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Determinants of blockchain adoption readiness in Kenyan commercial banks' remittance systems: the moderating role of bank size.

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DETERMINANTS OF BLOCKCHAIN ADOPTION READINESS IN KENYAN COMMERCIAL BANKS' REMITTANCE SYSTEMS: THE MODERATING ROLE OF BANK SIZE

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other university. To the best of my knowledge and belief, this dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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APPROVAL

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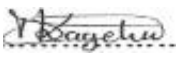
Signature:  Date: 05/21/2025

ABSTRACT

Remittances contribute to economic and social development, stimulating growth, enhancing stability, reducing poverty, and facilitating upward mobility for millions of families. They are leading and stable sources of foreign exchange for many countries. As such, remittances are expected to grow in the foreseeable future, especially in low and middle-income countries. However, current remittance systems are plagued by inefficiencies attributed to reliance on traditional methods that suffer from high transaction costs, a lack of transparency, sluggish processing times, and several other complexities. Blockchain technology is presented as a solution to these challenges, offering a faster, cheaper, and more secure way to send and receive money across borders. However, while plenty of research on blockchain exists, there is scant empirical evidence on its integration into banks' remittance systems. This study aimed to contribute to this field by examining the readiness of Kenya's commercial banks for blockchain integration into their remittance systems. The study examined these banks' organisational readiness, technical readiness, and regulatory readiness. The study was grounded in the contingency theory and technology acceptance model, followed positivist research philosophy, and adopted a descriptive cross-sectional research design. 39 commercial banks constituted the units of analysis, whereby a cohort of 156 representatives was targeted. Primary data was collected using structured questionnaires and analysed using descriptive statistic and the PLS-SEM model to establish the relationship between variables. The structural modelling analysis showed that organisational readiness and technical readiness exert a positive and significant influence on blockchain adoption, whereas the effect of regulatory readiness was negligible. Furthermore, firm size had a negative moderating effect on organisational readiness, but its moderation of technical and regulatory readiness was not significant. Therefore, this research advocates for regulatory reforms and the formulation of strategic decisions aimed at driving banks' technical capabilities and internal environments to drive blockchain integration into remittances.

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VT OMNES
VNVM SINT

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LIST OF ABBREVIATIONS

BAK	Blockchain Association of Kenya
BCT	Blockchain Technology
CBDC	Central Bank Digital Currencies
CBK	Central Bank of Kenya
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IT	Information Technology
KBA	Kenya Bankers Association
KES	Kenya Shilling
LMIC	Low- and middle-income country
MTO	Money Transfer Operator
ODA	Official Development Assistance
PLS-ANN	Partial Least Square - Artificial Neural Network
PLS-SEM	Partial Least Square - Structural Equation Modelling
POTIC	People, Organisation, Technology, Industry, and Country
SME	Small to Medium Enterprise
TAM	Technology Acceptance Model
TOE	Technological, Organisational, and Environmental
UK	United Kingdom
US	United States
USD	United States Dollar

DEFINITION OF TERMS

Blockchain technology: It is a decentralised and distributed digital ledger system that securely records transactions across multiple computers (Janssen et al., 2020). Key features and components include decentralisation, immutability, cryptographic security, transparency, and smart contracts.

Firm size: a firm's scale/magnitude of operations measured in several ways, depending on the context and criteria (Jannah et al., 2022). It was conceptualised as the total assets in this study.

Money transfer operator: a company that specialises in providing services for transferring money from one individual or entity to another, often across international borders (Metzger et al., 2020).

Organizational readiness: the extent to which an organization is prepared to successfully adopt and implement emerging technologies (Clohessy & Acton, 2019). In this case, it encompasses a range of factors that determine whether commercial banks can effectively leverage blockchain to achieve digitized and modern remittance systems.

Regulatory readiness: a firm's preparedness to navigate complex and evolving regulatory landscape surrounding blockchain technology (Sanda et al., 2022). Involves understanding and complying with relevant laws and regulations and anticipating future regulatory developments.

Remittance: the transfer of money, typically by a foreign worker, a member of a diaspora community, or a citizen with familial ties abroad to individuals or family members in their home country (Ratha, 2005).

Technical readiness: technical readiness focuses on the specific technological capabilities and infrastructure an organization needs to successfully implement and utilize blockchain technology Lustenberger et al. (2021).

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Background of the Study

Remittances constitute a significant economic factor in the global economy, particularly for low- and middle-income countries (LMICs) (World Bank, 2023), serving as a critical source of income for millions of households and are one of the largest and most stable sources of foreign exchange (Hasan et al., 2019; Katuwal, 2021; Ullah et al., 2024). In 2023, remittance flows to LMICs hit "USD 656 billion, outperforming foreign direct investment (FDI) and official development assistance (ODA)" (World Bank, 2023). The International Fund for Agricultural Development (IFAD) projects that "USD 5.4 trillion will be sent by migrant workers to their countries of origin, USD 1.5 trillion of which will be saved or invested" (Chigova & Hofisi, 2023). Remittances are used to cover basic needs: food, housing, education, and healthcare, improving recipients' quality of life (Amega, 2018). At the same time, Ali Bare et al. (2022) and Wagh and Pattillo (2021) cite that remittances contribute immensely to poverty reduction, economic stability, and upward mobility by ensuring a steady flow of foreign currency, which can sometimes surpass FDI and other capital flows.

However, the global remittance industry is plagued by inefficiencies. Coutinho et al. (2023), Rella (2019), and Naderi (2021) claim that conventional remittance systems suffer from high transaction fees, lack of transparency, sluggish processing times, and several other complexities that greatly inconvenience persons, families, and entities that rely on cross-border transactions. Remittances flow through traditional methods are described by Kpodar and Amir Imam (2024) and Metzger et al. (2020). They explain that remittances through traditional channels such as banks and money transfer operators (MTOs) typically involve the sender initiating the transaction by visiting these channels and providing the necessary details: the recipient's name, location, and bank account. The sender then pays the remittance amount along with applicable fees. The bank/MTO processes the transaction, often using secure networks like SWIFT for banks or proprietary systems for MTOs, to transfer the funds to the recipient's bank or local agent. Upon receiving the funds, the recipient can collect the money either directly into their bank account or in cash from the MTO's local agent.

This traditional method, while still widely used, is susceptible to several inefficiencies (Coutinho et al., 2023; La Cava & Naatus, 2020; Metzger et al., 2020; Naderi, 2021; Rella, 2019). First, banks and MTOs often charge significant fees for processing remittances, which can be burdensome for senders, especially when frequently sending small amounts. Second, remitting through traditional methods can take several days to process transactions, causing delays for recipients who may need the money urgently. Third, accessibility issues are apparent since, in some regions, especially in LMICs, access to banking facilities or MTO agents may be limited, making it difficult for both senders and recipients to initiate or collect remittances. Fourth, the bureaucratic procedure, denoted by extensive documentation and compliance checks, can slow down the remittance process, creating additional hassles for users. Fifth, senders and recipients may find it challenging to track the status of their transactions in real time, leading to uncertainty and a lack of transparency.

As an emerging technology, blockchain technology (BCT) serves as a solution to the challenges above and promises to transform the entire global remittance landscape. It enables faster and more secure transactions by eliminating intermediaries, reducing the time it takes to transfer funds (Coutinho et al., 2023). This can significantly lower transaction fees, making remittances more affordable. Additionally, blockchain's decentralised and transparent nature enhances security and reduces the risk of fraud, as each transaction is recorded on an immutable ledger (Mansoor et al., 2024). The technology also provides real-time tracking of transactions, increasing transparency and allowing both senders and recipients to monitor the status of their funds. Qiu et al. (2019) add that blockchain can facilitate financial inclusion by providing access to remittance services for individuals in remote or underserved areas who may not have access to traditional banking infrastructure. Overall, blockchain integration can streamline the remittance process, making it more efficient, cost-effective, accessible, and secure for users.

Furthermore, BCT offers a pathway to decentralise remittances in banking systems by eliminating the need for traditional intermediaries, thereby fostering peer-to-peer transactions (Coutinho et al., 2023). By leveraging a distributed ledger, blockchain can create a transparent and immutable record of each remittance, reducing the risk of fraud and increasing security. Moreover, smart contracts and self-executing agreements embedded in blockchain can automate compliance checks, enhance efficiency, and reduce manual interventions (Rella, 2019). Smart contracts can also automate the execution of transactions and significantly speed up processing times and lower

transaction costs. Also, BCT's inherent cross-border capabilities can bypass the limitations of traditional banking, enabling faster and more efficient money transfers, particularly for those in underserved or remote areas (Sood & Simon, 2019). This shift towards decentralised remittances has the potential to empower individuals and promote financial inclusion on a global scale.

Notwithstanding its popularity, the integration of BCT into the global remittance system is still very much a work in progress. From the United States' perspective, the underwhelming application of BCT, particularly in the fintech and financial services industry, is attributed to a myriad of factors, chief among them including technical limitations, regulatory framework, and energy consumption (Malavolta et al., 2019; Soufaih, 2021). According to the scholars, "blockchain applications have not been deployed at scale due to many technical limitations." Common examples of these technical issues include inadequately skilled professionals, data security and privacy concerns, interoperability issues, and network congestion. At the same time, the lack of clear legal and regulatory frameworks has been shown to cause uncertainties, thus hindering the acquisition of blockchain applications. Malavolta et al. (2019) further contend that "blockchain operations consume significant amounts of energy, raising environmental concerns."

European Union (EU) and countries like Japan, Singapore, and Switzerland have adapted their regulatory frameworks to keep pace with the rapidly evolving BCT (Karisma & Pardis, 2023; Reeves & O'grady, 2022; Tauda et al., 2023; Yadav et al., 2022). For instance, Japan is open to cryptocurrency use, recognising it as a type of money (Mahajan & Nanda, 2024). However, despite its progressive stance on blockchain, Japan faces several challenges in integrating the technology into its financial services as Weerawarna et al. (2023) state, interoperability, security, and public perception are major setbacks. Integrating blockchain with existing financial systems and seamless operations is a significant concern. Even though blockchain platforms are celebrated for their inherent security features, Weerawarna et al. (2023) claim that vulnerabilities in smart contracts and off-chain components can pose risks. Additionally, low public trust and misunderstandings about the technology have been shown to impede its successful implementation.

In Africa, as the continent makes significant strides towards a digital economy, countries show varying levels of readiness for adopting BCT in the banking and financial services industries. As Thegeya (2023) suggests, "There has been a rapid rise of cryptocurrency trade on the continent,

with digital currencies having become alternative forms of payments to local currencies." In addition, "Nigeria, South Africa, and Mauritius are in the development stage of introducing central bank digital currencies (CBDCs)," with several other countries in the piloting stage (Thegeya, 2023). Nigeria, Kenya, and South Africa, Africa's leading innovators in BCT, account for 80% of blockchain innovations, mostly in the finance, insurance, internet and telecommunications, and healthcare sectors (Thegeya, 2023; Wilhelm, 2019).

The challenges associated with BCT integration and use in Nigeria's banking sector have long been established. Yunusa and Ocheni's (2024) study revealed a lack of reliable power supply, lack of technological know-how, lack of data protection, and security concerns as the leading barriers to blockchain adoption. According to Shalender et al. (2023), "lack of regulations, financial constraints, rigid work culture, and inadequate infrastructure are the primary inhibitors of Nigeria's financial domain's readiness to adopt BCT." Oni and Oyedokun (2023) offer valuable insights into the discussion, pointing out that the absence of a central regulatory authority is the main challenge of cryptocurrency integration into Nigeria's payment system. As documented by the mentioned scholars above, "the absence of a central authority is the primary cause of crypto-related issues such as tax evasion, terrorism financing, money laundering, and cyber blackmail, which often taint the integrity of the country's financial system."

BCT integration for South Africa's remittance system is dubbed a work in progress with several developments. From 2020 to 2021, South Africa saw a 1200% increase in crypto adoption, with a portion of this being for remittances (Barrett & Van Belle, 2022; Liu et al., 2022). However, the progress is affected by several factors that Adams et al. (2023) categorise into three themes – "technological, organisational, and environmental (TOE)." Motivators of blockchain adoption include simplification of payment systems, decentralisation, collaboration, and competition. However, the common challenges identified were poor public perception, lack of regulations, limited technical skills, costs of adoption, privacy concerns, energy use, scalability issues, and insufficient stakeholder support. These factors have been echoed by the likes of Barrett and Van Belle (2022), Mafike and Mawela (2022), and Cassim (2023).

The readiness of Tanzania's financial services industry for blockchain adoption has also been examined. According to Hamidu et al. (2023), the state of cryptocurrency adoption in the country's

financial ecosystem is below expectations. The low rate and intention of adopting crypto can largely be attributed to ICT-related factors. A similar view was shared by Dickson and Mahwera (2022), who concluded that the "overall cryptocurrency adoption readiness was low" mostly because of negative attitudes toward the perceived usefulness of the innovation. Other challenges associated with the incorporation of digital currency in Tanzania's payment system include "the anonymity and decentralised features of BCT, which may support multiple illegalities such as money laundering and human trafficking" (Kidunda & Pastory, 2021). The general notion is that effort is needed to address factors limiting the implementation of blockchain in Tanzania.

In Kenya, BCT is increasingly being adopted across various sectors, with the key one being the financial services industry. Mwangi (2023) suggests that "Kenyan blockchain start-ups raised KES 3.5 billion in new funding, pointing to the sustained growth of the country's crypto market." He further points out that start-ups like Kotani Pay now leverage blockchain applications to facilitate cross-border payments. According to Ekwealor (2019), AZA Finance (formerly BitPesa), Africa's largest non-bank financial institution "specialising in web-based payments and remittances into and out of Africa," uses blockchain solutions to enable faster and cheaper remittances. Notwithstanding these advancements, Kenyan banks have yet to fully catch up to the BCT trend.

Aketch et al. (2021) cite that the BCT adoption is gaining momentum, more so the crypto wing. Yet, according to Ngila (2021) and Ouma and Ndede (2020), no commercial bank in Kenya has fully embraced BCT for specific applications such as cross-border payments. Wambui and Thomas (2024) argue, "unclear legal status impacts banks' willingness to adopt blockchain technology, and this could be due to the lack of government regulation on blockchain and cryptocurrencies, which indicates a clear need for the regulation." However, Equity Bank, KCB Bank, and Co-operative Bank, among others, are exploring BCT for cross-border payments and remittances, aiming to reduce transaction costs, enhance security and transparency, and improve efficiency (Kimoni, 2023; Ngila, 2021). Recent years have seen the race by the Central Bank of Kenya to become the first to adopt CBDC but its effort "has been tampered by implementation challenges (CBK, 2023), which begs the question of whether Kenya's banking system is ready for blockchain adoption.

