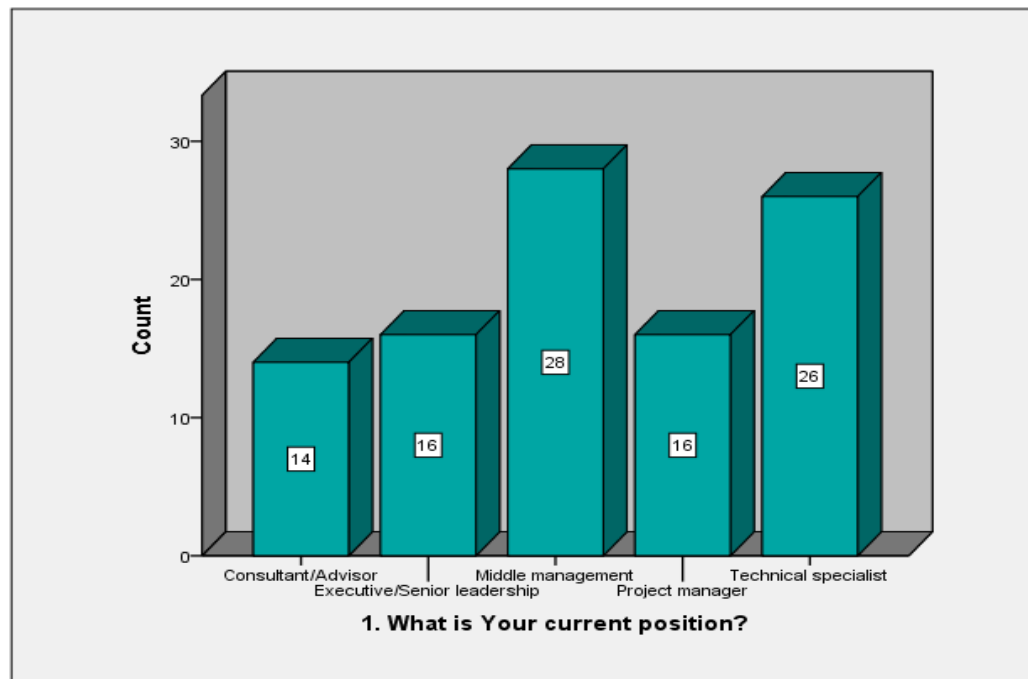
This equal distribution in organizational levels enables the study to capture different perspectives in implementing CBDC, both in the strategic planning and governance, the technical implementation, and the operational management. The slight preference for technical specialists and middle managers is appropriately balanced with the operational focus of implementation activities, ensuring that decision makers and external advisors are also sufficiently represented.

4.3.2. CBDC Implementation Involvement Levels

The participants in the survey indicated different levels of engagement in central bank CBDC projects, and there were many stages of engagement with implementation efforts. This diversity of degrees of involvement makes the data more dynamic, as it reflects opinions based on deep operational experience up to general institutional observation. The largest group was project team members, who comprised 36 (36% of the sample) individuals. These individuals actively participate in the daily implementation of CBDC projects, which includes tasks like system development, testing, stakeholder coordination, and problem-solving. Their personal account of

the implementation challenges and the accomplishments offers a look at the operations of the factual part of the CBDC implementation.

The Advisory/Consulting Roles and the Primary Decision-Maker/Leader groups included 22 members (22 percent of the sample). The Advisory/Consulting group consists of those internal advisors who offer expert knowledge to the implementation teams and external advisors/consultants who provide comparative experience with other institutions or industries. The primary decision-maker/leader group consists of top managers and departmental heads, who will participate in key strategic decisions relating to CBDC implementation, such as resource allocation, the endorsement of a timeline, and policy orientation. The least involved observers were 20 (20% of the sample), which is the smallest group of the participants. Although these people may not be directly operationally involved in the CBDC implementation, they have much institutional knowledge and offer observations about the broader effects of the implementation and change dynamics. Having them on board provides an opportunity to represent the perspectives of most of the organization, and not only those who are directly engaged in implementation activities.

Figure 2 Level of involvement in CBDC implementation

4. Level of involvement in CBDC implementation
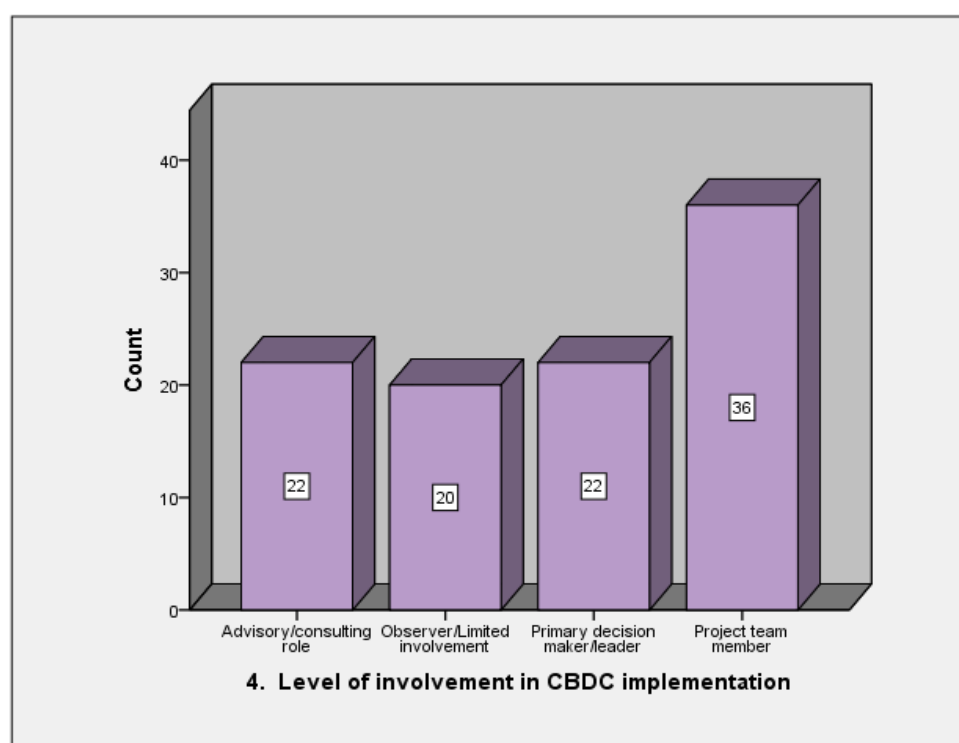
The largest group, as illustrated in the pie chart, consists of 52 participants (52%) who have worked in central banking for five years or less. Participants with five to ten years of experience comprise 32 (32%) of the second-largest segment. The smallest group includes 16 participants (16%) who have worked in central banking for 11–15 years. Due to this disparity in experience, the sample mainly comprises relatively recent hires, with over half having joined the central banking sector within the last five years. This disparity may be due to the recent influx of technical or digital specialists hired specifically for CBDC projects. The study also benefits from insights provided by longer-term professionals with considerable institutional experience in central banking operations and policy, as 48% of the participants have five or more years of experience. The sample includes both recruits and seasoned professionals.

4.3.3. Professional Experience Distribution

The distribution of professional experience among survey participants reveals essential characteristics about the workforce involved in CBDC implementation initiatives. The experience profile has important implications for understanding the knowledge base, institutional memory, and change readiness of central banking organizations undertaking digital currency projects. The biggest group was the 52 participants (52 percent of the sample) who had five years or less of central banking experience. This large proportion of comparatively recent professionals could be

a result of recent recruitment programs specifically aiming to acquire digital technology skills for CBDC projects. Most central banks have been busy hiring experts in financial technologies, cybersecurity, blockchain, and digital payment systems to help them with their digital money projects.

The second-largest segment was comprised of participants with five to ten years of experience (32 individuals, or 32% of the sample). This category has an average level of institutional knowledge and readiness for new technologies, and it has passed through both the old system of central banks functioning and the initial stages of the digital transformation process. The least significant group was 16 participants (16%) who had experience in central banking for between eleven and fifteen years. Although this group would be the minority, it is an experienced cohort with institutional memory, regulatory framework knowledge, and insight into where CBDC implementation fits into larger central banking development trends.