The available body of empirical literature is of the opinion that Kenya's financial system is not ready, but it is gradually moving towards readiness for BCT. For instance, on the perception of the

technology in developing countries, Oates et al. (2024) note that "blockchain, particularly bitcoin, is associated with the dark web, black market, and other illicit activities like trading drugs and weapons, illegal mining, theft, money laundering, terrorism, and illegal gambling." The negative connotation can be attributed to the lack of comprehensive regulations specifically tailored for blockchain (Kamau, 2022). Other critical success factors include the need to upgrade existing infrastructure to accommodate blockchain applications, build trust among customers and other stakeholders, and ensure seamless integration with existing banking systems and other financial technologies (Mishra et al., 2023; Soutter et al., 2019; Sydow et al., 2020).

Additionally, according to Jena (2022), the adoption of BCT within the banking sector is highly variable, and this variability is driven by a complex interplay of factors. Among these factors, the size of the bank has been singled out as a key determinant of the successful integration of the technology. For instance, Kawasmi et al. (2019) explain that larger banks typically have more financial resources and established infrastructure to implement and sustain blockchain systems. Unlike smaller banks, larger banks have the capability to invest in new technologies, hire specialised personnel, invest in research and design (R&D), have robust risk management frameworks, and more. However, in their inquiry to determine the moderating role of firm size, Prisco et al. (2024) observed that "SMEs are more efficient in adopting blockchain compared to large firms." This is because smaller firms benefit from their agility and willingness to innovate. This study also sought to determine the moderating effect of firm size on commercial banks' readiness for blockchain adoption in their remittance systems.

1.1.1 Readiness for Blockchain Adoption

Blockchain technology (BCT) "has garnered significant attention for its potential to revolutionise key sectors, including finance and financial services" (Lustenberger et al., 2021). However, the readiness for blockchain adoption and use involves several critical factors that organisations must address. Firstly, according to Sanda et al. (2022) and Lustenberger et al. (2021), technical readiness is paramount. This involves having the necessary infrastructure, i.e., robust information technology (IT) systems and skilled professionals to implement and keep blockchain applications running effectively. At the same time, Sanda et al. (2022) stress the importance of making sure blockchain solutions are compatible with or can integrate seamlessly with existing systems. Other

aspects of technical readiness, as proposed by Drescher (2017) and Schmitt et al. (2019), include complexity (i.e., understanding of the functionality of an innovation) and trialability.

Secondly, regulatory readiness is another crucial factor in meeting blockchain adoption needs. Sanda et al. (2022) are of the view that "the legal and regulatory landscape for blockchain is still evolving," forcing organisations intending to introduce blockchain into their operations to navigate a complex web of policies, directives, laws, regulations, and judicial interpretations. Depending on the appetite for innovation, policies can be either restrictive or permissive. Leaning too far on either end of this spectrum can yield negative results: stagnation if the policy is too restrictive, or harmful compromise if it is too permissive" (Balasubramanian et al., 2021; Kimani et al., 2020). This implies that the legal and regulatory frameworks must evolve in parallel with the advancements of blockchain applications to facilitate successful adoption.

Thirdly, organisational readiness is a crucial determinant of blockchain adoption. Organizational readiness is a broad concept encompassing a wide range of factors such as resource (financial, technological, and human) availability, the culture in place, organizational structures and processes, size, top management support, age, and innovation propensity (Clohessy & Acton, 2019; Lustenberger et al., 2021; Post et al., 2018; Rauchs et al., 2019). Lastly, ecosystem readiness is equally important. This is because, as Lustenberger et al. (2021) suggest, "blockchain adoption often requires collaboration among multiple stakeholders – partners, suppliers, and regulatory bodies." Stressing the importance of stakeholder collaboration, Barnes III and Xiao (2019) claim, "Often, innovations fail if coordination within the ecosystem is insufficient." It is worth pointing out that, as far as blockchain is concerned, because of its decentralised nature, collaboration usually spans a complex range of industries, organisations, and interests.

1.1.2 Remittance System in Kenya

Financial innovation has enabled Kenyans worldwide to conduct transactions through more convenient channels, with the particular example of remittances, which are money sent by an individual from a foreign land to their home country (CBK, 2021). Zika (2007) defines remittances as earnings sent by a migrant, most of whom relocate to a developed country, to their country of origin – mainly to their families, who reside in developing countries. Despite strides in financial

innovation, however, the Central Bank of Kenya (2020), when hosting the Afro-Asia Fintech Festival Nairobi Online City (AAFF), whose main theme was Fintech, People, and Ecosystems, revealed its main objective to be a collaboration between the private and public sector to scale up sustainable digital ecosystems that are inclusive for all.

The latest data shows that remittances for the year ended December 2024 surpassed CBK's forecast to hit a record USD 4.94 billion (KES 640.75 billion), representing an 18 per cent growth from the previous year (Alushula, 2025). The major regions contributing to this share were North America and Europe. This immense growth marks the significance of remittances to the country's economy as a source of foreign exchange, contributing 4.6 per cent to the GDP (Karashani, 2025). Kenya's remittances to GDP ratio remains the highest in the East African region. "Since 2015, remittances from abroad have remained the largest source of foreign cash flows into the country", which has since tremendously grown by 220.78 per cent in just a decade (Alushula, 2025). CBK (2021) points out that remittances offer a key source of foreign exchange while playing a pivotal role in the socio-economic development of recipient countries, specifically in Kenya.

MTOs like Western Union, WorldRemit, Wave, and Sendwave were the most preferred channels for remittances as they were prompt, easy to access, and convenient, ranking first cumulatively at 56%, followed by mobile money operators such as M-Pesa, which ranked second at 20 percent CBK, 2021). Banks ranked third at 16% as the preferred channel for remittances, and other forms of remittance, such as *hawala* and postal networks, took 8% (CBK, 2021). The main challenges faced by Kenyans in the diaspora were remittance costs at 33% and, specifically, "unfavourable exchange rates applied by service providers leading to high conversion costs; hidden charges and fees ranking at 20%; and other challenges such as slow interbank transfers" (CBK, 2021). A breakdown of the market capture of MTOs is given in Table 1.1. In addition, the World Bank reported that by the last quarter of 2015, online services were the most affordable in terms of costs at 5.57%, while commercial banks had the highest remittance costs at 11.12% (Salome, 2017).

Table 1.1: Most preferred MTOs by Kenyans in the Diaspora

Service Provider	Market Coverage (%)
World Remit	14%
Wave	9%
Sendwave	25%
Western Union	8%

Source: (Central Bank of Kenya)

1.1.3 Commercial Banks in Kenya

Kenya has a dynamic and rapidly evolving banking industry that plays a critical role in the country's economic development. The industry is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act, and the prudential guidelines issued by the CBK (Kori et al., 2020). According to Carletti et al. (2018), the CBK is the primary regulator of the banking industry; it formulates and implements monetary policies and fosters the liquidity, solvency, and proper functioning of the financial system. The Kenya Bankers Association (KBA) is the industry's leading advocacy group and an umbrella body of 46 financial institutions licensed and regulated by CBK (Allen et al., 2021). It reinforces a reputable and professional banking sector by lobbying for the interests of and addressing issues that affect its members.

The banking industry comprises financial institutions of all types. According to CBK's (2024) industry report, Kenya's banking sector comprises "39 Commercial Banks, 1 Mortgage Finance Company, 1 Mortgage Refinance Company, 10 Representative Offices of foreign banks, 14 Microfinance Banks (MFBs), 3 Credit Reference Bureaus (CRBs), 23 Money Remittance Providers (MRPs), 8 non-operating bank holding companies, 32 Digital Credit Providers (DCPs) and 74 foreign exchange (forex) bureaus." 37 of the 39 banking institutions are privately owned, while the Government of Kenya (GOK) had majority ownership in 2 institutions. "20 of the 37 privately owned banks are locally owned, while 17 are foreign-owned."

The CBK also classifies banks into three peer groups (known as tiers) using a weighted composite index (Allen et al., 2021). It consists of net assets, total deposits, capital and reserves, deposit accounts, and loan accounts (CBK, 2024). This means that large (or Tier 1) banks have an index

of 5%, Tier 2 (medium) banks have between 1-5% index, and Tier 3 (small) banks have a less than 1% index. According to CBK, the Tier 1 group comprises nine commercial banks with a combined market share of 76.6%. They include Equity Bank, Kenya Commercial Bank, Co-operative Bank, NCBA, Diamond Trust Bank, Absa, I&M Bank, Standard Chartered, Stanbic Bank, and Prime Bank. Tier 2 comprises eight banks, which control 15% of the market, and Tier 3 banks, which are 23 in number, control only 8.4% of the market.

1.2 Statement of the Problem

Kenya's remittance market looks promising, with remittances inflow expected to hit USD 5.19 billion by 2028. The importance of remittances to the country's GDP is expected to become even more pronounced. Yet, the current remittance system, which predominantly relies on traditional methods and faces numerous challenges (high fees and charges, delayed transfer time, security, privacy, and service accessibility). Although the government, through the CBK, aims to create a favourable regulatory environment for remittances, there is a need to do more. Embracing ultra-modern technologies such as blockchain could be the solution to making remittance transfers more accessible, inclusive, cheaper, faster, and more secure. Additionally, given that banks are a key channel for remittances and still bear the highest costs to customers, as demonstrated earlier, it is imperative for Kenyan commercial banks to be forward-thinking in increasing their competitive edge for improved customer retention and wider market reach through innovation.

Mishra et al. (2023) assert that "60% of financial institutions are willing to use blockchain for internal money transfers." Yet, so far, no commercial bank in Kenya has completely embraced blockchain and its associated technologies. Kawasmi et al. (2019) show empirical evidence of the benefits that can be derived from BCT's applications in banking for cross-border transactions. The technology has the ability to enable faster transactions, lower transaction costs, enhanced security, transparency, and financial inclusion. Therefore, BCT offers Kenyan banks the opportunity to compete with international MTOs, as stated by CBK (2021). This is because the remittance market in the country is dominated by MTOs, who control 56% of the market, with banks controlling only 16%. They also rank third among the most preferred channels for remittances.

Notwithstanding its numerous benefits, the readiness for the adoption of the technology among commercial banks for remittance services is crucial. Since banks have yet to adopt BCT, assessing their readiness for the technology is imperative for several reasons: smooth implementation, risk mitigation, cost efficiency, infrastructure capabilities, and strategic alignment (Balasubramanian et al., 2021; Lustenberger et al., 2021; Ruangkanjanases et al., 2022). Yet, after analysing available empirical literature on the subject matter, certain unresolved problems exist as far as geographical scope, contextual, conceptual, and methodological gaps are concerned.

For instance, the existing body of scholarly work fails to focus particularly on blockchain in the context of remittance systems in Kenya's banking sector (Aketch et al., 2021; Ngila, 2021; Oates et al., 2024; Ouma & Ndede, 2020; Wambui & Thomas, 2024a). Even then, none of these studies offers valuable insights into the readiness among commercial banks for BCT for their remittance systems. Moreover, the moderating effect of firm size remains debatable, as highlighted by Kawasmi et al. (2019) and Prisco et al. (2024). In other words, there was insufficient evidence in the literature contributing to the body of work on the adoption framework.

Filling the above-mentioned empirical gaps by conducting research on banks' readiness for blockchain adoption was crucial for several reasons. First, it would provide data-driven insights that would help banks make informed decisions about BCT; second, help identify potential risks and challenges; third, help banks gain a sustainable competitive advantage; and lastly, provide a means for collaboration among banks. That said, this study aimed to address these gaps by examining the readiness of commercial banks in Kenya for BCT adoption from the aspects of organisational readiness, technical readiness, and regulatory readiness while examining the moderating effect of firm size on these aspects.

1.3 Objectives of the Study

The study was guided by one main objective and four specific objectives, as shown below:

1.3.1 General Objective

The main objective of the study was to determine the readiness of Kenyan commercial banks for blockchain technology adoption in remittance systems and the moderating effect of firm size.

1.3.2 Specific Objectives

The specific objectives of the study were as follows:

i. To determine the organizational readiness of commercial banks in Kenya towards blockchain adoption in remittance systems.
ii. To examine the technical readiness of commercial banks in Kenya towards blockchain adoption in remittance systems.
iii. To investigate the regulatory readiness of commercial banks in Kenya towards blockchain adoption in remittance systems.
iv. To determine the moderating effect of firm size on commercial banks' readiness towards blockchain adoption in remittance systems.

1.4 Research Questions

The study sought to answer the following research questions:

i. To what extent are commercial banks in Kenya organizationally ready for blockchain adoption in remittance systems?
ii. How technically ready are commercial banks in Kenya for blockchain adoption in remittance systems?
v. What is the status of the regulatory readiness of commercial banks in Kenya for blockchain adoption in remittance systems?
vi. Does firm size moderate commercial banks' readiness toward blockchain adoption in remittance systems?

1.5 Scope of the Study

The study aimed to analyse the readiness of commercial banks' remittance systems for the adoption of BCT. The independent variables for the study constituted organizational readiness, technical readiness, and regulatory readiness, while the dependent variable was blockchain adoption for remittance systems. The contextual and geographical scopes of the study were commercial banks in Kenya. The study was conducted and completed in March 2025.

1.6 Significance of the study

The study is beneficial to the following stakeholders:

1.6.1 Policymakers and Regulators

The findings and recommendations of this study give direction to policymakers such as The Office of the National Treasury and Planning and the regulator CBK, given the ongoing challenges facing the CBDC. This also contributes to the body of literature around conversations on the relevance and efficiency of the technology in order to capitalize on its potential, including how the technology can be leveraged to improve remittance transfers, hence leading to GDP growth. Like the Blockchain Association of Kenya (BAK) is currently doing, the study can contribute to a push towards discussions around the adoption of the technology.

1.6.2 Commercial Banks

The study contributes informative insights for stakeholders in Kenyan remittance operations. It provides a description of the potential that BCT offers in terms of efficiency and transparency. The outcome of the study challenges foresight in terms of building intellectual and infrastructural capacity in order to consider future implementation of BCT, which is the case for other remittance operators around the globe. Also, given the challenges that the CBDC faces, it is of interest to remittance transfer operators to consider their readiness and capability to adopt the technology since preliminary discussions indicate blockchain as the underlying technology for the CBDC.

1.6.3 Academicians and Researchers

The study highlights the benefits of a new decentralized system of remittance operations, which can unlock further potential in GDP growth and give insight into further study and research in the areas of blockchain technology and cryptocurrency and the current state of the technological and regulatory landscapes in Kenya as the world further develops into the age of FinTech 2.0.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The study aimed to determine the readiness of remittance systems in Kenyan commercial banks for the adoption of blockchain technology. This chapter provides a review and analysis of relevant scholarly publications on the topic. It also defines the study's theoretical framework and conceptual framework, as well as how variables were operationalised.