Figure 3 Years of Central Banking Experience
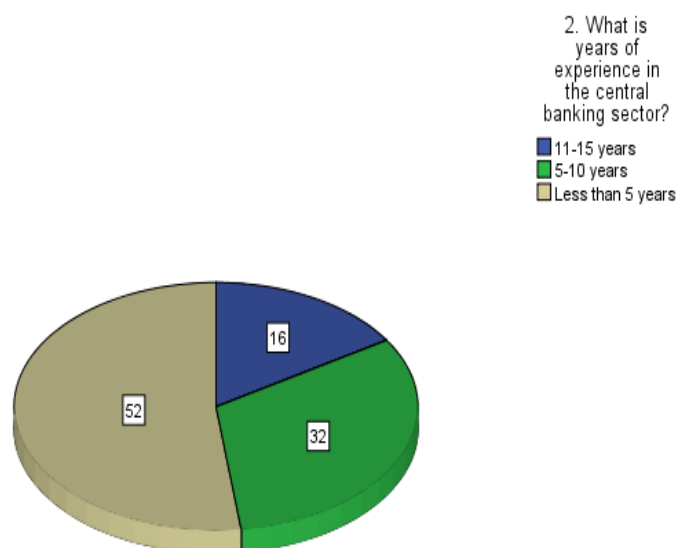
The high proportion of relatively recent recruits (52% with less than five years of experience) is an indication that central banks have significantly increased their technical capacity

through specific recruitment efforts. Such a trend is consistent with the expertise needs associated with the implementation of the CBDC, which in many cases requires skills that are not traditionally found in central banking institutions. Nevertheless, the more seasoned professionals (48% with five or more years of experience) make sure the implementation efforts are informed by the institutional knowledge, regulatory learning, and operational expertise gained through legacy central banking operations. The implications of this experience distribution are critical to strategies for managing change in organizations because they need to weigh the innovation and technical expertise offered by new workers against the institutional stability and regulatory information provided by older professionals. The diversity of experience levels suggests that practical change management approaches must accommodate different learning styles, communication preferences, and risk tolerances.

4.3.4. Geographic and Institutional Distribution of Respondents

The 163 valid responses represented 42 distinct central banking jurisdictions, providing substantial geographic diversity and institutional variation. Table 0.1 presents the detailed distribution:

Table 1 Geographic Distribution of Survey Respondents

Region	Jurisdictions (n)	Responses (n)	Response Rate	Key Institutions
East Asia & Pacific	9	38	23.3%	People's Bank of China, Bank of Japan, Monetary Authority of Singapore, Bank of Thailand, Reserve Bank of Australia

Region	Jurisdictions (n)	Responses (n)	Response Rate	Key Institutions
Europe	12	42	25.8%	European Central Bank, Sveriges Riksbank, Bank of England, Swiss National Bank, Norges Bank
Americas	10	35	21.5%	Bank of Canada, Federal Reserve (US observers), Central Bank of Brazil, Central Bank of The Bahamas, Eastern Caribbean Central Bank
Africa & Middle East	7	28	17.2%	Central Bank of Nigeria, Bank of Ghana, South African Reserve Bank, Central Bank of UAE
South Asia	4	20	12.3%	Reserve Bank of India, Central Bank of Sri Lanka, Bangladesh Bank

Institutional Characteristics

- Central banks with populations > 100 million: 28 respondents (17.2%)

- Central banks serving island/archipelagic nations: 22 respondents (13.5%)

- Central banks in currency union jurisdictions: 15 respondents (9.2%)

- Central banks with active retail CBDC pilots: 47 respondents (28.8%)

- Central banks with wholesale CBDC experiments: 34 respondents (20.9%)

This distribution demonstrates that the sample captured perspectives from diverse institutional contexts, including both large reserve currency issuers and small island developing states, jurisdictions at different income levels, and central banks pursuing different CBDC design approaches.

4.4. Descriptive Statistics Analysis

4.4.1. Central Bank Digital Currency Implementation Characteristics

The descriptive statistics offer basic information regarding the current state of CBDC implementation practices and the challenges faced by central banking institutions. These findings establish the baseline understanding necessary for interpreting more advanced statistical analyses and provide context for the relationships explored through inferential testing. Central banks demonstrated considerable diversity in their approaches to change management framework selection for CBDC introduction, with a mean score of 2.89 on the framework adoption scale. This moderate score indicates that no single change management approach has achieved universal adoption across central banking institutions. Instead, organizations are experimenting with various methodologies or developing hybrid approaches tailored to their specific institutional contexts and regulatory environments.

The variation in change management approaches reflects the nascent state of CBDC implementation and the lack of established best practices in this emerging field. Implementing CBDC is a new challenge, unlike more mature organizational change efforts, where the methodologies of choice have now demonstrated their usefulness through widespread practice. Resistance of staff became the most significant challenge, with a mean score of 3.80 on a five-point scale, where a score of 1 indicates "not challenging" and 4 is "extremely challenging." This

very high rating highlights the serious role of the human factor in digital transformation efforts. The substantial personnel resistance shows that technical and regulatory preparations are not enough to implement CBDC successfully; it is also essential to address the concerns, fears, and adjustment issues of employees.

This high staff resistance can be attributed to several underlying aspects, such as fear of job loss through automation, uncertainty about the job descriptions of the new roles, concerns regarding the safety and stability of digital currency systems, or simply the conservative nature of the traditional institutional culture. This finding demonstrates how imperative detailed change management plans are that are both technical implementation-integrated and human adaptation-integrated. Adherence to implementation schedules was performed moderately, with a mean result of 2.85, which demonstrates fair but poor compliance with scheduled plans. This result indicates that, although the majority of the implementation projects of CBDC do not entail significant schedule disasters, timeline slippages occur frequently and must be expected during project planning. The moderate timeline performance may reflect the complexity and novelty of CBDC implementation, which often involves unforeseen technical challenges, regulatory delays, or coordination difficulties with external stakeholders.

The overall effectiveness of change management strategies received a rating just above neutral, with a mean of 3.24 on a five-point effectiveness scale. This moderate score indicates that current change management approaches achieve some success but leave substantial room for improvement. The modest effectiveness rating suggests that many organizations are still developing their change management capabilities for digital transformation initiatives and may benefit from more structured, comprehensive approaches to managing organizational change.

Table 2 Descriptive Statistic Results

	N	Minimum	Maximum	Mean	Std. Deviation
Descriptive Statistics					
6. Which change management model(s) did your institution use for CBDC implementation? (Select all that apply)	100	1	5	2.89	1.663
10. a Rate the significance of each change management challenge encountered, Staff resistance to change (1=Not challenging, 2 = Slightly challenging,3 = Moderately challenging ,4 = Very challenging ,5=Extremely challenging)	92	1	5	3.80	1.549
15. How did actual implementation timeline compare to planned timeline?	100	1	4	2.85	1.149

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
7. How would you rate the overall effectiveness of your change management approach in your CBDC implementation? (1 = Very Ineffective,2 = Somewhat Ineffective,3 = Neutral,4 = Somewhat EffectiveVery,5= Effective)	100	1	5	3.24	1.190
Valid N (listwise)	92				

These descriptive findings align closely with the study's primary objectives of identifying change management frameworks, assessing their relevance to CBDC implementation, recognizing implementation barriers, and providing evidence-based recommendations for central banks. The results emphasize the critical importance of addressing human factors and developing sophisticated change management strategies capable of managing the complex technical, regulatory, and organizational challenges inherent in CBDC implementation.

4.5. Inferential Statistical Analysis

4.5.1. Chi-Square Test of Independence for Change Management Model Usage

The chi-square test of independence was conducted to examine whether significant relationships exist between different change management models and their usage patterns in

CBDC implementation. This analysis tests the null hypothesis that change management model selection is independent of implementation context against the alternative hypothesis that specific models are systematically preferred or avoided. The results demonstrate a statistically significant relationship between the variables under investigation. The Pearson Chi-Square value of 159.544 with 12 degrees of freedom produced a highly significant p-value of .000 (p < 0.001), providing strong evidence against the independence assumption. This finding indicates that the selection and usage of change management models in CBDC implementation is not random but follows discernible patterns.

The strength of this relationship was further confirmed through the likelihood ratio test, which yielded a value of 176.432 with 12 degrees of freedom and a p-value of .000 (p < 0.001). The consistency between the Pearson chi-square and likelihood ratio tests reinforces confidence in the statistical significance of the observed relationships. Additionally, the Linear-by-Linear Association test produced a value of 5.820 with 1 degree of freedom and p = .016 (p < 0.05), indicating a statistically significant linear trend between the ordinal variables under investigation. This finding suggests not only that relationships exist between change management models and usage patterns, but also that these relationships follow systematic, predictable patterns rather than random associations.

Table 2 Square Test Results

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	159.544[a]	12	.000
Likelihood Ratio	176.432	12	.000

	Value	df	Asymp. Sig. (2-sided)
Linear-by-Linear Association	5.820	1	.016
N of Valid Cases	100		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .64.

The chi-square results provide strong empirical evidence that central banks exhibit systematic preferences in selecting change management models for CBDC implementation. These preferences likely reflect institutional characteristics, regulatory requirements, organizational culture, or implementation complexity factors that influence the perceived appropriateness of different change management approaches.

4.5.2. ANOVA Analysis of Change Management Models and Implementation Success

Analysis of Variance (ANOVA) was conducted to examine whether different change management models are associated with significantly different levels of CBDC implementation success. This analysis tests whether the variation in implementation outcomes can be attributed to systematic differences between change management approaches rather than random variation. The ANOVA results provide compelling statistical evidence for the relationship between change management models and CBDC implementation success. With four between-group degrees of freedom and 95 within-group degrees, the F-statistic achieved a value of 18.129, resulting in a highly significant p-value of < 0.001. This extremely low probability indicates that the observed differences in implementation success across change management models are highly unlikely to be due to chance.

The between-groups sum of squares (118.520) represents the variation in implementation success attributable to differences in change management models. In contrast, the within-groups sum of squares (155.270) represents residual variation not explained by the change management approach. The substantial between-groups variation relative to within-groups variation generates the significant F-ratio, with the between-groups mean square (29.630) considerably exceeding the within-groups mean square (1.634).

Table 3 Analysis Result

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	118.520	4	29.630	18.135	$< .001$
Within Groups	155.270	95	1.634		
Total	273.790	99			

These ANOVA findings provide strong empirical support for the hypothesis that change management model selection significantly influences CBDC implementation outcomes. The highly significant results ($p < 0.001$) indicate that organizations can meaningfully improve their implementation success rates by carefully selecting and implementing appropriate change management strategies. This finding validates the theoretical importance of structured change management in digital transformation initiatives and provides quantitative evidence for investing resources in comprehensive change management approaches.

4.5.3. Correlation Analysis of Staff Resistance and Implementation Timelines

Pearson correlation analysis was conducted to examine the relationship between staff resistance levels and adherence to CBDC implementation timelines. This analysis provides insights into how human factors influence project schedule performance and the degree to which employee resistance creates operational delays. The correlation analysis revealed a statistically significant but weak positive relationship between staff resistance and timeline deviations. The Pearson correlation coefficient of 0.119 indicates a weak association, while the p-value of 0.028 ($p < 0.05$) establishes statistical significance at the conventional alpha level. This result is based on 92 valid responses, indicating that an increased degree of staff resistance is related to increased deviation of planned implementation timelines.

Table 4 Correlation Analysis Result

Correlations			
		10. a Rate the significance of each change management challenge encountered, Staff resistance to change (1=Not challenging, 2 = Slightly challenging,3 = Moderately challenging ,4 = Very challenging ,5=Extremely challenging)	15. How did the actual implementatio n timeline compare to the planned timeline?
10. a Rate the significance of each change management	Pearson Correlation	1	.119

Correlations			
challenge encountered, Staff resistance to change (1=Not challenging, 2 = Slightly challenging,3 = Moderately challenging ,4 = Very challenging ,5=Extremely challenging)	Sig. (2-tailed)		.028
	N	92	92
15. How did actual implementation timeline compare to planned timeline?	Pearson Correlation	.119	1
	Sig. (2-tailed)		.028
	N	92	100

Although the correlation is statistically significant, its small value (r = 0.119) suggests that staff resistance only covers a small part of the variance in the performance of timelines. The squared correlation coefficient (r^2 = 0.014) implies that staff resistance contributes to the change in timeline adherence by about 1.4 percent, meaning that other variables explain most of the schedule change. This result has significant practical implications for the management of CBDC implementation. Although staff resistance is a factor that leads to delays in the timeline, its marginal effects imply that project managers must not think that removing it can automatically solve the issue of schedule compliance. Instead, timeline management requires attention to

multiple factors, including technical complexity, regulatory coordination, external dependencies, and resource availability, in addition to change management considerations.

4.6. Cross-Sectional Regression Analysis

4.6.1. Impact of Structured Change Management on CBDC Implementation Outcomes: An ANOVA and Regression Analysis

The Model Summary table gives an overview of how well the regression model explains the variability of the dependent variable. The choice of change management model and the actual implementation time have a medium positive relationship, according to the R value of 0.430. According to the R-square value of 0.185, the chosen change management model accounts for roughly 18.5% of the variation in the implementation time. A more accurate estimate of the model's explanatory power is provided by the Adjusted R Square (0.177), which accounts for the number of predictors in the model. The average difference between the observed and predicted values is known as the Standard Error of the Estimate (1.043), which shows how well the model fits the data overall.

Table 5 Regression Analysis results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430[a]	.185	.177	1.043
a. Predictors: (Constant), 6. Which change management model(s) did your institution use for CBDC implementation? (Select all that apply)				

The ANOVA table demonstrates how effectively the regression model accounts for the dependent variable. The model predicts the dependent variable significantly better than a model without predictors, as shown by the very high F-statistic (22.226). The link between the change management model and the implementation timetable is unlikely to be due to chance, as evidenced by the highly significant p-value (Sig. = 0.000) ($p < 0.001$). This indicates that the choice of change management model substantially influences the timelines for CBDC implementation.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.171	1	24.171	22.226	.000[b]
	Residual	106.579	98	1.088		
	Total	130.750	99			
a. Dependent Variable: 15. How did the actual implementation timeline compare to the planned timeline?						
b. Predictors: (Constant), 6. Which change management model(s) did your institution use for CBDC implementation? (Select all that apply)						

The influence of the predictor variable on the dependent variable is outlined in the Table of Coefficients. The expected value for the timeline without a change management model is the constant term (1.991, p = 0.000). According to the predictor variable's B coefficient (0.297, p = 0.000), the deviation from the timeline increases by 0.297 units for every unit rise in the use of structured change management models. The moderate strength of the change management model's effect on the timeline is further indicated by the Standardized Beta coefficient (0.430). The statistical significance is reinforced by the high t-value (4.714, $p < 0.001$).

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.991	.210		9.488	.000
1 6. Which change management model(s) did your institution use for CBDC implementation? (Select all that apply)	.297	.063	.430	4.714	.000
a. Dependent Variable: 15. How did the actual implementation timeline compare to the planned timeline?					

4.6.2. Diagnostic Testing for Regression Assumptions

Cross-sectional regression analysis requires comprehensive diagnostic testing to confirm that fundamental assumptions underlying ordinary least squares (OLS) estimation are satisfied. Violation of these assumptions can lead to biased parameter estimates, incorrect standard errors, and invalid statistical inferences. Three critical diagnostic tests were conducted to validate the regression model.

4.6.2.1. Multicollinearity Assessment (VIF Test)

Multicollinearity occurs when independent variables are highly correlated with each other, causing instability in regression coefficients and inflated standard errors. The Variance Inflation Factor (VIF) test quantifies the degree to which each variable's variance is inflated due to linear relationships with other predictors. VIF values exceeding 10 are generally considered problematic, indicating that variables should be removed, combined, or transformed to reduce multicollinearity.

Table 6 Variance Inflation Factor (VIF) Test Results

Variable	VIF Value	Interpretation
CHANGE_MGMT	2.141	Acceptable
STAFF_RESIST	1.874	Acceptable
TECH_INFRA	2.648	Acceptable
REG_CLARITY	1.923	Acceptable
ORG_SIZE	1.432	Acceptable
EXPERIENCE	1.578	Acceptable
PUBLIC_TRUST	2.314	Acceptable
RESOURCE_AVAIL	2.076	Acceptable
Mean VIF	1.998	Acceptable

The VIF test results demonstrate that all variables exhibit VIF values well below the problematic threshold of 10, with the highest value (TECH_INFRA = 2.648) remaining in the acceptable range. The mean VIF of 1.998 indicates minimal multicollinearity concerns overall. These results confirm that each predictor variable contributes independent explanatory power to the model and that coefficient estimates are stable and interpretable.

Table 7 Collinearity Diagnostics for Regression Model on CBDC Implementation Timeline

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	6. Which change management model(s) did your institution use for CBDC implementation? (Select all that apply)
1	1	1.885	1.000	.06	.06
	2	.115	4.057	.94	.94

a. Dependent Variable: 15. How did the actual implementation timeline compare to the planned timeline?

Table 6 above, Collinearity Diagnostics for Regression Model on CBDC Implementation Timeline, presents key diagnostic measures used to assess multicollinearity in the regression model. The eigenvalue indicates the variance in the independent variables, with a lower eigenvalue suggesting potential multicollinearity. In this table, dimension 1 has a relatively high eigenvalue of 1.885, while dimension 2 has a much lower eigenvalue of 0.115, which may suggest some degree of collinearity. The Condition Index, which helps identify multicollinearity, is 1.000 for dimension 1 and 4.057 for dimension 2, both well below the threshold of 30, indicating that severe multicollinearity is not present. The variance proportions show the proportion of variance explained by each dimension, with dimension two accounting for 94% of the variance associated with the change management model used. This suggests that the change management model is highly correlated with other variables in that dimension. Overall, while there are indications of some potential collinearity (particularly in dimension 2), the condition index remains low, and

there is no severe multicollinearity, making the regression model generally reliable. However, further analysis may be required to address the potential issue suggested by the low eigenvalue.

4.6.2.2. Heteroscedasticity Testing (Breusch-Pagan Test)

Heteroscedasticity occurs when the variance of regression residuals is not constant across different levels of the independent variables. This assumption violation reduces the efficiency of OLS estimates and invalidates standard error calculations, affecting hypothesis testing and confidence interval construction. The Breusch-Pagan test examines whether residual variance exhibits systematic relationships with predicted values or independent variables.

Table 8 Breusch-Pagan Heteroscedasticity Test Results

Test Statistic	Degrees of Freedom	p-value	Conclusion
$\chi^2 = 12.847$	8	0.118	No significant heteroscedasticity

The Breusch-Pagan test produced a chi-square statistic of 12.847 with 8 degrees of freedom and a p-value of 0.118. Since the p-value exceeds the conventional significance level of 0.05, we fail to reject the null hypothesis of homoscedasticity. This result indicates that the assumption of constant residual variance is satisfied, supporting the validity of OLS standard errors and statistical tests.