2.2 Theoretical Framework

The study's theoretical framework consisted of two theories: contingency theory as the anchoring theory and the technological acceptance model as the supporting theory. These theories are discussed in detail below:

2.2.1 Contingency Theory

The contingency theory is an organisational theory attributed to the scholarly works of Robert Black and Jane Muton. It postulates that "there is no best way to manage or lead an organisation; rather, the optimal course of action is contingent upon the internal and external situation" (Coombs & Tachkova, 2022). The theory was developed out of and to address the inefficiencies of Taylor's scientific management and Weber's bureaucracy theories, which failed to account for various aspects of the environment (contingency factors) in management style and organisational structure (Coombs & Tachkova, 2022; Naidu et al., 2023). Therefore, according to Naidu et al. (2023), this theory stresses the importance of flexibility and adaptability, citing that management strategies should be tailored to specific circumstances.

Contingency theory comprises three key concepts – situational variables, leadership styles, and decision-making (Childs et al., 2022; Safari & Saleh, 2020). The element of situational variables encompasses various situational factors (i.e., market conditions, competition, technological landscape, organisational size, and so on) and how they influence organisational effectiveness (Coombs & Tachkova, 2022). The theory also suggests that different leadership styles are suited

for different situations—for example, while a relationship-oriented leadership style is suitable for a dynamic organisational setting, a task-oriented leadership style is effective for a structured environment (Childs et al., 2022). Lastly, effective decision-making often varies depending on the context, the nature of the task and the level of uncertainty.

While widely influential, contingency theory is not without its limitations. A primary critique is its inherent complexity in operationalising all relevant contingencies in empirical research (Mark & Erude, 2023). Identifying and accurately measuring a myriad of internal and external factors, and then determining their optimal "fit" with various organisational structures and practices, can be challenging. This often leads to oversimplification of models, potentially overlooking crucial interactions or the dynamic nature of these contingencies (Magaji et al., 2018). Furthermore, the theory is criticised for being deterministic, implying that firms must adapt to their environment or face inefficiency. This downplays the role of managerial choice, strategic intent, and the ability of organisations to proactively shape their environments (Mark & Erude, 2023). It also sometimes lacks predictive power beyond stating that "it depends," making it challenging to prescribe specific actions in novel situations.

Despite these shortcomings, contingency theory remains highly relevant to technology adoption literature. Since it posits that organisational effectiveness is contingent upon internal and external environmental factors, it is relevant to the adoption of BCT. According to Mishra et al. (2023), Sanda et al. (2022), and Lustenberger et al. (2021), the successful adoption of BCT is influenced by a variety of issues that can be grouped into environmental, technical, organisational, and ecosystem factors. Therefore, in the context of remittance systems' readiness for blockchain adoption, contingency theory holds relevance. In other words, the readiness of banks to integrate BCT into their remittance systems effectively depends on several contingent factors, as pointed out above. That said, as the anchoring theory, the principles of contingency theory were applied to assess how technical factors, organisational factors, and regulatory factors influence the readiness of remittance systems to adopt BCT.

2.2.2 Technology Acceptance Model

The technology acceptance model (TAM) is "an information systems theory developed by Fred Davis in 1989" (Shehzad et al., 2022). The theory claims that "the adoption of technology is influenced by two primary factors – perceived usefulness (U) and perceived ease of use (E)" (Ursavaş, 2022). In this case, "U is the extent to which users believe using a particular technology will enhance their job performance, whereas E is the belief that using the technology is free from effort" (Ursavaş, 2022). These two factors influence the attitude (A) towards the technology, which then informs their behavioural intention (BI), which then determines the likelihood of the person using the technology (Ursavaş, 2022). As further pointed out by Shehzad et al. (2022), "Both U and E are influenced by external variables such as social influence, facilitating conditions, and individual differences."

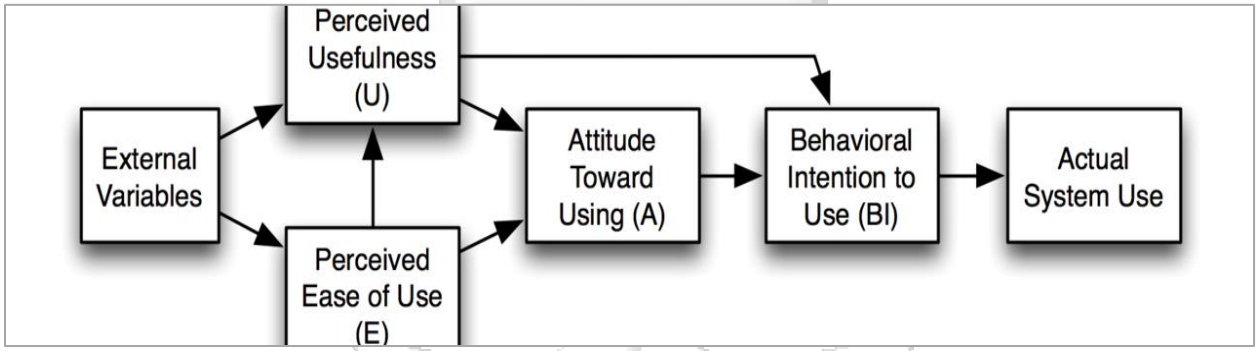

Figure 2. 1: Technology Acceptance Model

Despite being a widely used theoretical framework, TAM has its share of limitations. A key concern is its cognitive focus and limited consideration of external, social, and contextual factors that influence the acceptance of technology (Liu & Ye, 2021). It primarily emphasises individual perceptions of U and E, often underplaying the impact of corporate culture, peer influence, leadership support, facilitating conditions, and external pressures that can drive or hinder adoption (Liu & Ye, 2021). Furthermore, its simplicity leads to a potentially reductionist view of a multifaceted phenomenon, since it often overlooks critical variables unique to technologies or users (Çolak & Kağnicioğlu, 2022). Finally, some scholars contend that TAM is more descriptive than prescriptive, offering insights into why users accept technology but providing less guidance on how to design or implement technologies to ensure acceptance effectively.

Nevertheless, TAM remains a valuable theoretical framework, especially for technology-related research. Therefore, in this study, it helped model a framework for users to accept and use new technology, as illustrated in Figure 2.1. In the context of the study, the theory is pertinent in exploring the readiness of remittance systems for blockchain technology. In other words, users of remittance systems must perceive blockchain applications as useful and easy to use, resulting in the intention to adopt and use the innovation. Taherdoost (2022) and Çolak and Kağnicioğlu (2022) allude that if stakeholders believe that blockchain will significantly enhance transactions in terms of speed, cost, security, and reliability, they are more likely to embrace it. At the same time, the technology must be user-friendly for both the remittance service providers and end-users to boost its acceptability.

Moreover, it is to be noted that a variety of external variables influence blockchain technology's U and E. For example, a supportive regulatory environment and the availability of the necessary IT infrastructure can facilitate its acceptance and adoption (Gan & Lau, 2024). In the context of the study, the TAM model provided a framework for examining the degree to which technical, organisational, and regulatory readiness influences the adoption of BCT in remittance systems in commercial banks.

2.3 Empirical Review

In this section, relevant peer-reviewed literature on the topic is reviewed, analysed, and critiqued. The section is presented according to the specific objectives of the study.

2.3.1 Organizational Readiness and Blockchain Adoption

An empirical study by Malik et al. (2021) offers valuable insights into the topic. It sheds light on "the factors influencing the adoption of blockchain solutions in Australia using the TOE framework". After reviewing the literature and interviewing experts, Malik et al. (2021) observed that in the "organizational context, innovativeness, organizational learning capability, and top management support were crucial for successful BCT adoption." Elsewhere in Malaysia, Wong et al. (2020) sought "to determine factors of BCT adoption among SMEs using the TOE framework", as Malik et al. (2021). A seven-point Likert scale was disseminated to 203 respondents and analysed using the PLS-ANN approach. According to the findings, in the context of organizational

factors, cost and relative advantage were important in blockchain adoption. However, contrary to Malik et al.'s (2021) view, Wong et al. (2020) discovered that upper management support was insignificant in the adoption of BCT. Although insightful, the studies above are not without gaps. A geographical scope gap has been noted whereby none of the studies were based in Kenya, and none of them focused on commercial banks' remittance systems, denoting a contextual gap.

Regionally, Orji et al. (2020) looked into "factors influencing the adoption of blockchain in Nigeria's freight logistics industry." Using the TOE framework, the researchers used a multi-case research approach whereby expert interviews and literature reviews were used. Results suggest that the freight logistics sector faces more technological (level of infrastructure, trialability, perceived benefits, complexities, compatibility, security, privacy) and institutional pressures (government policy and support, competition, market turbulence, shareholder pressure) than organizational pressures (resource availability, top management support, firm size, HR capabilities, and perceived costs) when seeking to adopt BCT. From South Africa's perspective, Dowelani et al. (2022) investigated "factors influencing BCT adoption in the clearing and settlement sector." Data was collected from stakeholders in the sector with a focus on the country's capital market using semi-structured interviews. Results suggest that the "people, organisation, technology, industry, and country (POTIC) factors" are important in BCT adoption. Additional factors include "trust, load shedding, unemployment, infrastructure, useful life, and educational campaigns." Although ground-breaking, these studies are not without gaps. A geographical scope gap has been noted whereby none of the studies was based in Kenya; neither of them focused on commercial banks' remittance systems, denoting a contextual gap, and a methodological gap was identified whereby both of the studies were based on qualitative data and methods.

In Kenya, the effect of organisational factors on BCT adoption has been highlighted by Wangui (2018) and Kanuku et al. (2020). In her research, Wangui (2018) surveyed 210 procurement professionals from the supply chain industry using questionnaires and adopted inferential statistics for data analysis. She observed that the popularity of crypto may have affected respondents' awareness of BCT applications in the supply chain. Nonetheless, there was a positive perception towards the technology, with users citing its usefulness in the "cost efficiency, provenance, traceability, time efficiency, and order fulfilment of supply chain management." Focusing on the insurance sector and using both qualitative and quantitative factors, Kanuku et al. (2020) identified

several factors that were grouped into “four categories – motivational, internal barriers, external barriers, and ecosystem barriers.” From an organizational factors angle, the top internal barriers were mistrust, lack of cooperation, security issues, lack of tools, and skill gaps. On the other hand, motivating factors included the perceived benefits of BCT. The studies above contribute immensely to the topic. However, they are not without limitations. Neither of them focused on commercial banks’ remittance systems, denoting a contextual gap, and organizational factors were not well defined, denoting a conceptual gap.

2.3.2 Technical Readiness and Blockchain Adoption

Research by Janssen et al. (2020) offers valuable insights into the interplay between technical factors and the adoption of BCT. The researchers examined how institutional, market, and technical factors influence BCT adoption using a systematic review of the literature approach. In particular, the technical factors examined were “information exchange and transactions, distributed ledger, and shared infrastructure.” Findings suggest that these factors influence BCT adoption. Using the “Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) standards for a systematic review of the literature,” Al-Ashmori et al. (2022) identified 18 factors influencing BCT adoption. Among these factors, security, compatibility, complexity, facilitating conditions, and effort expectancy were recognised as technical factors, and they all had a strong influence on the adoption of the technology. For these studies, geographical scope gap has been noted whereby none of the studies was based in Kenya; neither of them focused on commercial banks’ remittance systems denoting a contextual gap and; a methodological gap was identified whereby Janssen et al.'s (2020) study was based on qualitative data and methods.

Elsewhere in Ghana, Asante Boakye et al. (2023) sought to examine factors influencing SMEs’ BCT implementation using the TOE framework. Data was collected from 214 registered SME members and analysed using PLS-ANN and PLS-SEM approaches. Findings show that “competitive pressure, market dynamics, and SME owner/manager support had no significant influence on BCT adoption; on the other hand, relative advantage, cost, and complexity had significant influence.” In Ethiopia, Legesse et al. (2024) used a similar approach as Asante Boakye et al. (2023) to analyse determinants of BCT adoption in national quality infrastructure. Findings reveal that “technological compatibility, perceived usefulness, and upper management support as

important determinants of the technology." Although based in Africa, evidence from the studies cannot be generalized to Kenya's commercial banking system because of country-specific differences. Besides geographical scope limitations, both studies lacked remittance systems for commercial banks in the context, highlighting the need for further research in this empirical field.

In Kenya, Kosgei (2020) conducted a study to determine the readiness for BCT in the local horticulture industry. The researcher adopted a case study focusing on the urban horticulture supply chain. In particular, the researcher assessed environmental readiness (regulations and policies), technical readiness (infrastructure, affordability, and skills), and usage readiness (individual, business, and government). Both online and phone interviews were conducted with actors along the supply chain, and data were analysed using model testing and inferential statistics. Kosgei (2020) observed that "blockchain adoption was perceived by actors to be high; however, regulations, suitable infrastructure, skills, and usage were still at conceptual stages." This suggests that the level of readiness for BCT adoption is still low. The study is instrumental in understanding Kenya's readiness for blockchain. However, since it focuses on the horticulture industry, findings and conclusions from this study cannot be generalized to commercial banks' readiness for blockchain for their remittance systems.

2.3.3 Regulatory Readiness and Blockchain Adoption

Li et al. (2022) contributed to the regulatory readiness and BCT adoption aspect by exploring "the factors influencing its adoption in China's construction industry." The study was based on the TOE framework and data collected from 244 construction professionals. Data gathered was analysed using PLS-SEM, which revealed that "compatibility, top management support, relative advantage, regulatory support, cost, competitive pressure, organizational readiness, and firm size significantly influence blockchain adoption." This result is consistent with those of Malik et al. (2021), Wong et al. (2020), and Asante Boakye et al. (2023), as highlighted above. According to Li et al. (2022), regulatory support through policies and legislation creates an enabling environment for BCT adoption. However, as the researchers further point out, China's government has yet to create a fully supportive regulatory framework for the integration of BCT. These studies are not without empirical gaps. A geographical scope gap has been noted whereby none of the studies were based

in Kenya, while none of them focused on commercial banks' remittance systems, denoting a contextual gap.