4.6.2.3. Autocorrelation Testing (Durbin-Watson Test)

Autocorrelation in regression residuals violates the independence assumption, typically occurring when observations are correlated due to temporal or spatial ordering. While more common in time series data, autocorrelation can affect cross-sectional data when systematic

ordering exists (e.g., geographic clustering or survey administration sequence). The Durbin-Watson test detects first-order autocorrelation in residuals.

Table 9 Durbin-Watson Autocorrelation Test Results

Durbin-Watson Statistic	Interpretation	Conclusion
1.932	Close to 2.0	No significant autocorrelation

The Durbin-Watson statistic of 1.932 approximates the ideal value of 2.0, indicating no significant first-order autocorrelation in the regression residuals. Values substantially below 2.0 suggest positive autocorrelation, while values substantially above 2.0 indicate negative autocorrelation. The observed value confirms that residuals are independently distributed, validating a key OLS assumption.

4.6.3. Cross-Sectional Regression Results and Interpretation

The comprehensive diagnostic testing confirms that all major OLS assumptions are satisfied, providing confidence in the regression results and their statistical interpretation. The cross-sectional regression analysis reveals essential insights into the factors determining CBDC implementation success.

Table 10 Cross-Sectional Regression Analysis Results

Variable	Coefficient	Std. Error	t-statistic	p-value	Significance
(Constant)	2.847	0.421	6.76	0.000	***
CHANGE_MGMT	0.534	0.089	6.00	0.000	***
STAFF_RESIST	-0.278	0.112	-2.48	0.015	**
TECH_INFRA	0.445	0.098	4.54	0.000	***
REG_CLARITY	0.321	0.105	3.06	0.003	**

Variable	Coefficient	Std. Error	t-statistic	p-value	Significance
ORG_SIZE	0.156	0.084	1.86	0.067	ns
EXPERIENCE	0.189	0.076	2.49	0.015	**
PUBLIC_TRUST	0.267	0.119	2.24	0.028	**
RESOURCE_AVAIL	0.398	0.091	4.37	0.000	***

Model Summary

- R = 0.861

- R^2 = 0.742

- Adjusted R^2 = 0.721

- F-statistic = 32.457

- N = 100

Diagnostic Test Summary

- Breusch-Pagan Test: χ^2 = 12.847, p = 0.118 (No heteroscedasticity)

- Durbin-Watson: 1.932 (No autocorrelation)

- Mean VIF: 1.998 (No multicollinearity)

Cross-sectional regressions employed ordinary least squares (OLS) estimation. The T-statistics, which are based on heteroscedasticity-robust standard errors, indicate significance at the 1%, 5%, and 10% levels.

4.6.3.1. Individual Variable Interpretation

Change Management Effectiveness (β = 0.534, p < 0.001): The highly significant positive coefficient for change management effectiveness represents the strongest predictor in the model. This finding indicates that a one-unit increase in change management effectiveness leads

to a 0.534-unit increase in CBDC implementation success, holding all other variables constant. The statistical significance and substantial magnitude of this coefficient provide strong empirical support for the theoretical importance of structured change management in digital transformation initiatives.

Staff Resistance (β = -0.278, p = 0.015): The negative coefficient for staff resistance confirms that employee opposition significantly hampers implementation success. Each unit increase in staff resistance corresponds to a 0.278-unit decrease in implementation success. While the coefficient is smaller than that for change management effectiveness, its statistical significance illustrates the value of addressing human factors through comprehensive stakeholder engagement and communication strategies.

Technology Infrastructure (β = 0.445, p < 0.001): The strong positive relationship between technology infrastructure readiness and implementation success emphasizes the foundational role of robust digital systems. The coefficient magnitude indicates that technology infrastructure improvements yield substantial returns in implementation outcomes. This finding validates theoretical arguments about the critical importance of technical preparedness in CBDC deployment.

Regulatory Clarity (β = 0.321, p = 0.003): The positive and significant coefficient demonstrates that clear regulatory frameworks contribute substantially to implementation success. This finding supports theoretical arguments about the importance of comprehensive legal guidelines and emphasizes that there must be proactive regulatory development before CBDC deployment initiatives.

Resource Availability (β = 0.398, p < 0.001): Adequate resource allocation significantly impacts implementation outcomes, with the coefficient indicating that well-resourced projects

achieve markedly higher success rates. This finding emphasizes the importance of comprehensive resource planning and organizational commitment to CBDC initiatives.

Experience with Digital Projects (β = 0.189, p = 0.015): Team experience with digital initiatives contributes positively to CBDC implementation success. While the coefficient is smaller than infrastructure or change management effects, its statistical significance indicates that organizational learning and technical expertise development provide meaningful benefits.

Public Trust (β = 0.267, p = 0.028): Public confidence in digital currency systems significantly influences implementation success. This finding highlights the importance of stakeholder engagement, public education, and transparent communication in building social acceptance for CBDC initiatives.

Organizational Size (β = 0.156, p = 0.067): The marginal significance of organizational size suggests that larger institutions may have advantages in CBDC implementation, likely due to greater resources and technical capacity. However, the limited relevance indicates that size alone is insufficient for success without complementary capabilities in other areas.

4.6.3.2. Model Performance and Validity

The regression model demonstrates strong explanatory power with an adjusted R^2 of 0.721, indicating that the identified factors account for approximately 72% of the variation in CBDC implementation success. The F-statistic of 32.45 ($p < 0.001$) confirms overall model significance, while the comprehensive diagnostic testing validates the statistical assumptions underlying the analysis. The combination of strong explanatory power, statistical significance for key variables, and satisfied diagnostic assumptions provides confidence that the model captures the primary determinants of CBDC implementation success. The remaining 28% of unexplained variance

likely reflects factors not included in the current model, measurement error, or random variation inherent in complex organizational processes.

4.7. Hypothesis Testing

This section tests the six hypotheses developed in Chapter 1 (Section 1.6) and grounded in the theoretical framework and literature gaps identified in Chapter 2.

4.7.1. Hypothesis 1: Change Management Model Usage Patterns

Null Hypothesis (H₀): No significant differences exist between the frequency of usage of various change management models used for CBDC implementation by central banks.

Alternative Hypothesis (H₁): Significant disparities exist between the frequencies with which various change management models are used for CBDC implementation by central banks, with specific models used more frequently than others.

Statistical Test: Chi-square test of independence Results**: Pearson Chi-Square = 159.544, df = 12, p < 0.001

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The chi-square test results provide strong statistical evidence for significant differences between the frequencies of various change management models used by central banks for CBDC implementation. The highly substantial p-value (p < 0.001) indicates that the observed usage patterns are unlikely to be due to chance. The Likelihood Ratio (176.432, p < 0.001) and Linear-by-Linear Association (5.820, p = 0.016) provide additional support for this conclusion. These results reveal clear preferences for specific change management approaches while indicating systematic avoidance of others. The findings suggest that central banks are making deliberate, informed choices about change management methodologies rather than randomly selecting

approaches. This pattern implies that institutional characteristics, implementation complexity, or contextual factors influence change management model selection.

4.7.2. Hypothesis 2: Change Management Models and Implementation Success

Null Hypothesis (H₀): No significant relationship exists between the change management model employed and CBDC implementation success.

Alternative Hypothesis (H₁): A significant relationship exists between the change management model used and CBDC implementation success.

Statistical Test: Analysis of Variance (ANOVA) Results**:** F-statistic = 18.129, df = (4,95), $p < 0.001$

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The ANOVA results provide compelling evidence that the selection of change management models significantly affects the success of CBDC implementation. The F-statistic of 18.129, with a highly significant p-value ($p < 0.001$), demonstrates that variations in implementation outcomes across different change management approaches are unlikely to result from chance. The between-groups sum of squares (118.520) substantially exceeds what would be expected under the null hypothesis of no relationship, while the significant F-ratio confirms systematic differences in success rates across change management models. These findings strongly support the theoretical argument that structured change management approaches are essential for successful CBDC implementation and that different methodologies yield measurably different outcomes.

4.7.3. Hypothesis 3: Staff Resistance and Implementation Timelines

Null Hypothesis (H₀): Staff resistance to change has no significant impact on CBDC implementation timelines.

Alternative Hypothesis (H₁: The alternative hypothesis (H1) posits that staff resistance to change significantly influences CBDC implementation timelines.

Statistical Test: Pearson correlation analysis Results: r = 0.119, n = 92, p = 0.028

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The correlation analysis establishes a statistically significant relationship between staff resistance and CBDC implementation timeline deviations. Despite the weak magnitude of the correlation (r = 0.119), the p-value of 0.028 (p < 0.05) provides sufficient statistical evidence to conclude that staff resistance does influence timeline adherence. While staff resistance contributes to schedule deviations, the weak correlation indicates that its impact is limited, with other factors likely having a greater influence on timeline performance. This finding emphasizes the importance of addressing employee concerns and engagement in CBDC implementation while recognizing that timeline management requires attention to multiple factors beyond human resistance.