Regionally, Mazorodze et al. (2022) employed a mixed-method approach to examine the regulatory framework in facilitating the adoption and use of crypto in Zimbabwe. Quantitative data was collected on the adoption and utilization of digital currencies, whereas qualitative data was collected on the best practices for regulating cryptos. According to the researchers, "the major factors driving the adoption include cross-border remittances and payments, while factors working against adoption include lack of understanding and legal recourse for dispute resolution." In other words, Zimbabwe was not regulatorily ready for cryptocurrency adoption and use despite the high interest in digital currencies. This sentiment was shared by the likes of Orji et al. (2020) and Dowelani et al. (2022) from Nigeria and South Africa's perspectives, respectively. However, geographical, contextual, and conceptual gaps are apparent in Mazorodze et al.'s (2022) study. It was based in Zimbabwe, lacked clear context, and focused on crypto adoption instead of blockchain as the outcome variable.

In Kenya, the nexus between regulatory factors and BCT adoption was studied by Waihenya (2020), Kanuku et al. (2020), and Munyua (2021). Waihenya (2020) attempted to decode Kenya's crypto regulation and discovered that the country is grappling with regulating crypto since these digital currencies do not fall within the CBK and Capital Markets Authority (CMA) set of regulated activities. In other words, a substantial gap exists in Kenya's regulatory environment to facilitate crypto adoption and use. Adopting a benchmarking approach, Munyua (2021) demonstrates that Kenya's laws, regulations, and policies do not recognize virtual currencies, which, to a large extent, remain heavily unregulated. From a regulatory perspective, Kanuku et al. (2020) observed the lack of a legal ecosystem to support smart contracts as the biggest barrier. These findings point towards a common theme – Kenya's regulatory environment is not ready for the adoption and use of BCT. However, since the studies lacked clear context, their findings cannot be generalized to commercial banks' regulatory readiness for blockchain adoption in their remittance systems. Also, these studies relied on qualitative data and approaches, denoting a methodological gap and focused on crypto as the outcome variable instead of blockchain adoption.

2.3.4 Moderating Effect of Firm Size

Prisco et al. (2024) sought to examine the determinants of blockchain adoption among companies in Italy with a moderating effect on firm size. Using TAM and TPB as theoretical frameworks, data collected and analysed using the PLS-SEM method showed that "a significant predictor of intention to use blockchain is perceived behavioural control and perceived benefit significantly influenced perceived usefulness." However, contrary to conventional wisdom, the study observed that "SMEs are more efficient in adopting blockchain compared to large firms," which suggests that the moderating effect of firm size can be negligible when other factors, such as innovation propensity, are considered. According to Su et al. (2023), smaller firms are more likely to be earlier adopters than larger firms because of their "reduced bureaucratic structure, which facilitates reorganization and reconfiguration, proving an advantage in the digital environment." Although useful, these studies were not based in Kenya, did not focus on commercial banks, and organizational, technical, and regulatory factors were not captured as predictor variables.

Offering a different opinion, Clohessy and Acton (2019) argue that "large firms are more likely to adopt blockchain than SMEs." According to the study, large firms have an advantage over smaller firms because of their greater financial resources, access to expertise, and ability to absorb costs associated with implementing new technologies. Similarly, Cirera et al.'s (2022) research that looked into firm-level adoption of technologies in Kenya singled out firm size as a significant predictor of technological adoption. This is because larger enterprises have greater access to finances, have established firm capabilities (information, knowledge, and expertise), and have access to markets and competition than their smaller counterparts. Although ground-breaking, these studies are not without limitations. For instance, Kenya's geographical scope is not reflected in Clohessy and Acton's (2019) research. Both of the studies lack commercial banks as the context, whereas Cirera et al.'s (2022) research is conceptually limited in that it fails to particularly focus on blockchain adoption.

2.4 Summary of Literature and Research Gaps

Table 2.1 provides a summary of the literature reviewed in terms of their objectives, methodologies, and findings. It also highlights gaps in these scholarly materials and how the study addressed these gaps.

Table 2. 1: Summary of Literature and Research Gaps

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Malik et al. (2021)	"Factors affecting the organizational adoption of blockchain technology: extending the TOE framework in the Australian Context."	Quantitative: PLS-SEM	"Technological factors, organizational factors, and environmental factors play an important role in the adoption of BCT."	"Scope: the study was conducted in Australia Contextual: the focus of the study was on Australian securities exchange-listed firms."	"The study was conducted in Kenya with a focus on remittance system in commercial Banks."
Wong et al. (2020)	"Time to seize the digital evolution: Adoption of blockchain in operations and supply chain management among Malaysian SMEs."	Quantitative: questionnaire, PLS-ANN	"Cost, competitive pressure, complexity, and relative advantage significant affect BCT adoption. Market dynamics, regulatory support, and upper management support were insignificant"	"Contextual: the focus of the study was on SMEs Scope: conducted in Malaysia"	"The study was conducted in Kenya with a focus on remittance system in Banks."
Orji et al. (2020)	"Evaluating the factors that influence blockchain adoption in the freight logistics industry."	Qualitative: multi-case research approach.	"The freight logistics sector faces more technological and institutional factors than organizational factors"	"Scope: study was conducted in Nigeria Methodological: used a qualitative method. Contextual: focus was on logistics sector."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Dowelani et al. (2022)	"Factors influencing blockchain adoption in the South African clearing and settlement industry"	Qualitative: semi-structured interviews	"POTIC factors are important in BCT adoption. Other factors include trust, load shedding, unemployment, infrastructure, useful life, and educational campaigns"	"Scope: study was conducted in Nigeria Methodological: qualitative method. Contextual: focus was on logistics sector."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."
Wangui (2018)	"Perception of procurement professionals on the adoption of blockchain technologies and its impact on supply chain management in Kenya."	Quantitative: descriptive research design	"A strong positive relationship between cost efficiency, provenance, traceability, time efficiency, and order fulfilment as independent variables, and total supply chain efficiency as the dependent variable"	"Contextual: focus of was on supply chain Conceptual: organizational factors not well defined."	"The study was conducted in Kenya with the focus on remittance system in Banks."
Kanuku et al. (2020)	"Factors determining adoption of blockchain in the insurance industry: a case of Kenya"	Mixed method: both qualitative and quantitative	"Major determinants of BCT adoption include: motivational aspect, internal barriers, external barriers, and ecosystem barriers"	"Contextual: focus of was on insurance sector Conceptual: organizational factors not well defined."	"The study was conducted in Kenya with the focus on remittance system in Banks."
Al-Ashmori et al. (2022)	"Classifications of sustainable factors in blockchain adoption: a literature review and bibliometric analysis"	Qualitative: SRL	"Security, compatibility, complexity, facilitating conditions, and effort expectancy were technical factors that influenced BT adoption"	"Scope: study had no clear scope Methodological: used a qualitative method. Contextual: the study lacked clear context."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Janssen et al. (2020)	"A framework for analysing blockchain technology adoption: Integrating institutional, market and technical factors"	Qualitative: SRL	"Technical factors, i.e., information exchange and transactions, distributed ledger, and share infrastructure, influenced BT adoption"	"Scope: study had no clear scope Methodological: the used a qualitative method. Contextual: the study lacked clear context."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."
Asante Boakye et al. (2023)	"Seizing technological advancement; determinants of blockchain supply chain finance adoption in Ghanaian SMEs"	Quantitative: questionnaire, PLS-ANN, and PLS-SEM	"Relative advantage, cost, and complexity significantly influenced BT adoption but competitive pressure, market dynamics, and SME owner/manager support had no significant effect."	"Scope: study was conducted in Ghana Contextual: the focus of the study was on SME sector."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks."
Legesse et al. (2024)	"Exploring the influencing factors of blockchain technology adoption in national quality infrastructure: a Dual-Stage structural equation model and artificial neural network approach using TAM-TOE framework"	Quantitative: questionnaire, PLS-ANN, and PLS-SEM	"Technological compatibility, perceived usefulness, and upper management support are important determinants of blockchain"	"Scope: study was conducted in Ethiopia Contextual: the focus of the study was on national infrastructure."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks."
Kosgei (2020)	"Blockchain readiness assessment for domestic Horticulture traceability in Urban Kenya"	Quantitative: questionnaire, inferential statistics	"The future of BT was influenced by regulations, suitable infrastructure, skills, and usage, which were all in the conceptual stages."	"Contextual: the focus of the study was on horticulture sector."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks."

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Li et al. (2022)	"Factors influencing the adoption of blockchain in the construction industry: a hybrid approach using PLS-EM and fsQCA"	Quantitative: questionnaire, PLS-SEM, and fsQCA	"Compatibility, top management support, relative advantage, regulatory support, cost, competitive pressure, organizational readiness, and firm size significantly influence blockchain adoption."	"Scope: study was conducted in China Contextual: the focus of the study was on construction."	"The study was conducted in Kenya with the focus on remittance system in commercial Banks."
Mazorodze et al. (2022)	"Towards a regulatory framework for the adoption and use of cryptocurrencies in Zimbabwe"	Mixed method: both qualitative and quantitative	"Major factors driving the adoption include cross-border remittances and payments, while factors working against adoption include lack of understanding and legal recourse for dispute resolution"	"Scope: based in Zimbabwe Contextual: lacked clear context. Conceptual: crypto constituted outcome variable"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. The study measured BT adoption as the outcome variable."
Waihenya (2020)	"Decoding the dilemma of cryptocurrency regulation in Kenya"	Qualitative: literature review	"There exist substantial gaps in the law and regulatory environment in the country"	"Methodological: the used a qualitative method. Contextual: the study lacked clear context." Conceptual: crypto was the outcome variable	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Munyua (2021)	"The model of regulation for virtual currencies in Kenya"	Qualitative: literature review	"Laws, regulations, and policies do not recognize virtual currencies, of which to a large extent, remain heavily unregulated."	"Methodological: the used a qualitative method. Contextual: the study lacked clear context. Conceptual: crypto was the outcome variable"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."
Su et al. (2023)	"How market pressures and organizational readiness drive digital marketing adoption strategies' evolution in small and medium enterprises"	Qualitative: longitudinal study	"Market pressure and organizational readiness serve as boosters and enablers to drive the process together. Firm size moderates' adoption."	"Methodological: the used a qualitative method. Contextual: the study focused on SMEs. Conceptual: BCT adoption was not the outcome variable. Scope: research was not based in Kenya"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."
Prisco et al. (2024)	"Factors affecting blockchain adoption in Italian companies: the moderating role of firm size"	Quantitative: PLS-SEM	"A significant predictor of intention to use blockchain is perceived behavioural control. Moreover, benefit significantly influenced perceived usefulness. Finally, SMEs are more efficient in adopting blockchain compared to large firms"	"Contextual: the study lacked clear context. Scope: research was based in Italy"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks"

Researcher(s)	Topic	Methodology	Findings	Research Gaps	The focus of the Study
Clohessy and Acton (2019)	"Investigating the influence of organizational factors on blockchain adoption: An innovation theory perspective"	Qualitative: a comprehensive literature review	"Large firms are more likely to adopt blockchain than SMEs."	"Methodological: the used a qualitative method. Contextual: the study dd not focus on commercial banks. Conceptual: BCT adoption was not the outcome variable. Scope: research was based in Ireland"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks. Quantitative method was used."
Cirera et al. (2022)	"Firm-level Adoption of Technologies in Kenya"	Quantitative: Desk-top and descriptive	"Adoption of ICT tools, such as computer, Internet, and cloud computing for business purpose are low, but very heterogeneous and positively associated with firm size."	"Contextual: the study lacked clear context Conceptual: BCT adoption was not the outcome variable"	"The study was conducted in Kenya with the focus on remittance system in commercial Banks."

Source: ***(Researcher, 2025)***

2.5 Conceptual Framework

The study examined the readiness of commercial banks in Kenya to adopt financial remittance systems for blockchain technology. Therefore, remittance readiness constituted the independent variable, which was represented by organizational readiness, technical readiness, and regulatory readiness. Blockchain technology adoption in remittance systems constituted the dependent or outcome variable, whereas bank size constituted the moderating variable. The study's conceptual framework is shown in Figure 2.2 below.

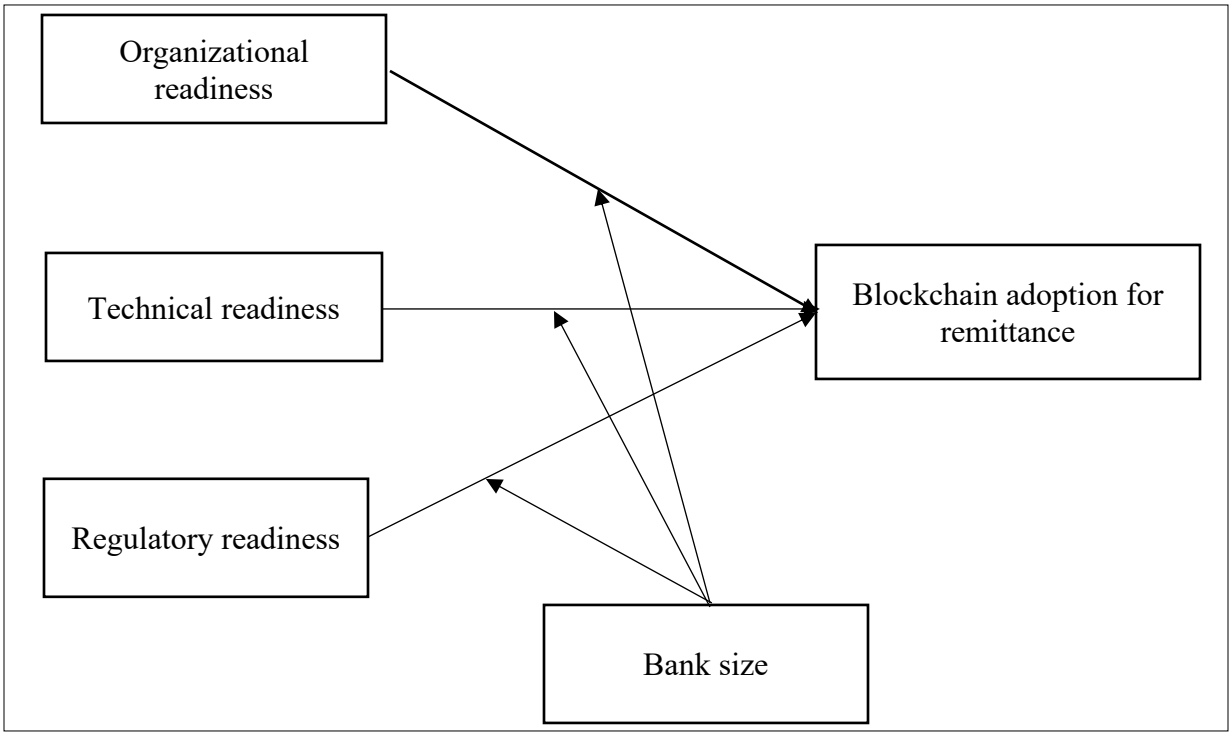

Figure 2. 2: Conceptual Framework

Source: ***(Researcher, 2025)***

2.6 Operationalization of Variables

Table 2.2 shows how the variables depicted in the conceptual framework above were operationalized.

Table 2. 2: Operationalization of Variables

Variable	Indicators	Scale	Source
Dependent variable			
BCT adoption in remittance systems	• Perceived usefulness • Perceived ease of use • Intention • Strategic alignment	5-point Likert scale	(Malik et al., 2021; Taherdoost, 2022)
Independent variables			
Organizational readiness	• Financial capability • Skill availability • Top management support • Organizational culture • Innovation propensity	5-point Likert scale	(Clohessy & Acton, 2019; Orji et al., 2020; Post et al., 2018)
Technical readiness	• IT infrastructure level • System compatibility • Complexity • Trialability • Security and privacy	5-point Likert scale	(Lustenberger et al., 2021; Sanda et al., 2022; Schmitt et al., 2019)
Regulatory readiness	• Regulatory clarity • Industry-specific regulations • Security/privacy regulations • Supportive policies	5-point Likert scale	(Kianieff, 2019; Sanda et al., 2022)
Moderating variable			
Bank Size	• Log of assets	Nominal	(Kirimi et al., 2022)

Source: ***(Researcher, 2025)***

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the methods, strategies, techniques, and tools used in conducting the study are described. The chapter defines the research philosophy and design the study adopted, the population that was targeted, sampling methods, data collection methods and tools, and data analysis techniques.

3.2 Research Philosophy

A research philosophy is the set of beliefs about the nature of reality and knowledge that underpin a research study. It influences how a researcher approaches a study, from the formulation of the questions to the methods used to gather and analyze data (Tamminen & Poucher, 2020). The common philosophies for social science research include positivism, interpretivism, pragmatism, and critical theory (Chege & Otieno, 2020; Saunders et al., 2019). These philosophies differ in terms of beliefs, values, and underlying assumptions. Positivism emphasizes objectivity, empirical evidence, and the scientific method. Interpretivism emphasizes subjective meaning and understanding, acknowledging that reality is socially constructed. Pragmatism focuses on practical consequences and problem-solving. It allows for the use of multiple methods and perspectives, depending on what works best for the research question. Critical theory aims to critique and challenge existing social structures.

Accordingly, the study adopted the philosophy of positivism. As described by Alharahsheh and Pius (2020), positivism is rooted in the belief that only trustworthy knowledge is obtained through objective observation and measurement. Therefore, a research study that follows the principles of positivism is characterised by bias-free data collection, measurement, and analysis processes. Chege and Otieno (2020) further note that “since positivism emphasizes objective measurement and reason, a research study that adheres to this school of thought produces objective findings free from human misinterpretation or prejudice.” In light of the above, a positivist research paradigm

was instrumental in objectively assessing the readiness of the remittance systems in commercial banks in Kenya to adopt blockchain technology.

3.3 Research Design

A research design is "a comprehensive plan or strategy outlining how a research study is conducted" (Chege & Otieno, 2020). It serves as a blueprint for how a researcher collects, analyses, and interprets data. Several research designs exist, including correlational, case study, descriptive, experimental, explanatory, exploratory, cross-sectional, quasi-experimental, and longitudinal (Bostley, 2019; Pawar, 2020). Bostley (2019) stresses the importance of choosing the right design, citing that, as a blueprint, "a research design defines sampling techniques, data collection methods, data analysis methods, and ethical considerations." For this reason, the study adopted a descriptive cross-sectional research design – a design used to describe a population or a phenomenon at a specific point in time.

A descriptive cross-sectional research design was appropriate for this study because it allowed for a comprehensive snapshot of the variables at a single point in time. This design helped identify organizational, technical, and regulatory readiness levels across multiple banks. It was selected to gain insights into the multifaceted impact of these readiness factors on blockchain adoption for remittance at the time of the study. By employing a cross-sectional approach, the study effectively captured the real-time state of readiness, current industry conditions, and regulatory frameworks affecting blockchain integration. Additionally, the inclusion of bank size as a moderating variable required diverse financial data, which the cross-sectional design facilitated by covering published reports. This research design provided a balanced and structured methodology that ensured a thorough examination of readiness factors while accounting for institutional differences in blockchain adoption.

3.4 Population and Sampling

The section below describes the target population and methods that were employed for sampling.

3.4.1 Target Population

A population in research is a group of individuals, items, entities, or objects with similar characteristics. “Population is the entire group a researcher intends to draw conclusions about” (Guest, 2015). Commercial banks in Kenya constituted the study’s unit of analysis, whereby employees working within these banks were targeted. According to CBK (2024), Kenya’s banking industry comprises 39 local private banks, foreign banks, and local public commercial banks.

3.4.2 Sampling

A two-tiered sampling approach was employed. In the first tier, a census method was applied to the individual banks, involving all 39 commercial banks in Kenya. In the second tier, the study targeted the representatives of the foreign exchange, IT, legal/regulatory compliance, and general management offices using a purposive sampling technique. This sampling technique was appropriate because employees from these functional departmental units are well informed about overall organizational functions, the status of the remittance systems, and the fundamentals of ICT solutions such as blockchain in their respective banks. Additionally, respondents in the foreign exchange department provided sufficient representation for branch operations of the bank since all remittances processed at the branch level eventually flow to this department for processing, and the foreign exchange staff typically deal directly with the CBK and the banking intermediaries for processing of these remittances. One respondent was picked from each department, resulting in a sample size of 156 representatives.

Recruiting multiple respondents per organization was intended to benefit the study from the diversity of opinions and perspectives, resulting in a more comprehensive survey. Responses from each organization were analysed and averaged to address any conflicting views.

3.5 Data Collection

The study utilized a survey approach to collect primary data from the identified respondents. Structured questionnaires were utilized as data collection instruments. These questionnaires were designed based on the research questions and derived from the conceptual framework and operationalization of variables. Data were measured using a five-point Likert scale where “1=no

extent, 2=to a small extent, 3=to a moderate extent, 4=to a large extent, and 5=to a very large extent" (Appendix 1).

The study leveraged both offline and online methods in distributing the questionnaires. Respondents had the option of either choosing a physical copy of the questionnaire or a link to an online version of the data collection tool. This was done to elicit a higher response rate.

3.6 Data Analysis

The completed questionnaires were collected, sorted, and checked for completion. They were then subjected to a cleaning process whereby questionnaires with incomplete responses or errors were eliminated. Questionnaires eligible for analysis were coded and entered into the Smart PLS 4 software for analysis. Descriptive and Inferential techniques were employed to analyse the data.

3.6.1 Descriptive Statistics

Descriptive statistics were utilized to summarize, organize, and present the main attributes of the data set in a logical and meaningful manner. In particular, the measures of central tendency, measures of frequency, and measures of variability were used to describe the characteristics of the responses.

3.6.2 Inferential Statistics

The Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to establish relationships between the variables and draw inferences about the population based on the sample data. This analytical technique was selected primarily due to the nature of the topic which involves multiple constructs (organizational, technical, and regulatory readiness, as well as blockchain adoption and bank size) and complex relationships, including direct effects and a moderating effect. As Hair et al. (2019) and Sarstedt et al. (2021) explain, unlike traditional regression models, PLS-SEM allows for a simultaneous assessment of direct, indirect, and moderating effects, making it ideal for complex relationships involving multiple constructs. Therefore, given the dynamic nature of blockchain adoption, where technological, organizational, and regulatory factors are

intertwined, PLS-SEM helped provide a holistic, data-driven approach that enhances explanatory power while offering deeper insights into financial sector innovation and digital transformation.

PLS-SEM is highly capable of estimating such complex models with multiple predictors and interactions simultaneously, providing path coefficients and significance levels for each hypothesised relationship. In this model, the path coefficients were examined to determine the strength and direction of the relationships between the latent variables. The R-squared value was assessed to determine the amount of variance in blockchain adoption explained by the readiness factors (i.e., organisational, technical, and regulatory readiness). Also, the interaction effect approach in PLS-SEM was used to examine the moderating effect of bank size.

Prior to PLS-SEM analysis, a crucial step involving rigorous assessment of the reliability and validity of the model was conducted. This assessment was performed to ensure that the constructs are consistently and accurately measured. Several key statistical tests were employed to achieve this, as recommended by Hair et al. (2019): Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) criterion. The Cronbach's Alpha metric was used to evaluate the internal consistency of each construct, ensuring that items within the same construct were closely related. CR was used to provide a more advanced assessment by factoring in the true score variance of the indicators.

The AVE test, validity check, was performed to ensure that each construct adequately captured variance from its indicators. An AVE threshold above 0.5 signifies that more than 50% of the variance in the indicators is explained by the latent construct, supporting convergent validity (Hair et al., 2019). Similarly, both the Fornell-Larcker Criterion and the HTMT Criterion assess discriminant validity. However, the Fornell-Larcker Criterion was employed to check whether each construct was sufficiently distinct from others, whereas the HTMT Criterion was employed to test whether constructs were too closely related.

3.7 Research Quality

The following measures were taken to uphold the quality of the study.

3.7.1 Research Reliability

Reliability is “the extent to which a study is likely to consistently produce the same results” (I. Ahmed & Ishtiaq, 2021). Reliability is crucial because it ensures findings are repeatable and not due to random chance or external factors. For this reason, the reliability of the study was enhanced using the following strategies as recommended by Ahmed and Ishtiaq (2021): providing clear and precise instructions to respondents, controlling possible external variables that could affect the results, standardizing procedures for collecting data to minimize variability, and administering a pilot test prior to the actual survey.

Prior to the main study, a pilot study involving participants from the Kenya Commercial Bank (KCB) was conducted to refine the research instrument. This is because of the moderating effect of bank size, which was being investigated in the study and the fact that at the time of conducting the study, KCB was the largest commercial bank in Kenya, with net assets totalling KES 1.4 billion (Central Bank of Kenya, 2024). Additionally, participants from each department were selected to ensure all independent variables would be well-refined where necessary. Cronbach's alpha was used to evaluate the internal consistency of the pilot data (Mohamad et al., 2015). The instrument was revised until a Cronbach's alpha coefficient within the acceptable range of 0.7 to 0.9 was achieved.

During the piloting phase, the questionnaire was refined to enhance its clarity, accuracy, and overall effectiveness. Feedback from pilot participants highlighted areas of ambiguity, leading to revisions of question wording and structure. Furthermore, the analysis of completion times helped optimise the questionnaire's length and flow, while scrutiny of unusual distributions in answers helped identify potential issues with internal consistency. To ensure the reliability of the instrument, a test-retest procedure was adopted, confirming the stability of responses over time. The acceptable internal consistency of all constructs was verified through Cronbach's alpha coefficients, the values of which are presented in Table 3.1.

Table 3. 1: Cronbach's alpha test

Construct	Cronbach's alpha	No. of items
BCT adoption in remittance systems	0.812	4
Organizational readiness	0.926	5
Technical readiness	0.890	6
Regulatory readiness	0.905	5

3.7.2 Research Validity

Validity in research is "the extent to which a study measures what it intends to measure" (Heale & Twycross, 2015). In other words, the research study's outcome reflects the phenomenon being studied rather than being influenced by other factors. This means that valid research accurately depicts the true feedback of the respondents. For this reason, construct, content, and face validity were ensured through the following strategies as proposed by Sugiarta et al. (2023): define variables and concepts more clearly and precisely for respondents to understand, conduct a preliminary study to test and refine the questionnaire, have the proposal and research instrument reviewed by the assigned supervisor and other experts for potential biases and errors.

Following the pilot test results and feedback from pilot respondents, the questionnaires underwent necessary adjustments to enhance their clarity, structure, and effectiveness in data collection. One key improvement involved refining the overall structure, ensuring that questions followed a logical sequence, making it easier for respondents to navigate the survey without confusion. Items were simplified to remove any ambiguous, overly technical, or complex wording to allow participants to better comprehend and respond with accuracy. The data collection methods were enhanced by incorporating clear instructions, optimized response formats, and adjustments to the length of the questionnaire to ensure completion rates remained high. These refinements strengthened the quality and consistency of responses and improved the overall effectiveness of the research instrument.

3.8 Ethical Considerations

The study observed the ethical standards governing scientific research. Approval was sought from the Strathmore University Institutional Scientific and Ethics Research Committee (SU-ISERC)

before commencing data collection. Subsequently, a research permit was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI). The principles of informed consent, confidentiality, and anonymity also applied. Willing respondents were furnished with a copy of the information sheet and informed consent form to ensure full disclosure, understanding, and voluntariness. Confidentiality was guaranteed by securing the data collected, and the anonymity of respondents was maintained by refraining from collecting personally identifiable information.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

The study sought to determine Kenya's commercial banks' readiness for the adoption of blockchain technology in their remittance systems. This section builds upon the previous chapters by providing the findings of the study, which are organised and presented using tables and figures. The chapter encompasses the following: the study's response rate, the demographic profile of the respondent sample, descriptive statistics, and inferential statistics.

4.2 Response Rate

This study employed a questionnaire-based survey targeting 156 professionals representing key departments (foreign exchange, IT, legal/regulatory compliance, and general management) of 39 targeted commercial banks in Kenya. A total of 95 completed questionnaires from 29 banks were received, yielding a response rate of 60.90%. A summary of the study's response rate is presented in Table 4.1.

Table 4. 1: Response Rate

Metric	Frequency
Initial target respondent sample	156
Number of questionnaires distributed	156
Questionnaires completed and received	95
Response rate	60.90%

According to Babbie (2016), a response rate of 60.90% should be adequate for academic research, especially one that targets professionals within a particular sector. This is because such target populations are not easy to access and are constrained by time and confidentiality concerns. Therefore, although higher response rates are preferred, a 50% response rate for such studies is sufficient. In this case, as Babbie (2016) suggests, a 60.90% response rate offers an accurate snapshot of the population being studied, enhances this study's statistical power, and allows for the generalization of the findings to the broader population with greater confidence.

Achieving a reasonably high response rate involved several strategies. These included streamlining the data collection tool to be brief and focused, maintaining clear and consistent communication channels with respondents, issuing personalised invitations to encourage participation, ensuring data privacy and anonymity, offering the flexibility of both online and offline data collection methods to maximise convenience, and sending timely follow-up reminders. Despite efforts to maximise participation, a non-response rate of 39.1% was reported. This can be attributed to the characteristics of the target population, comprising busy professionals within key functional units of commercial banks, whose time constraints likely limited their ability to complete the survey within the given timeframe.

4.3 Demographic Information

The study sought to collect demographic data of the respondents to provide meaningful contexts for interpreting the findings. Demographic data was also instrumental in examining the representativeness of the target population in the study. This included the age, gender, educational qualification, professional experience, their respective banks, department, seniority within those departments, and level of familiarity with blockchain technology and challenges associated with remittances. The distribution of the respondent sample according to their demographic profile is presented in Table 4.2.