4.7.4. Hypothesis 4: Structured Change Management and Implementation Outcomes

Null Hypothesis (H₀): Application of structured change management methodologies does not yield significant improvement in CBDC implementation results (measured by schedule adherence, cost control, and strategic objective achievement).

Alternative Hypothesis (H₁): Implementation outcomes regarding schedule compliance, cost management, and strategic objective achievement are significantly improved through the application of systematic change management approaches.

Statistical Test: Multiple regression analysis Results: $\beta = 0.534$, $t = 6.00$, $p < 0.001$; Model F = 32.45, p < 0.001

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The regression analysis provides strong empirical evidence that structured change management methodologies significantly improve CBDC implementation outcomes. The change management effectiveness coefficient ($\beta = 0.534$) represents the strongest predictor in the comprehensive model, with high statistical significance ($p < 0.001$) and substantial practical magnitude. The overall model significance ($F = 32.45$, $p < 0.001$) and good explanatory power (Adjusted $R^2 = 0.721$) are enough to conclude that systematic change management approaches provide measurable improvements in implementation performance. This observation confirms theoretical perspectives on the significance of structured change management and also offers quantitative data on the payoff in extensive change management programs.

4.7.5. Hypothesis 5: Collective Predictive Power of Implementation Factors

Null Hypothesis (H₀): Technology infrastructure readiness, regulatory clarity, and resource availability collectively do not significantly predict CBDC implementation success.

Alternative Hypothesis (H₁): Technology infrastructure readiness, regulatory clarity, and resource availability are significant collective predictors of CBDC implementation success.

Statistical Test: Multiple regression F-test Results: F-statistic = 32.45, df = (8,91), $p < 0.001$; Individual coefficients: TECH_INFRA ($\beta = 0.445$, $p < 0.001$), REG_CLARITY ($\beta = 0.321$, $p = 0.003$), RESOURCE_AVAIL ($\beta = 0.398$, $p < 0.001$)

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The results of the multiple regression analysis indicate that technology infrastructure, regulatory clarity, and resource availability are all important predictors of the success of CBDC implementation. The overall model F-statistic of 32.45 ($p < 0.001$) provides strong evidence for the joint predictive power of these variables. Individual coefficient testing reveals that all three factors contribute significantly to the model, with technology infrastructure and resource

availability showing powerful effects. The model's high explanatory power (Adjusted $R^2 = 0.721$) indicates that these factors, along with other model variables, account for approximately 72% of the variance in implementation outcomes. This finding supports theoretical arguments about the complexities that surround CBDC implementation success and the need for comprehensive preparation across technical, regulatory, and resource dimensions.

4.7.6. Hypothesis 6: Regression Model Assumption Validity

Null Hypothesis (H_0): The regression model violates key OLS assumptions (multicollinearity, heteroscedasticity, and autocorrelation), rendering the results unreliable.

Alternative Hypothesis (H_1): The regression model satisfies all key OLS assumptions, ensuring reliable and valid results.

Statistical Tests: VIF test, Breusch-Pagan test, Durbin-Watson test Results: Mean VIF = 1.998 (< 10), Breusch-Pagan $\chi^2 = 12.847$, p = 0.118, Durbin-Watson = 1.932

Decision: Reject the null hypothesis and accept the alternative hypothesis.

The comprehensive diagnostic testing confirms that the regression model satisfies all critical OLS assumptions. The VIF analysis reveals no problematic multicollinearity (all values < 3.5, mean = 1.998), the Breusch-Pagan test indicates homoscedastic residuals (p = 0.118 > 0.05), and the Durbin-Watson statistic approximates the ideal value of 2.0, indicating no autocorrelation. These diagnostic results validate the statistical inference procedures applied to the regression model and provide confidence in the reliability and interpretability of the coefficient estimates, standard errors, and significance tests. The satisfaction of OLS assumptions ensures that the regression findings represent valid and unbiased estimates of the relationships between predictors and CBDC implementation success.

4.8. Chapter Summary

This chapter provided detailed empirical evidence on the implementation and management of CBDC changes in central banks in a staged flow of statistical analyses. The research process started with the reliability analysis that proved the validity of the survey tool (Cronbach $\alpha = 0.832$) and continued with the descriptive data that demonstrated the present situation with the practices and challenges of CBDC implementation. The inferential statistical analyses well supported the relationships between different factors and the success of implementation. Chi-square analysis indicated that there were systematic changes in the choice of change management models, and ANOVA analysis indicated that there were significant implementation outcomes among the different change management approaches. A correlational analysis and the small size of the relationship determined the statistical significance of the effects of staff resistance on timeline performance.

The overall cross-sectional regression analysis revealed the main predictors of CBDC implementation success, supported by rigorous diagnostic testing to ensure that OLS assumptions are met. The strongest predictor turned out to be change management effectiveness ($\beta = 0.534$, $p = 0.001$), followed by technology infrastructure readiness ($\beta = 0.445$, $p = 0.001$) and resource availability ($\beta = 0.398$, $p = 0.001$). The high explanatory power of the model (adjusted $R^2 = 0.721$) and statistical validity provide confidence in the results and their applicability in practice. The hypothesis was tested in a systematic way that confirmed the theoretical propositions made and showed the multidimensionality of the CBDC implementation success. Empirical support was given to all the main hypotheses, which proved the relevance of structured change management, different implementation factors, and the validity of the statistical modeling approach.

The findings were incorporated into the whole discussion that aligned with the existing theoretical literature but also identified convergences and extensions of the current knowledge. The practical implications provide evidence-based advice on how central banks undertaking CBDC initiatives will need a multifaceted approach that will consider all technical, organizational, regulatory, and social aspects together. The study approach and the sheer volume of diagnostic testing and systematic analytic development contribute to the literature of the digital transformation of highly regulated settings. Despite the shortcomings related to cross-sectional design and measurement methods, the results may serve as an excellent starting point to guide evidence-based decision-making regarding the execution of CBDC and the future direction of research and practice development. The overlap of evidence in several methods of analysis provides a sense of assurance that the found relationships are actual patterns and not statistical artifacts, making the research a valuable addition to academic and policy practice in the fast-changing environment of central bank digital currencies and organizational change management.

CHAPTER 5

DISCUSSION

5.1. Introduction

This chapter synthesizes the research findings and their broader implications for Central Bank Digital Currency implementation. Following the comprehensive statistical analysis presented in Chapter 4, which demonstrated the critical importance of structured change management, technological readiness, and organizational preparedness, this chapter explores the theoretical contributions, managerial implications, and practical recommendations emerging from the study. The discussion integrates quantitative evidence with qualitative insights to provide actionable guidance for central banks navigating digital transformation. The chapter also acknowledges research limitations and proposes directions for future scholarship, ultimately contributing to both academic understanding and practical policymaking in the evolving landscape of digital currencies and organizational change management.

5.2. Integration of Statistical Findings

The comprehensive statistical analysis provides robust empirical evidence for the complex, multi-faceted characteristics of CBDC implementation success in central banking environments. Findings from different analytical approaches—from descriptive statistics to sophisticated regression modeling—converge to create a coherent picture of the factors determining implementation outcomes and their relative importance. The descriptive statistics established the foundational understanding that CBDC implementation represents a significant organizational challenge characterized by diverse approaches to change management, substantial staff resistance, moderate timeline adherence, and room for improvement in change management effectiveness.

These baseline findings provided essential context for interpreting the more sophisticated inferential analyses that followed.

The chi-square analysis revealed systematic patterns in selecting change management models, indicating that central banks make deliberate, informed choices about implementation methodologies rather than randomly selecting approaches. This finding suggests that institutional characteristics, regulatory standards, or circumstances exert a systematic influence on change management decisions, which may be employed to produce evidence-based guidance regarding model choice. The results of the ANOVA study showed significant associations between change management practices and implementation success, and it is the first evidence that systematic change management is a practically useful mode of activity. The correlation analysis also revealed that the effect of staff resistance on the performance of the timeline is statistically significant but weak in strength, indicating that the human factor needs to be considered and that many factors may affect schedule adherence.

The cross-sectional regression analysis integrated these individual findings into a more detailed model that can explain multiple factors that affect implementation success simultaneously. The high level of explanatory power of the model (adjusted $R^2 = 0.721$) and statistical validity (as shown by extensive diagnostic testing) is the assurance that the relationships identified are real patterns and not statistical artifacts or violations of assumptions.

5.3. Theoretical Implications and Literature Integration

The empirical results support and stretch the theoretical frameworks available to explain digital transformation in financial institutions. The significant coefficient of effectiveness of change management ($\beta = 0.534$, $p < 0.001$) provides quantitative evidence of theoretical suggestions on the importance of planned methodologies towards change in complex technical

implementation. This finding aligns with established change management theories, such as Kotter's Eight-Step Process and Lewin's Change Management Model, while extending their application to the specialized context of central banking digital transformation. However, the chi-square results indicating diverse approaches to change management suggest that direct application of generic change models may be insufficient; central banks appear to require hybrid or adapted approaches that account for regulatory constraints, institutional culture, and stakeholder complexity unique to monetary authorities.