Table 4. 2: Demographic Information

Demographic information	Distribution	Frequency	Percentage
Gender	Male	49	51.6%
	Female	46	48.4%
Age	18-30 years	12	12.6%
	31-40 years	31	32.6%
	41-50 years	36	37.9%
	Over 50 years	16	16.8%
Educational qualification	Undergraduate	43	45.3%
	Masters	38	40.0%
	Postgraduate	14	14.7%
Department/division	General management	27	28.4%
	ICT	29	30.5%
	Legal/Compliance	17	17.9%
	Foreign exchange	22	23.2%

Seniority	Junior level	5	5.3%
	Mid-level	40	42.1%
	Senior level	45	47.4%
	Executive level	5	5.3%
Professional experience	Less than 5 years	25	26.3%
	5-10 years	25	26.3%
	11-20 years	40	42.1%
	More than 20 years	5	5.3%
Familiarity with blockchain	Not at all familiar	7	7.4%
	Slightly familiar	25	26.3%
	Somewhat familiar	48	50.5%
	Very familiar	15	15.8%
Familiarity with the remittance system	Not at all familiar	5	5.3%
	Slightly familiar	5	5.3%
	Somewhat familiar	55	57.9%
	Very familiar	30	31.6%

From the table above, there was a relatively balanced gender distribution, with slightly more males (51.6%) than females (48.4%), suggesting that both genders were represented in the study. However, the age distribution was skewed, with a significant concentration in the 41-50 age group (37.9%). This means that the study primarily gathered insights from experienced professionals. Educational levels showed a strong representation of individuals with undergraduate (45.3%) and master's degrees (40.0%), representing a well-educated sample with knowledge of technologies like blockchain. This is also shown in the familiarity with blockchain, whereby only 7.4% of the respondents were unfamiliar with the technology. Furthermore, the familiarity with the remittance systems and challenges was high, with a combined ratio of 89.5% being somewhat or very familiar. The high level of familiarity was important in assessing the banks' readiness to shift remittance systems towards blockchain technology.

Furthermore, the sample adequately represented the key bank departments involved in remittance operations, including General Management, ICT, Legal/Regulatory Compliance, and Foreign Exchange. This representation was instrumental in ensuring that the study captured a holistic view from various functional areas. The seniority levels were concentrated in the mid-level (42.1%) and senior-level (47.4%) categories, implying that the study primarily collected data from a sample with substantial experience and influence within their organizations, which was crucial for

assessing readiness for blockchain adoption. This was further reinforced by professional experience distribution, with a significant portion of respondents having 11-20 years of experience (42.1%). Overall, the demographic data suggests that the study gathered insights from a knowledgeable and experienced sample, which was essential for assessing the readiness of commercial banks in Kenya for blockchain adoption in remittance systems.

4.4 Descriptive Statistics

The findings of the descriptive statistical analysis, used to summarize respondents' perceptions of commercial banks' readiness for blockchain adoption across organizational, technical, and regulatory dimensions, are presented in this section.

4.4.1 Readiness for Blockchain Adoption for Remittances

Respondents were asked to assess the extent to which their banks were prepared for blockchain integration for remittance services on a five-point Likert scale, where 1=No extent at all and 5=Very large extent. An overview of the responses is provided in Table 4.3.

Table 4. 3: Readiness for Blockchain Adoption for Remittances

	N	Mean	SD
To what extent do you believe blockchain technology is useful for remittance services?	95	3.7368	.8532
To what extent do you believe blockchain technology is easy to use for remittance services?	95	3.3684	1.0422
To what extent do you believe the bank is likely to adopt blockchain for remittance services?	95	2.7368	.8532
To what extent do you believe the adoption of blockchain for remittances aligns with the bank's overall strategic direction and business goals?	95	2.9474	1.1519
Overall Mean		**3.1974**	**.9751**

The overall mean of 3.1974, as reported above, suggests a moderately positive, but not strongly affirmative, view of the banks' readiness for blockchain adoption. Put simply, on average, respondents felt that commercial banks were ready for blockchain adoption for remittances to a

moderate extent. In individual sub-variables, respondents felt that blockchain technology was useful for remittances (M=3.7368, SD=.8532). However, their perception of the ease of use of blockchain for remittances was slightly lower (M=3.3684, SD=1.0422), the likelihood of adoption of blockchain for remittances was relatively low (M=2.7368, SD=.8532), and alignment between blockchain adoption and the bank's strategic direction was also relatively low (M=2.9474, SD=1.1519).

In summary, respondents recognized the potential usefulness of blockchain for remittance services. However, concerns about its ease of use and the likelihood of their banks' adoption were notable. Additionally, standard deviations, which ranged from .8532 to 1.1519, indicate a moderate variability in responses, implying that respondents held varying opinions and perspectives on the parameters above. This can be attributed to the diverse respondent sample and varying organizational characteristics of the studied commercial banks.

4.4.2 Organizational Readiness

Respondents were asked to assess their bank's organizational preparedness for blockchain integration in remittance systems using a five-point Likert scale (1=No extent at all, 5=Very large extent). Results are summarized in Table 4.4.

Table 4. 4: Organizational Readiness

	N	Mean	SD
To what extent do you believe the bank has a dedicated budget and resources for technological initiatives, including blockchain?	95	2.4316	1.2261
How well-prepared is the bank’s workforce to effectively work with blockchain tools and technologies for remittances?	95	2.2632	1.0740
How engaged is (are you as) leadership in championing and driving support for the bank to adopt blockchain for remittances?	95	2.6000	1.1975
To what extent do you believe the company culture in place can support the integration of blockchain for remittances?	95	2.7579	1.1825
To what extent do you believe the bank's inclination to innovation is adequate to explore blockchain for remittances?	95	2.7368	1.0640
Overall Mean		**2.5579**	**1.1488**

The overall mean of 2.5579 at a 1.1488 standard deviation indicates a generally low perception of organizational readiness for blockchain adoption. This perception is consistent across all elements of organizational readiness. For instance, respondents exhibited a low perceived level of dedicated budget and resources for technological initiatives (M=2.4316, SD=1.2261), felt the bank's workforce was poorly prepared to work with blockchain (M=2.2632, SD=1.0740), felt leadership engagement in championing and driving blockchain adoption was underwhelming (M=2.6000, SD=1.1975), perceived support of company culture for blockchain integration was relatively low (M=2.7579, SD=2.7579), and the adequacy of the bank's inclination to innovation for exploring blockchain is slightly lower (M=2.7368, SD=1.0640). Overall, drawing from the data, organizational readiness among Kenyan commercial banks for blockchain adoption in remittance services is hugely underwhelming. However, the high standard deviation values for all the indicators suggest varying perspectives among respondents.

4.4.3 Technical Readiness

Respondents were asked to assess their bank's technical preparedness for blockchain integration in remittance systems using a five-point Likert scale (1=No extent at all, 5=Very large extent). Results are summarized in Table 4.5.

Table 4. 5: Organizational Readiness

	N	Mean	SD
How prepared is the bank’s IT infrastructure to support the deployment, integration, and scaling of blockchain for remittances?	95	2.6421	.9884
To what extent do you believe the bank's existing systems are compatible with integrating blockchain for remittances?	95	2.5158	1.1473
To what extent of complexity do you believe blockchain integration is for the bank’s remittance system?	95	2.7895	1.0609
To what extent has the bank identified use cases and tested and experimented with blockchain for remittance services?	95	2.3158	1.1227
To what extent do you believe the bank's security and privacy measures are enough to address issues of blockchain integration for remittance services?	95	2.9474	.8917

To what extent do you believe the quality, reliability, and accessibility of the bank's data for blockchain adoption for remittance services?	95	3.0000	1.1299
Overall Mean		**2.7018**	**1.0735**

The overall mean of 2.7018 at a 1.0735 standard deviation indicates a generally low level of technical readiness among banks for blockchain adoption in remittance systems. This perception among respondents signifies technical challenges for commercial banks considering blockchain adoption in remittances. Assessment of individual indicators of technical readiness sheds light on these challenges. For instance, respondents felt that there was a generally low IT infrastructure preparedness (M=2.6421, SD=.9884), low system compatibility (M=2.5158, SD=1.1473), relatively high blockchain integration complexities (M=2.7895, SD=1.0609), underwhelming trialability (M=2.3158, SD=1.1227), a moderate level of security and privacy measures (M=2.9474, SD=.8917), and moderate level of the quality, reliability, and accessibility of bank's data (M=3.000, SD=1.1299). The overall low mean is indicative of the need for substantial technical improvements before banks can effectively adopt blockchain for remittance systems. However, the low to moderate standard deviations, from .8917 to 1.1299, suggest that respondents shared opinions on certain indicators but held varying perceptions towards other indicators of technical readiness.

4.4.4 Regulatory Readiness

Respondents were asked to assess the regulatory preparedness for blockchain integration in banks' remittance systems using a five-point Likert scale (1=No extent at all, 5=Very large extent). Results are summarized in Table 4.6.

Table 4. 6: Regulatory Readiness

	N	Mean	SD
To what extent are existing regulations clear on the adoption and use of blockchain technology?	95	2.3684	.9899
To what extent are regulations in the banking sector adequate for addressing blockchain adoption in remittance services?	95	2.2632	1.2135
To what extent do you believe your organization is prepared for any upcoming regulations around blockchain technology?	95	2.6316	.8758

To what extent does the governance strategy of the bank clearly outline and account for the adoption of new technology, including blockchain?	95	2.2632	1.0740
To what extent, if any, does the bank effectively monitor blockchain technology risks and ensure auditability?	95	2.3684	1.2295
Overall Mean		**2.3789**	**1.0765**

The overall mean of 2.3789 with a 1.0765 standard deviation indicates a generally low level of regulatory readiness among commercial banks for blockchain adoption in remittance services. In general, respondents were of the view that existing regulations on blockchain adoption and use are unclear (M=2.3684, SD=.9899), regulations are inadequate in addressing blockchain adoption needs for banking (M=2.2632, SD=1.2135), low organizational preparedness for future regulations (M=2.6316, SD=.8758), governance strategy lacking clarity in outlining and accounting for new technologies (M=2.2632, SD=1.0740), and low bank's effectiveness in monitoring blockchain technology risks (M=2.3684, SD=1.2295). In conclusion, the data reveals significant regulatory challenges that hinder blockchain adoption in remittance systems within Kenyan commercial banks.

4.4.5 Bank Size

The study also aimed to collect data on the sizes of the commercial banks included in the research, using total assets as a proxy for bank size. This data was gathered to examine the moderating effect of bank size on the readiness for blockchain implementation in remittance services among these banks. Table 4.7 provides a descriptive summary of the total assets of the 29 commercial banks studied, offering valuable insights into their financial scale and potential influence on blockchain adoption.

Table 4. 7: Total Assets (in KES '000)

Mean	32,3241,172.4
Median	153,000,000
Mode	166,100,000
Standard Deviation	487,466,579.2
Kurtosis	6.17895267
Skewness	2.477710331
Minimum	12,500,000
Maximum	1,960,000,000

Count (N)	29

The descriptive statistics presented in the table provide critical insights into the financial scale of the 29 banks studied. It emphasizes substantial differences in asset sizes. The mean total assets of KES 32,324,172,400 indicate a relatively high average, though the median value of KES 153,000,000 suggests that a significant portion of banks have smaller asset bases, with a few large banks skewing the overall mean. The mode of KES 166,100,000 represents the most frequently occurring asset value, which is considerably lower than the mean. This further reinforces the presence of smaller and mid-sized banks than larger banks within the sample.

The high standard deviation of KES 487,466,579.2 points to extreme variations in financial scale. This underscores the influence of Tier 1 banks, which hold significantly larger assets compared to Tier 2 and Tier 3 banks. This disparity arises because Tier 2 and Tier 3 banks, marked by lower financial capacity, outnumber Tier 1 banks, which typically possess larger capital bases and stronger financial stability. The minimum asset value of KES 12,500,000 (for Paramount Bank) and maximum asset value of KES 1,960,000,000 (for KCB Bank) illustrate the stark contrast in financial capacity among the banks.

4.5 Inferential Statistics

For the inferential statistical evaluation, the study utilized correlation analysis and Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyse and estimate relationships between both latent and observed variables.

4.5.1 Correlation Analysis

Correlation analysis was undertaken to examine the level of relationship or dependence among the variables of the study. This was done to determine whether changes in one variable are associated with changes in another and to quantify the degree of this association. Findings of this analysis are presented in Table 4.8.

Table 4. 8: Spearman's rank correlation

			BTA	OR	TR	RR	SIZE
Spearman's rho	BTA	Coefficient	1.000				
	OR	Coefficient	.878**	1.000			
	TR	Coefficient	.895**	.873**	1.000		
	RR	Coefficient	.830**	.725**	.668**	1.000	
	SIZE	Coefficient	.437**	.294**	.263**	.301**	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

The analysis reveals statistically significant positive correlations among all pairs of the variables. Blockchain adoption exhibits strong correlations with the readiness components: organizational readiness ($r=0.878$, $p<0.01$), technical readiness ($r=0.895$, $p<0.01$), and regulatory readiness ($r=0.830$, $p<0.01$). These high coefficients suggest that as the readiness across organizational, technical, and regulatory aspects increases, so too does the level of blockchain adoption. In addition, blockchain adoption is moderately correlated with bank size ($r=0.437$, $p<0.01$), implying that larger banks are more likely to integrate blockchain technology into their remittance systems than their smaller counterparts.

Furthermore, the readiness dimensions themselves are also positively correlated with each other. This intercorrelation indicates that improvements in one area of readiness often coincide with improvements in others. For example, an improvement in organizational readiness for blockchain technology is likely to coincide with technical and regulatory readiness. Interestingly, bank size exhibits a significant, but weaker positive correlation with all readiness factors. This suggests that larger banks tend to have higher levels of readiness across all measured dimensions. However, this relationship is not as strong as the intercorrelations among the readiness factors, implying that while bank size matters, readiness factors are more crucial.

Overall, the findings strongly support the interconnectedness of various readiness factors in facilitating blockchain adoption, with bank size playing an important, though less dominant, role.

4.5.2 Structural Equation Modelling

Following the foundational insights into the association among the variables, as established in the correlation analysis above, the analysis advanced to SEM analysis which allowed for in-depth

inferences about the phenomenon under investigation—Kenya commercial banks' readiness for blockchain adoption in their remittance systems with the moderating effect of bank size. The analysis consisted of a two-stage process: the assessment of the measurement model and the assessment of the structural model.