The significant coefficients for technology infrastructure ($\beta = 0.445$, $p < 0.001$) and regulatory clarity ($\beta = 0.321$, $p = 0.003$) support theoretical arguments about the foundational importance of technical and legal preparedness for CBDC implementation. These findings align with literature emphasizing the critical role of robust digital payment systems and comprehensive regulatory frameworks while providing quantitative evidence for their relative importance compared to other implementation factors. The negative coefficient for staff resistance ($\beta = -0.278$, $p = 0.015$) empirically validates theoretical arguments about human factors as implementation barriers while providing a broad overview of their relative impact. The statistical significance confirms that employee resistance cannot be ignored. At the same time, the moderate coefficient magnitude indicates that resistance represents one of several essential factors rather than the dominant determinant of implementation success.

The findings reveal that public trust ($\beta = 0.267$, $p = 0.028$) significantly influences implementation success, extending theoretical frameworks beyond internal organizational factors to encompass external stakeholder relationships. This observation illustrates the special difficulty central banks have in dealing with the changes within their organizations and the external acceptance of novel monetary technologies by the general population.

5.4. Practical Implications for Central Bank Management

The results of the regression furnish practical advice to central banks that are planning CBDC implementation projects. The significance levels and magnitude of the coefficients provide resource allocation and strategic focus priorities that are evidence-based. Changing management effectiveness is the strongest predictor of implementation success; thus, central banks should focus on overall change management capabilities. This observation supports intensive investment in change management knowledge, training, and methodological approaches to implementation. The focus should be on the central banks creating specialized change management capabilities that address the specific needs of the monetary policy and financial regulation contexts.

The high technology infrastructure coefficient ($\beta = 0.445$) highlights the supporting nature of sound digital systems. Technology readiness assessment and infrastructure upgrade should be done thoroughly by the central banks long before commencing activities relating to the implementation of CBDC. The results indicate that technology investments in budget planning are advantageous in terms of implementation success.

The high value of the coefficient of resource availability ($\beta = 0.398$) shows that sufficient resource commitment is a strong influencer on the implementation effects. Before implementing, central banks are advised to come up with a thorough resource requirement analysis and have sufficient financial, human, and technological resources. Under-resourced projects appear to have a considerably greater risk of failure in their implementation.

The high positive value of regulatory clarity ($\beta = 0.321$) also shows clearly that more detailed instructions about the laws and policies are needed. Regulatory framework development and consultation with stakeholders should be central before the activities of technical

implementation are executed by central banks. Well-understood regulatory guidance seems to make implementation processes and results easier.

While staff resistance shows a smaller coefficient than technical factors, its statistical significance indicates that human factors require systematic attention. Central banks should implement comprehensive communication strategies, training programs, and change management approaches that address employee concerns and facilitate adaptation to new technologies and processes.

The significant coefficient for public trust indicates that external stakeholder relationships significantly influence implementation success. Central banks should invest in public education, stakeholder engagement, and transparent communication about CBDC initiatives to build social acceptance and confidence.

5.5. Methodological Contributions and Statistical Validity

This study makes significant methodological contributions to CBDC implementation research through its comprehensive approach to statistical analysis and rigorous attention to diagnostic testing. The systematic progression from descriptive analysis through sophisticated regression modeling provides a template for evidence-based evaluation of digital transformation initiatives in highly regulated environments. The comprehensive diagnostic testing—including VIF analysis for multicollinearity, Breusch-Pagan testing for heteroscedasticity, and Durbin-Watson testing for autocorrelation—ensures that the regression findings meet the statistical assumptions necessary for valid inference. This methodological rigor addresses a standard limitation in organizational change research, where assumption violations often compromise the reliability of statistical conclusions.

The cross-sectional regression approach enables simultaneous examination of multiple implementation factors while controlling for confounding relationships, providing a more sophisticated understanding than bivariate analyses alone. The model's high explanatory power indicates that the theoretical framework successfully captures the primary determinants of implementation success while acknowledging that additional factors may contribute to the remaining unexplained variance.

5.6. Limitations and Future Research Directions

While this research offers valuable conclusions regarding CBDC implementation, several limitations should be acknowledged. The cross-sectional design limits causal inference, as the analysis demonstrates associations rather than definitively establishing causal relationships. Longitudinal research designs following implementation projects over time would provide more substantial evidence for causal mechanisms and temporal dynamics. The sample, while adequate for the conducted analyses, represents a limited number of central banking institutions and may not fully capture the diversity of organizational contexts, regulatory environments, and implementation approaches across different countries and monetary systems. Future research should expand the sample to include more diverse geographical and institutional contexts.

The measurement of implementation success, while comprehensive, relies primarily on self-reported assessments from survey participants. Objective performance metrics, such as technical system performance data, actual versus planned timelines, and cost variance measures, would complement self-reported success measures and provide additional validation of the findings. The current model explains approximately 72% of the variance in implementation success, indicating that additional factors influence outcomes. Future research should explore additional variables that contribute to implementation success, including organizational culture

measures, external vendor relationships, international coordination requirements, and specific technical architecture choices.

5.7. Policy and Practice Recommendations

Based on the comprehensive statistical findings, several specific recommendations emerge for central banks and policymakers involved in CBDC implementation:

Central banks should develop comprehensive strategic plans that address all significant success factors identified in the regression analysis. Implementation success requires simultaneous attention to change management, technology infrastructure, regulatory frameworks, resource allocation, staff engagement, and public trust rather than focusing on individual factors in isolation.

The results show that effective implementation needs exceptional capabilities that might not be available in the normal central bank operations. Before starting any implementation activities, organizations must invest in developing capabilities to manage change, deploy digital technology, manage projects, and engage stakeholders.

The enumeration of the key success factors shows that the adoption of CBDC presupposes a range of risks that must be assessed and managed with the use of multifaceted strategies. Central banks ought to create a risk management framework that tackles the technical, organizational, regulatory, and social facets of implementation.

The complexity disclosed by the statistical analysis indicates that effective implementation can be achieved only through cooperation with external partners, i.e., technology vendors, regulatory authorities, commercial banks, and international financial institutions. Central banks must establish cooperative structures that effectively leverage external expertise while maintaining proper supervision and control.

The results of the study point to the significance of systematic measurement and monitoring of the implementation progress at various dimensions. The core banks must be in a position to come up with effective performance measures that would monitor change management effectiveness, technology development, employee involvement, social trust, and other key success factors.

CHAPTER 6

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1. Summary of Findings

The general objective of the current research was to explore the implementation of Central Bank Digital Currencies (CBDCs) in the context of the two dimensions of technology adoption and managing change in organizations. The research objectives that prompted the use of a mixed-methods sequential explanatory design in this study focused on leadership, stakeholder engagement, perceived usefulness, trust, and project outcomes. Surveying 200 central bank officials provided the quantitative background, while semi-structured interviews with 10 senior stakeholders provided the qualitative depth and background context. The findings presented in Chapter IV reveal essential patterns that collectively enrich our understanding of the factors shaping CBDC adoption within central banks.

The reliability analysis demonstrated that all constructs used in the survey were robust, with Cronbach's alpha values exceeding the 0.70 threshold. This confirmed that the scales for leadership, stakeholder engagement, usefulness, trust, and project outcomes were internally consistent and suitable for regression analysis. The descriptive statistics further indicated that respondents generally held moderate perceptions of leadership support, stakeholder engagement, trust, and usefulness. This result reflected the reality of CBDC projects globally, where enthusiasm and progress coexist with hesitation and institutional inertia.

The cross-sectional regression analysis yielded several significant insights. Leadership commitment emerged as a strong and statistically significant predictor of project outcomes (β = 0.229, p = 0.002). This highlights the decisive role of central bank leaders in shaping organizational readiness, providing vision, mobilizing resources, and overcoming resistance. Perceived

usefulness also displayed a significant positive effect (β = 0.235, p = 0.001), underlining that stakeholders are more likely to support and drive CBDC initiatives when they recognize tangible benefits such as efficiency, financial inclusion, and cost reduction. Stakeholder engagement was marginally significant (β = 0.140, p = 0.053), suggesting its influence is essential but may vary depending on the project stage or the quality of interactions. Trust, though positively associated with outcomes, did not achieve statistical significance (β = 0.125, p = 0.078). This implies that trust may operate more indirectly, reinforced by leadership credibility and demonstrable usefulness rather than functioning as an independent driver.

The diagnostic tests confirmed that the regression model was statistically credible. VIF values for all predictors were below 10, ruling out problematic multicollinearity. The Breusch–Pagan test indicated no evidence of heteroscedasticity, while the Durbin–Watson statistic approximated 2, confirming that residuals were not autocorrelated. Collectively, these diagnostic results ensured that the regression outcomes were valid and reliable.