4.5.2.1 Measurement Model Assessment

The assessment of the measurement model was carried out to evaluate the validity and reliability of the constructs used in the structural equation modelling. According to Magno et al. (2024), the assessment ensures that the indicators used to measure each latent variable are appropriate and accurately reflect the underlying concepts. This assessment was crucial because it determined the quality of the data in terms of indicator reliability, internal consistency, convergent validity, and discriminant validity (Magno et al., 2024). In short, the assessment was undertaken to ensure the results of the structural model led to reliable and valid conclusions. The results of the measurement model assessment are shown in Table 4.9.

Table 4. 9: Construct reliability and validity

Constructs	Items	Loading	Alpha	CR	AVE
Blockchain Adoption	BTA_1	0.648	0.812	0.877	0.642
	BTA_2	0.847			
	BTA_3	0.850			
	BTA_4	0.842			
Organizational readiness	OR_1	0.932	0.926	0.945	0.774
	OR_2	0.800			
	OR_3	0.863			
	OR_4	0.913			
	OR_5	0.885			
Technical readiness	TR_1	0.944	0.890	0.924	0.683
	TR_2	0.843			
	TR_3	0.339			
	TR_4	0.939			
	TR_5	0.861			

	TR_6	0.869			
Regulatory readiness	RR_1	0.773	0.905	0.929	0.723
	RR_2	0.896			
	RR_3	0.878			
	RR_4	0.865			
	RR_5	0.857			

The findings presented in the table above indicate that all the constructs met the recommended minimum Cronbach's alpha value of 0.7, suggesting that the internal consistency requirement for the constructs was satisfied. This is further supported by the Composite Reliability (CR), which also assesses the internal consistency of the constructs. As shown, CR values for all constructs exceeded the threshold of 0.7, confirming that the scales exhibit adequate internal consistency. Additionally, the Average Variance Extracted (AVE) was used to evaluate convergent validity, and all constructs demonstrated AVE values greater than the recommended minimum of 0.50, further supporting the validity of the constructs. These results collectively affirm the reliability and validity of the measurement model.

In addition to the above, the study performed the discriminatory validity test based on the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) criterion, as recommended by Hair et al. (2019). According to the scholars, for the model to be valid, the results of the Fornell-Larcker test, that is, the square root of AVE for all constructs, should be higher than their highest correlation with the other constructs. At the same time, HTMT values should be less than 0.9 in order to establish discriminant validity. The results of this assessment are shown in Table 4.10.

Table 4. 10: Discriminant validity

		AVE	√AVE	1	2	3	4	HTMT_1	HTMT_2	HTMT_3	HTMT_4
1	**BTA**	0.642	0.801	0.792				-			
2	**OR**	0.774	0.880	0.878	0.880			0.895	-		
3	**TR**	0.683	0.826	0.803	0.788	0.821		0.820	0.857	-	
4	**RR**	0.723	0.850	0.844	0.801	0.844	0.826	0.896	0.876	0.817	-

The results from the Fornell-Larcker and HTMT criteria, used to assess discriminant validity as part of the measurement model evaluation, indicate that the model demonstrates adequate validity.

Based on the reliability tests conducted earlier, all constructs meet the necessary conditions for proceeding with structural modelling.

4.5.3 Structural Model Analysis

Prior to structural modelling, both the standard root mean square residual (SRMR) and the coefficient of determination (R-Square) tests were employed to assess the fitness of the model. According to Henseler et al. (2016), an SRMR value below 0.1 is typically considered indicative of a good model fit in PLS-SEM. In this study, an SRMR value of 0.079 was obtained, which is below the recommended threshold, suggesting that the structural model fits the collected data well. Furthermore, the R-Square and Adjusted R-Square values of 0.823 and 0.817, respectively, were achieved, further confirming that the structural model demonstrated strong predictive power and provided a good fit to the data.

Table 4. 11: Structural Model

Endogenous constructs	**R-Square**				
BC adoption	0.823				
Hypotheses	**Estimate**	***t*-statistic**	***p*-value**	**Percentile 95% CI**	**Support**
OR → BC adoption	0.527	2.967	0.003	[0.20;0.90]	Yes
TR → BC adoption	0.258	1.463	0.046	[0.04;0.38]	Yes
RR → BC adoption	0.154	1.994	0.143	[0.03;0.48]	No

The table above shows the results of the examination of the hypothesised relationships of the study's constructs using a bias-corrected bootstrap procedure with 5000 subsamples. As per the values of the t-statistic, significance level (*p*-value), and the percentile bootstrap of a 95% confidence interval, two of the three hypothesised relationships were supported. Therefore, findings from the structural model analysis indicate that organisational preparedness and technical preparedness have significant positive effects on the adoption of blockchain technology for remittance services within banks.

Specifically, organisational readiness is a strong predictor, with a path coefficient of 0.527 and a statistically significant p-value of 0.003. This observation underscores the importance of

commercial banks' organizational preparedness for the implementation of blockchain for their remittance services. Similarly, technical readiness has a significant predictive effect on blockchain adoption (B=0.258, p<.05). This observation emphasizes the value of technical infrastructure and capabilities in facilitating blockchain integration into remittance systems. On the other hand, regulatory readiness fails to show a statistically significant effect (β=0.154, t=1.994, p=0.143), indicating that regulatory preparedness does not play a decisive role in blockchain adoption within the studied banks.

Overall, the findings suggest that organizational readiness and technical readiness, both internal determinants, are key drivers of blockchain adoption, whereas regulatory readiness, an external factor, does not have a significant impact on blockchain adoption for remittance services. The path diagram in Figure 4.1 represents a visual illustration of the relationships between key factors influencing blockchain adoption.

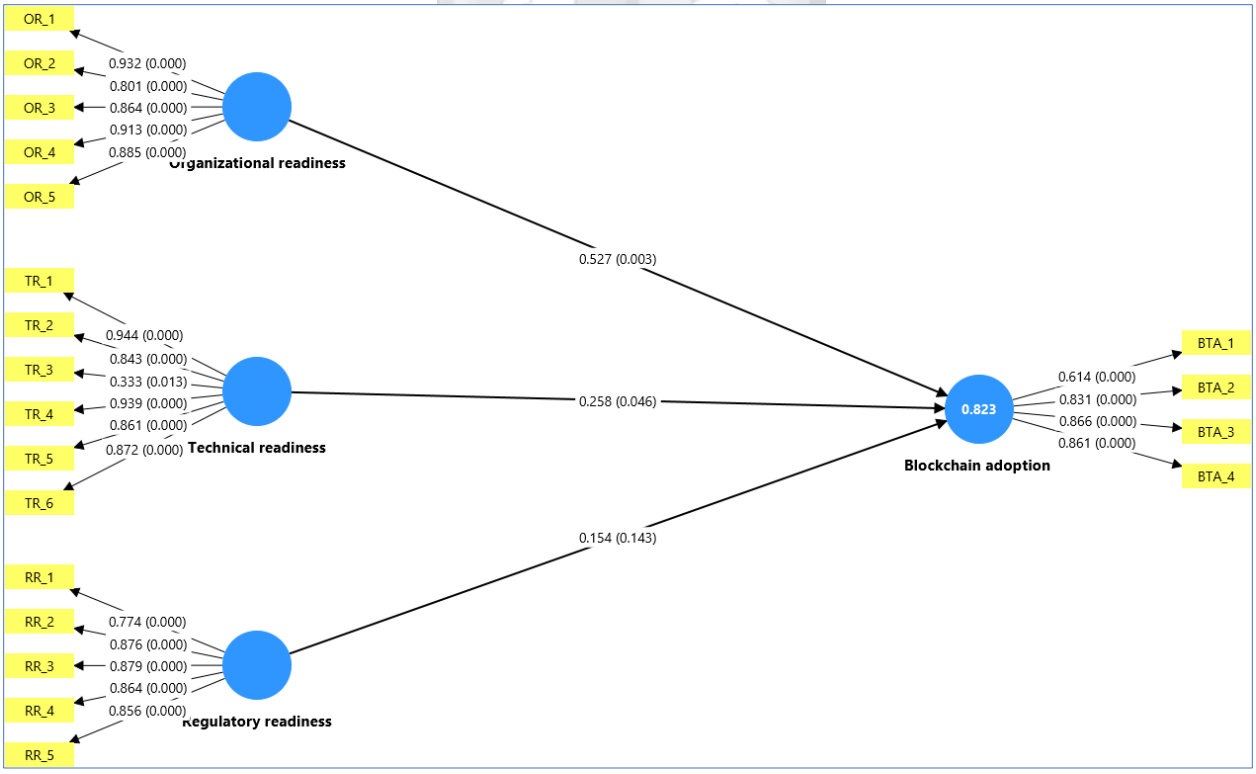

Figure 4. 1: Path Coefficient Diagram

In this diagram, each of the constructs is depicted as a latent variable measured by multiple indicators, with their respective factor loadings showing how strongly each observed variable

contributes to its construct. The factor loadings for blockchain adoption range from 0.614 to 0.866, all with p-values ≤ 0.000. This confirms strong construct validity. For other constructs, organizational readiness, technical readiness, and regulatory readiness, their respective indicators also exhibit high factor loadings, demonstrating that each item reliably measures its intended construct. However, variations in factor loadings across different constructs suggest differing levels of influence. For example, organizational readiness and technical readiness show higher loadings, reinforcing their strong role in blockchain adoption, whereas regulatory readiness may have lower loadings, reflecting its comparatively weaker impact in the model.

4.5.4 Moderation Analysis

The study further aimed to examine whether the sizes of the commercial banks moderated the observed effects of organizational, technical, and regulatory preparedness on blockchain adoption for remittance services. To achieve this, the size of the surveyed banks was measured using the logarithm of their assets. The results of the analysis are displayed in Table 4.12.

Table 4. 12: Structural model after testing for moderation

Endogenous constructs	**R-Square**				
BC adoption	0.868				
Hypotheses	**Estimate**	**t-statistic**	**p-value**	**Percentile 95% CI**	**Support**
OR → BC adoption	0.430	2.884	0.004	[0.03;0.21]	Yes
TR → BC adoption	0.197	1.849	0.065	[0.78;0.13]	No
RR → BC adoption	0.72	2.599	0.009	[0.13;0.72]	Yes
Bank size x OR → BC adoption	-0.523	2.785	0.005	[0.34;0.70]	Yes
Bank size x TR → BC adoption	0.247	1.926	0.054	[0.33;0.51]	No
Bank size x RR → BC adoption	0.081	0.680	0.497	[0.17;0.28]	No

The results presented above show the results of the structural model after introducing the moderating variable, bank size. According to the data, organizational readiness is a significant positive predictor of blockchain adoption (β=0.430, p=0.004). Interestingly, technical readiness, while still positively associated, is no longer a significant predictor of blockchain adoption

(β=0.197, p=0.065). On the other hand, regulatory readiness, which was not significant in a simpler model, now shows a significant positive direct effect on blockchain adoption (β=0.272, p=0.009). This shift in significance for technical readiness and regulatory readiness upon inclusion of moderation suggests complex interrelationships.

The model further reveals a significant moderating effect of bank size on the relationship between organizational readiness and blockchain adoption (β=-0.452, p=0.005). The negative interaction implies that as bank size increases, the influence of organizational readiness on blockchain adoption tends to become less pronounced. This suggests that while organizational readiness is generally vital, its impact has a reduced effect in larger organizations, possibly due to increased bureaucracy or complexities. The other moderation paths, technical readiness and bank size (β=0.247, p=0.054) and regulatory readiness and bank size (β=0.081, p=0.497), are not significant, indicating that bank size does not moderate the relationships between technical readiness or regulatory readiness and blockchain adoption in this model.

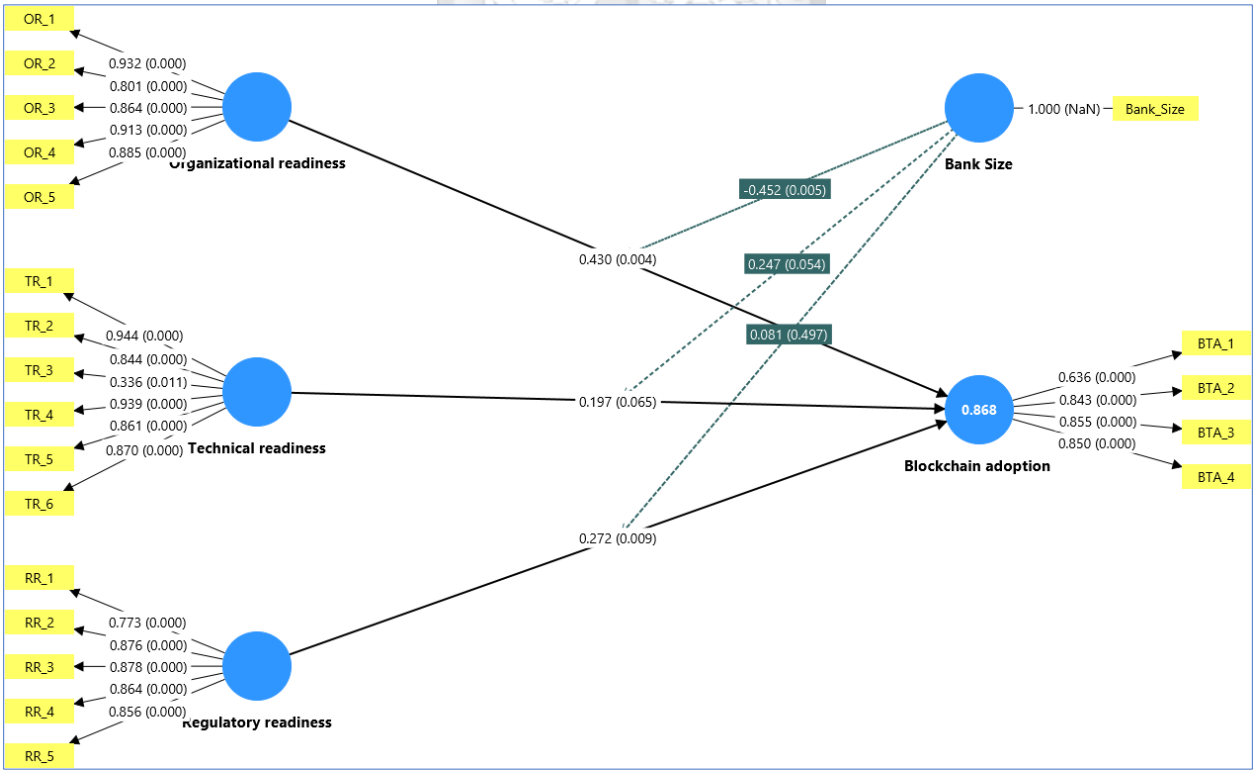

Figure 4. 2: Structural model after testing for moderation

In summary, based on the results of the PLS-SEM analysis, this study demonstrates that organizational, and technical preparedness significantly predict the success of the adoption of blockchain technology for remittance services. Furthermore, the effect of organizational readiness is significantly moderated by the size of the bank, implying that larger banks tend to exhibit lesser organizational readiness. However, this study does not produce sufficient statistical evidence to conclude that bank size significantly moderates the influence of technical readiness or regulatory readiness on blockchain adoption.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter expands on the findings presented in the foregoing section. It provides a comprehensive discussion of these findings, exploring their implications and how they correspond with the study's theoretical framework and the existing body of reviewed literature. Additionally, this section offers the overall conclusion of the study, along with recommendations and suggestions for future research.