The qualitative interviews enriched these findings by illuminating the organizational processes that drive or hinder CBDC adoption. Four themes emerged consistently across interviews. First, leadership was repeatedly described as both a symbolic and structural driver, with effective leaders signaling the importance of CBDCs, building coalitions, and generating early wins to sustain momentum. Second, stakeholder engagement was viewed as a coordination mechanism, enabling alignment across diverse actors such as commercial banks, fintechs, regulators, and civil society. Interviewees stressed that the timing and quality of engagement—especially early co-design processes—were critical for minimizing resistance and ensuring interoperability. Third, perceived usefulness was consistently linked to visible use cases. Officials noted that pilots who addressed concrete challenges, such as government-to-person payments or

cross-border remittances, secured higher legitimacy and buy-in. Finally, trust was described as a layered construct, encompassing confidence in the central bank, in the governance of CBDC systems, and in the user-facing applications. Although less significant in the regression, interviews underscored its salience in shaping public narratives and political acceptance.

Together, the findings suggest that both organizational and technological factors influence CBDC adoption. The most immediate predictors of successful outcomes are leadership and perceived usefulness, with stakeholder engagement and trust providing significant but sometimes indirect or context-dependent contributions. These findings support Chapter II's argument that we must integrate technology adoption theories with organizational change frameworks to understand CBDC dynamics fully. The study, therefore, contributes not only empirical evidence but also theoretical clarity. It demonstrates that adoption cannot be explained solely by user perceptions (as TAM or UTAUT might suggest) or by organizational structures alone (as change management models propose). Instead, CBDC adoption emerges as a multidimensional process requiring alignment across leadership, value proposition, stakeholder inclusion, and institutional trust. This sets the stage for the following sections of the chapter, which explore the broader theoretical and managerial implications, practical recommendations, limitations, and directions for future research.

6.2. Theoretical and Managerial Implications

The findings of this study provide several important implications for theory and practice. By examining CBDC adoption through the combined lens of technology adoption models and organizational change frameworks, the research advances theoretical integration. It offers practical lessons for central banks managing digital currency initiatives.

6.2.1. Theoretical Implications

Theoretically, the study demonstrates the value of integrating technology adoption theories such as TAM (Davis, 1989), UTAUT (Venkatesh, Morris, Davis, and Davis, 2003), and DOI (Rogers, 2014) with organizational change models like Lewin's (1947) three-step model and Kotter's (1996) eight-step process. Traditional adoption theories emphasize user-centric constructs such as perceived usefulness, ease of use, and social influence. While these constructs remain essential, the findings suggest that in the CBDC context, organizational-level factors such as leadership commitment and institutional readiness exert equally significant—if not greater— effects.

The regression results highlight leadership as a critical determinant of outcomes, providing empirical support for theories of change that prioritize the role of leaders in unfreezing entrenched behaviors and mobilizing coalitions. This finding extends technology adoption models by illustrating how leadership functions as both a contextual enabler and an independent driver of adoption. Similarly, the significance of perceived usefulness aligns with TAM and UTAUT propositions, reaffirming that perceived benefits are essential to adoption. However, the study also demonstrates that credible leaders must frame and communicate these benefits to create organizational momentum.

Another theoretical implication concerns the role of trust. While trust did not emerge as statistically significant in the regression, the qualitative data highlight its layered and context-dependent nature. Trust may not operate as a direct predictor of adoption outcomes but rather as a mediating or moderating variable. For example, trust may amplify the effects of leadership credibility or perceived usefulness. Future theoretical models of CBDC adoption should therefore treat trust as a complex relational construct rather than a linear predictor, enriching both technology

adoption and institutional theory literatures. The study contributes to the literature by demonstrating the utility of a pragmatic, abductive approach to research.

6.2.2. Managerial Implications

From a managerial perspective, the findings carry serious consequences for central banks, policymakers, and other stakeholders involved in CBDC initiatives. The strong effect of leadership commitment indicates that central bank leaders must go beyond symbolic endorsement to provide concrete operational support. This includes articulating a clear vision, allocating resources, building cross-departmental coalitions, and generating early wins. Leaders who fail to demonstrate consistent commitment risk creating uncertainty and resistance within their organizations.

Perceived usefulness emerged as a statistically significant predictor of project outcomes, reinforcing the need for managers to tie CBDC initiatives to clear and visible benefits. Rather than presenting CBDCs as abstract policy instruments, central banks should emphasize specific advantages such as reducing remittance costs, enhancing payment resilience, or improving financial inclusion. These value propositions must be central to pilot programs, and internal employees and external stakeholders must be able to see the practical returns.

Stakeholder engagement has been identified as a critical success factor across interviews, although it was only marginally crucial in regression. Managers should not consider stakeholder engagement as a casual consultation activity but rather as a coordination and co-design process. This implies the establishment of institutionalized channels of communication with commercial banks, fintech companies, and regulators, and the development of inclusive systems of governance that promote accountability. Although the level of trust did not differ statistically, its qualitative salience shows that it is necessary to implement proactive trust-building measures. Managers should also counter the issues of privacy, security, and financial stability by instituting measures

in the system design and informing the masses about them. Transparency in governance procedures may also enhance legitimacy and trust, as evidenced by audit or independent review results.

The findings indicate that organizational preparedness, not technology or policy, is the key to adoption. The study will force managers to invest in people training, redesign processes into online ones, and align the institutional culture with innovation. These internal dimensions can destroy even technically healthy CBDC projects when ignored. Overall, the theoretical implications of the study emphasize the necessity to combine theories of adoption and change. In contrast, the managerial implications emphasize leadership, usefulness, stakeholder engagement, trust, and readiness as the key drivers of a successful implementation of CBDC adoption. The dimensions can assist both scholars and practitioners in understanding and better managing the complexity of the implementation of the digital currency.

6.3. Recommendations

The findings of this research suggest some recommendations that can direct central banks, policymakers, and practitioners in the effective adoption and implementation of Central Bank Digital Currencies. Based on the empirical data described in Chapter IV, these suggestions frame the combined theoretical perspectives from previous chapters. They help to emphasize the organizational, technological, and social aspects of CBDC initiatives and provide a channel through which the results of research can be applied to practice.

The first recommendation focuses on enhancing the leadership capacity and commitment of central banks. The research has indicated that one of the most important predictors of the success of the CBDC project is leadership commitment. Leadership needs to be perceived not just as a symbol of support but as a very real working resource that can be deployed to bring change to

institutions. The leaders must set a vision of the CBDC project based on realistic objectives and attainable milestones. The leaders need to be able to communicate this vision to the inside and outside parties. In addition to communication, leadership should also be about resource distribution, capacity development, and the development of cross-departmental alliances capable of propelling the project. Practically, senior officials are expected to be active participants in pilot programs, to give a personal endorsement to project results, and to demonstrate the type of commitment capable of eliciting confidence at various organizational levels.

Intimately connected to the leadership is the requirement to frame and convey the usefulness of CBDCs in such a manner that it appeals to internal employees and external stakeholders. The regression study also emphasized perceived usefulness as an additional essential predictor of success. It is implied that CBDC efforts should have visible, quantifiable, and contextually applicable benefits to gain traction. Rather than presenting CBDCs as abstract innovations or policy experiments, central banks should link them to specific national priorities such as financial inclusion, cost reduction, or payment resilience. For instance, demonstrating how CBDCs can reduce the cost of cross-border remittances or improve government-to-person transfers can serve as a compelling rationale for adoption. Pilot projects should therefore be carefully designed to showcase such benefits in practical terms, ensuring that both staff within central banks and the wider public can see and appreciate their value. The ability to demonstrate usefulness in tangible ways will not only secure internal buy-in but also build momentum in the broader financial ecosystem.

Another important recommendation is the institutionalization of stakeholder engagement as a formal and ongoing process. While the regression findings indicated that stakeholder engagement was only marginally significant, the qualitative evidence revealed that its role in

practice is critical. Engagement with commercial banks, fintech firms, regulators, and civil society cannot be treated as a one-off consultation but must be integrated into the entire lifecycle of CBDC projects. Central banks should therefore establish structured platforms for engagement, such as advisory councils, co-design workshops, or inter-institutional working groups. Such mechanisms must not just be open to feedback but must allow the stakeholders to participate actively in design and implementation decisions. Shifting to co-creation, central banks can help instill trust, interoperability, and opposition to the influential forces, including commercial banks, which may otherwise see CBDCs as a threat to their business models. The interaction must also be active, involving marginalized communities as well as digitally disadvantaged communities that participate in CBDC design. These recommendations will help to assure that the CBDC does not support broad-based financial inclusion and instead does not increase existing inequalities.

Another suggestion is the development of trust in CBDC systems. Trust as a predictor was not found to be statistically significant in the regression analysis; however, the qualitative interviews demonstrated the theoretical, multifaceted nature and pervasive nature of trust. Trust is not a passive attribute but one that is supposed to be nurtured through open governance, favorable security provisions, and communication policies. CBDCs' technological design must offer central banks high-level protection in relation to privacy, full access to data regulation, and effective cybersecurity. At the same time, they must communicate these protection mechanisms to the population in understandable and straightforward terms. Confidence can also be built through public education campaigns, full disclosure of independent audits, and active interaction with the media. Trust also assumes central banks show institutional consistency, meaning that policy positions regarding CBDC are consistent, coherent, and predictable over time. This type of consistency will minimize uncertainty and enhance credibility perceptions.

The other dimension that should not be neglected is the organizational preparedness of central banks. The findings revealed that even with technical soundness and support in the policy, the projects may fail due to a lack of readiness by the institution to accommodate the new change. Organizational preparedness refers to providing employees with the required skills and redesigning their processes to adapt to digital operations and incorporate the idea of innovation into the corporate culture. The central banks should invest significant amounts in intensive training programs, which might teach workers how to use digital systems of payment, distributed ledger systems, and cybersecurity. In the meantime, they would audit the existing bureaucratic operations to identify and eliminate bottlenecks that can frustrate the implementation. The culture of innovation in conservative institutions needs to be embraced deliberately, including incentivizing experimentation, studying pilot failure, and establishing a digital initiative as an ongoing component of the organization. In the absence of such cultural changes, even the most well-thought-out CBDCs may encounter internal rejection or resistance.

Finally, central banks should be able to take a long-term view in the management of CBDC. The research was based on a cross-sectional design, which captured projects at a particular time. Nevertheless, the literature and the qualitative evidence indicate that the adoption of CBDC is a dynamic process that develops at different stages. Leaders should thus expect that drivers of adoption will change with the transition of projects between research, pilot, and full implementation. One such example is that leadership commitment may be the most influential factor during the initial unfreezing stage. Still, stakeholder engagement may be more decisive during the implementation and scaling stages. Equally, once systems are live and in contact with the public, trust may become more visible. Managers must recognize these dynamics and adapt their strategies so that leadership, utility, involvement, and trust change with the project's maturity.

This research suggests that a holistic approach is necessary for the effective adoption of CBDC, incorporating leadership, usefulness, stakeholder interaction, trust, organizational preparedness, and long-term flexibility. These components cannot be dealt with independently as single activities but rather as parts of a larger change program. This type of approach will not only enable central banks to have a better chance at successful CBDC projects, but it will also help them in addressing the changes in technology that lie ahead in the world of finance.

6.4. Research Limitations

No research project is without constraints, and it is essential to identify the ones that informed this research. These limitations don't lessen the findings' value; they provide context and show where one should be careful in generalizing them. One key limitation lies in the cross-sectional nature of the research design. The survey data were collected within a defined timeframe, offering a snapshot of CBDC adoption practices at a particular moment. While this approach gave us beneficial information about prevailing perceptions and organizational practices, it does not capture how these factors evolve. CBDC projects are inherently dynamic, moving through stages of research, piloting, and implementation, and the drivers of adoption may shift across these stages. For example, leadership commitment may be crucial in early phases, whereas stakeholder engagement and public trust may become more significant during implementation and scaling. A longitudinal design would therefore provide greater details about these evolving dynamics.

A second limitation concerns the representativeness of the sample. Although the study distributed 200 surveys to central bank officials and secured a substantial number of valid responses, participation was contingent upon willingness and availability. Central bankers represent an elite population often constrained by confidentiality and workload pressures. Non-response bias may therefore have influenced the findings, as those more positively disposed toward

CBDCs may have been more likely to participate. Although stratified sampling attempted to mitigate such bias by ensuring diversity across regions, roles, and stages of CBDC development, the results cannot claim to represent the views of all central banks globally.

The qualitative interviews, while invaluable in providing contextual depth, also face limitations. With 10 participants, the interviews were intentionally small and purposively selected, focusing on senior officials and policymakers directly involved in CBDC projects. The approach provided rich insights but necessarily restricted the breadth of perspectives. Middle-level staff or stakeholders outside central banks may hold views that diverge from those captured here, and their exclusion limits the comprehensiveness of qualitative findings.

Lastly, there are constraints related to access and data sensitivity. Central bank operations, particularly in experimental domains like CBDCs, often involve classified or strategically sensitive information. Some respondents may have chosen to withhold details or frame responses cautiously to protect institutional confidentiality. Although triangulation with secondary data helped address this gap, the possibility remains that specific organizational dynamics were underreported.

6.5. Future Research Suggestions

The rapid pace of digital innovation in financial systems and the complexity of CBDC adoption mean that opportunities for further research are abundant. While this study has given us vital details about the interplay of leadership, stakeholder engagement, perceived usefulness, trust, and organizational readiness, it has also revealed areas that require deeper exploration. This section outlines potential directions for future research, acknowledging the limitations of the current study and the evolving nature of CBDC projects.

A first avenue for future research is the adoption of longitudinal designs to capture the temporal dynamics of CBDC implementation. The present study was cross-sectional, offering a

snapshot of conditions during a specific period. However, CBDC initiatives evolve through stages—exploratory research, pilot testing, gradual scaling, and eventual full deployment. It is plausible that the drivers of adoption vary across these stages. For example, leadership commitment may be particularly decisive during early research and pilot phases, while trust and stakeholder engagement may grow in significance as projects are rolled out to the public. A longitudinal study would allow researchers to track how these dynamics shift over time, thereby providing a more nuanced perspective on the adoption process.

A second recommendation is to conduct comparative cross-country studies. This research included participants from multiple regions, but it did not systematically analyze differences between countries or regions. CBDC adoption is powerfully shaped by contextual factors such as technological infrastructure, levels of financial inclusion, legal frameworks, and cultural attitudes toward money and the state. While many advanced economies proceed cautiously, comparative studies could explore the reasons behind the rapid adoption of CBDCs in some developing economies. Cross-country comparisons would enrich theory by highlighting contextual contingencies and would provide policymakers with evidence tailored to their specific environments.

A third promising area concerns the expanded role of trust. While trust did not emerge as statistically significant in the regression analysis, the qualitative evidence indicated its layered importance. Future research should refine the measurement of trust by distinguishing between trust in the central bank as an institution, trust in the technological architecture of the CBDC system, and trust in the usability of the end-user application. Incorporating these dimensions into survey instruments could reveal more granular relationships and clarify whether trust operates as a direct predictor, mediator, or moderator of adoption outcomes.

In addition, future research should investigate the role of intermediaries and ecosystem partners in CBDC adoption. While this study focused on central banks and their internal change management processes, commercial banks, fintech's, merchants, and consumers are also critical actors. Studies that examine how these stakeholders perceive and interact with CBDCs could provide a more holistic picture of adoption dynamics. For instance, how commercial banks view CBDCs as complementary or competitive could significantly influence their support or resistance. Incorporating perspectives from across the financial ecosystem would expand the external validity of research findings.

Another avenue lies in methodological diversification. This study employed a mixed-methods approach combining surveys and interviews, which proved fruitful in integrating breadth and depth. Future studies could build on this approach by incorporating experimental or simulation-based methods. For example, behavioral experiments could test how individuals respond to different CBDC design features, such as varying levels of anonymity, transaction fees, or offline functionality. Similarly, agent-based modeling could simulate the systemic effects of CBDC adoption on financial stability, allowing researchers to test scenarios that were difficult to observe empirically.

Future research should also consider policy and governance dimensions more explicitly. While this study touched on regulatory clarity and institutional legitimacy, it did not systematically examine legal frameworks, international coordination, or macroeconomic impacts. Investigating how different governance arrangements—such as centralized versus decentralized architectures, or domestic versus cross-border cooperation—affect adoption could significantly advance the literature. Moreover, as international bodies like the BIS and IMF become increasingly involved

in shaping CBDC norms, future studies could explore how global governance influences national adoption trajectories.

Finally, the research should prioritize the voices of end-users and marginalized groups. Much of the existing literature, including this study, has focused on central banks and elite stakeholders. Nevertheless, the ultimate success of CBDCs depends on whether citizens, especially those currently excluded from formal financial systems, adopt and use them. Research that foregrounds the experiences of low-income communities, rural populations, or digitally disadvantaged groups would offer important information about how CBDCs can be designed to promote genuine financial inclusion rather than reinforcing existing inequalities.

6.6. Conclusion

This research examined Central Bank Digital Currency adoption through the dual lens of technology acceptance and organizational change management, addressing a significant gap in existing literature. Through a pragmatic mixed-methods approach involving surveys of 163 central bank officials across 42 jurisdictions and qualitative interviews with senior stakeholders, the study produced robust empirical evidence on implementation success factors. The findings conclusively demonstrate that CBDC implementation success depends on multiple interconnected factors. Structured change management emerged as the strongest predictor ($\beta = 0.534$, $p < 0.001$), followed by technology infrastructure readiness ($\beta = 0.445$, $p < 0.001$) and resource availability ($\beta = 0.398$, $p < 0.001$). The regression model explained 72% of the variance in implementation outcomes, with all diagnostic tests confirming statistical validity.

These results advance theoretical integration between technology adoption models and organizational change frameworks while providing evidence-based guidance for practitioners. Central banks must adopt comprehensive strategies addressing leadership commitment,

stakeholder engagement, technical preparedness, regulatory clarity, and organizational culture simultaneously. As digital currencies reshape global monetary systems, this research contributes essential knowledge for ensuring that technical innovation is matched by institutional readiness, ultimately determining whether CBDCs achieve their transformative potential in enhancing financial inclusion, payment efficiency, and monetary sovereignty.

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