5.2 Summary of the Study

The study sought to determine the readiness of Kenya's commercial banks for blockchain adoption for remittance services and whether bank size moderated this preparedness. To achieve this, the study was grounded on the foundations of contingency theory and TAM as the anchoring and supporting theoretical frameworks. The philosophy of positivism was followed, and a descriptive cross-sectional research design was applied. Data was collected from a cohort of foreign exchange, IT, legal/regulatory compliance, and general management of the 39 targeted commercial banks in Kenya, who were given structured questionnaires to complete.

A total of 95 completed questionnaires were received from a targeted sample of 156 respondents, yielding a sufficient response rate. The demographic profile of the respondent sample suggests that data was collected from a knowledgeable and well-experienced sample, which was essential for the phenomenon being studied. Respondents felt that commercial banks in Kenya were moderately ready to integrate blockchain into remittance services. However, the perception towards organizational, technical, and regulatory readiness was low, suggesting low levels of preparedness among commercial banks along these parameters.

The results of the PLS-SEM analysis reveal that all three readiness factors are significant positive predictors of blockchain adoption. Accounting for the path coefficients, regulatory readiness has the strongest effect, closely followed by organizational readiness and technical readiness. Results of testing for the moderating effect showed that bank size significantly moderates the effect of

organizational preparedness on blockchain adoption. However, its moderating effect on technical and regulatory preparedness is not statistically significant.

5.3 Discussion of the Findings

This section delves into an in-depth discussion of the findings, presented according to the specific objectives of the study.

5.3.1 Organizational Readiness and Blockchain Adoption

The study sought to determine the effect of organizational preparedness on implementing blockchain technology for remittances by commercial banks. Descriptive statistical analysis demonstrated that the level of organizational preparedness for blockchain adoption is underwhelming among Kenyan commercial banks. In particular, while most banks exhibited a reasonably high level of innovation propensity and a supportive organizational culture, the financial capability, skill availability, and top management commitment need improvement. This observation offers a snapshot into the level of organizational preparedness for emerging technologies such as blockchain within the commercial bank sector, an observation consistent with the views of Burrows and Mulligan (2019). According to these scholars, despite the strong innovative spirit, blockchain is still in its experimental phase in most African countries in Kenya, implying that the readiness for this innovative solution, especially among financial institutions, is still low.

Notwithstanding the level of organizational preparedness, the PLS-SEM analysis revealed a positive and statistically predictive relationship between organizational readiness and the adoption of blockchain for blockchain adoption. This means that as commercial banks increase their readiness through enhanced innovation propensity, top management support, financial resource commitment, strategic alignment, and a conducive organizational culture, the likelihood of success in integrating blockchain into the remittance system also increases. Put simply, this empirical discovery suggests that organizational preparedness is a key factor in determining whether a commercial bank in Kenya will successfully adopt blockchain technology for its remittance services. Therefore, in this context, the observed effect of organizational readiness supports the

foundational tenets of both contingency theory and TAM model as the anchoring and supporting theoretical frameworks for the study.

Contingency theory posits that there is no one-size-fits-all approach to managing an organization, and the effectiveness of an organizational strategy is contingent upon certain contextual factors (Naidu et al., 2023). In this case, the finding suggests that blockchain adoption for remittance systems is contingent upon the level of organizational readiness. This supports the idea that a bank's culture, financial resources, leadership, innovativeness, and workforce must be aligned and prepared for successful technology adoption, as organizational readiness directly influences the effort to adopt blockchain. From the perspective of the TAM model, organizational readiness can be seen as a precursor to the perceived usefulness and ease of use of blockchain for remittances (Chee et al., 2021). In other words, a bank that is organizationally ready is one that is well-equipped internally and thus is more likely to perceive blockchain technology as useful for improving remittance services and easier to implement.

Furthermore, the positive and significant relationship between organizational readiness and blockchain adoption correspondents with the findings of multiple empirical studies (Dowelani et al., 2022; Kanuku et al., 2020; Malik et al., 2021; Orji et al., 2020; Wangui, 2018; Wong et al., 2020). These studies agree that organizational preparedness enhances blockchain adoption by ensuring that the necessary internal conditions are met to implement and integrate new technology. In the context of this study, when a commercial bank possesses the necessary strategic alignment, a supportive organizational culture that embraces innovation, readily available resources, strong leadership support, and established processes for managing technological change, it creates an environment where the benefits of blockchain are more readily recognized, and the challenges of adoption are more effectively addressed. This internal capacity building ensures that the bank can allocate resources efficiently, navigate potential hurdles, and strategically align blockchain initiatives with overall business objectives, thereby increasing the success of blockchain adoption for services like remittances.

5.3.2 Technical Readiness and Blockchain Adoption

Besides organizational readiness, the study also explored the technical preparedness of commercial banks in Kenya for blockchain adoption for their remittance services. Respondents' perception of banks technical preparedness was somewhat positive and slightly better than that of organizational preparedness. This means that the levels of IT infrastructure, systems compatibility, and trialability of blockchain were high, while the perception of the complexity of the technology and the security/privacy concerns were reasonably low. This means that commercial banks in Kenya have the technical capability for new innovations, reflecting the views of Wambui and Thomas (2024) and CBK (2023). In particular, according to CBK (2023), banks and other financial institutions in Kenya are increasingly demonstrating capability for innovation, as evidenced by the development of mobile banking, electronic money transfers, online banking, and other digital solutions.

In view of the above, the importance of technical preparedness is demonstrated by the PLS-SEM analysis, which indicates that technical readiness plays a significant and positive role in driving blockchain adoption. This observation implies that having the necessary technical infrastructure, tools, and expertise is crucial for the successful adoption of blockchain technology. Banks that are technically prepared, with the right infrastructure and systems in place, are more likely to embrace blockchain effectively, as they can handle the technical challenges associated with its implementation. Therefore, the observed relationship between technical readiness and blockchain adoption aligns with the foundational principles of both the contingency and TAM models.

Since contingency theory posits that organizational effectiveness is contingent upon the prevailing internal and external conditions, this finding demonstrates that successful technology adoption is contingent upon having the necessary internal capabilities, whereby a bank equipped with adequate IT infrastructure and systems is better positioned to implement complex technologies like blockchain (Ahmed et al., 2022). Similarly, TAM emphasizes the importance of perceived ease of use and usefulness of new technology. Therefore, technical readiness ensures that blockchain is easier to implement and more useful to the organization, thus increasing the likelihood of its adoption (N. Liu & Ye, 2021). Both theories underscore that an organization's preparedness, particularly in terms of technical capabilities, plays a vital role in determining whether new technologies like blockchain will be successfully embraced.

Furthermore, the predictive effect of technical preparedness on blockchain adoption is an empirical finding that is in agreement with multiple peer-reviewed studies (Al-Ashmori et al., 2022; Asante Boakye et al., 2023; Janssen et al., 2020; Kosgei, 2020; Legesse et al., 2024). All these studies point towards the importance of technical preparedness as a necessary condition for the adoption of emerging solutions like blockchain. They explain that technical readiness enhances blockchain adoption by providing the essential capabilities for successful implementation and integration (Legesse et al., 2024). In this case, banks with robust IT infrastructure and established technical expertise can navigate the complexities of blockchain development, deployment, and maintenance (Kawasmi et al., 2019). This technical foundation enables banks to build and manage blockchain-based remittance systems, address potential technical challenges efficiently, ensure system security and interoperability, and ultimately leverage the technological advantages of blockchain to improve their services, making adoption a more feasible and less risky endeavour.

5.3.3 Regulatory Readiness and Blockchain Adoption

The study also sought to assess the regulatory readiness of commercial banks and its influence on the adoption of blockchain technology for remittance. Respondents' views suggest underlying challenges within the country's regulatory frameworks for emerging technologies like blockchain. This is because, of the three readiness factors, regulatory readiness scored the lowest on the perception scale, signifying a generally low level of regulatory readiness among commercial banks. In particular, challenges related to the lack of clear regulations for blockchain adoption and use, data security and privacy concerns, insufficient government support, and the status of the regulatory environment in banking were cited. This observation uncovers regulatory issues entrenched in Kenya's regulatory environment regarding new technologies, which have also been cited by Wambui and Thomas (2024), CBK (2023), and Fatoki and Wanjagi (2019). These findings cite the need for an enabling regulatory environment for blockchain adoption.

Interestingly, regulatory readiness does not have a significant effect on the adoption of blockchain technology for remittances. This means that changes in the current regulatory environment within the banking sector will not produce meaningful effect on the adoption of blockchain technology by individual banks. This means that the insignificant effect of the regulatory readiness on blockchain adoption presents an interesting deviation from common expectations often associated

with both contingency theory and the TAM model. From the contingency theory perspective, the finding demonstrates that the adoption of blockchain systems for remittances is not contingent upon regulatory preparedness (Kaushik et al., 2024). Similarly, in the context of the TAM model, the finding demonstrate that regulatory frameworks do not impact the perceptions towards blockchain as a technology that is useful and easier to implement and use for remittances.

The discovery is in support of several studies but also in contrast with several others. The insignificant effect of regulatory readiness on blockchain adoption is supported by (Chen et al., 2024; Dehghani et al., 2022; Marengo & Pagano, 2023; Norbu et al., 2024). These studies suggest that regulatory factors may not have a significant effect on blockchain adoption, or that their impact may be less pronounced compared to other factors. This could be due to several factors. For instance, in this study, the prevailing regulatory environment may not be acting as a strong direct driver of blockchain adoption (Norbu et al., 2024); rather, in this context, other internal factors (technical and organizational) might be more critical. This means that for the banks studied, the current regulatory conditions, as measured, do not exert a strong enough influence to compel them to adopt blockchain (Dehghani et al., 2022), suggesting that the decision might be more heavily weighted by internal capabilities.

The findings are also in contrast with those of the existing literature (e.g., Kanuku et al., 2020; Li et al., 2022; Mazorodze et al., 2022; Munyua, 2021; Waihenya, 2020). These studies underscore the importance of regulatory frameworks adopting new solutions, especially in critical sectors like banking. Since blockchain adoption in banking involves sensitive financial transactions, data privacy, and compliance with various laws, regulatory readiness helps mitigate legal risks (Mazorodze et al., 2022; Waihenya, 2020). Organizations that understand and are aligned with regulatory requirements can more confidently adopt blockchain, as they are able to ensure compliance with laws and regulations and industry-specific standards (Asante Boakye et al., 2023). At the same time, the status of the regulatory environment, which is often beyond the control of individual banks, matters (Waihenya, 2020). Favourable regulatory frameworks enhance the adoption of new technologies and vice versa.

The inconsistencies of finding regarding the effect of regulatory frameworks on blockchain adoption reveals this to be a highly contentious phenomenon. Therefore, the lack of consensus on

the pact of regulatory readiness prompts a deeper inquiry into the precise mechanisms through which regulation truly impacts the adoption of technological innovation in financial institutions, potentially pointing towards indirect pathways or the need for more explicit regulatory mandates to drive adoption.

5.3.4 Moderating Effect of Bank Size

The study extended the analysis by examining the potential moderating role of bank size on the relationships between the three key readiness factors and the adoption and use of blockchain technology for remittance services. It aimed to uncover whether the impact of a bank's internal preparedness (organizational and technical) and the external regulatory environment on its blockchain adoption decisions varies depending on its scale of operations, as measured by the logarithm of assets. By exploring this moderating effect, the study sought to provide a more nuanced understanding of the adoption process, acknowledging that larger banks with potentially greater resources, broader scope, and different risk appetites potentially respond differently to readiness factors compared to their smaller counterparts when considering the implementation of blockchain technology. This exploration could reveal valuable insights into tailoring strategies and policies to facilitate blockchain adoption across the diverse landscape of commercial banks.

The moderation analysis produced a significant finding regarding the influence of bank size on the preparedness for the adoption of blockchain technology. Specifically, the results indicated that the size of the bank has a negative moderating effect in the relationship between organizational readiness and blockchain adoption. This suggests that while organizational preparedness is generally crucial for driving blockchain adoption, its positive influence diminishes as the size of the bank increases. This study demonstrates that, for larger banks, while being highly organized and well-resourced might not translate into as strong an increase in blockchain adoption compared to smaller banks (Mote et al., 2016). This could be attributed to several factors inherent in larger organizations, such as increased bureaucratic hurdles, slower decision-making processes, greater resistance to change due to deeply entrenched legacy systems, the scale of integration challenges, or a more diffused sense of urgency (Cirera et al., 2021; Mote et al., 2016). Consequently, while organizational readiness is a significant enabler for all banks, its positive effect becomes less potent

by the complexities and inertia often associated with larger institutional structures when venturing into disruptive technologies like blockchain.

On the other hand, the analysis found that bank size does not have a statistically significant moderating effect on the relationships between technical readiness and blockchain adoption or between regulatory readiness and blockchain adoption. This indicates that regardless of bank size, the influence of technical and regulatory preparedness on blockchain adoption remains relatively consistent across different-sized banks.

The observed moderating effect of bank size on organizational preparedness is consistent with the proposition of the contingency theory. This is in the sense that the preparation for the adoption of new technology is contingent upon the size of the organization. This observation is also consistent with Clohessy and Acton's (2019) finding, who also argues that larger organizations, due to their greater resources, have more established strategic initiatives and higher risk tolerance for innovation; therefore, they are better positioned to translate their organizational preparedness into the implementation of new technology. Conversely, the insignificant effect of firm size in moderating regulatory and technical readiness is an observation that aligns with Prisco et al.'s (2024) research. The researchers observed no significant differences between smaller and large organizations in the adoption of new technologies.

5.4 Conclusion of the Study

The assessment of commercial banks' readiness for blockchain adoption in remittance services reveals critical insights into organizational, technical, and regulatory preparedness, as well as the moderating role of bank size. Overall, the study found a moderate level of blockchain adoption for remittances, with the levels of organizational and technical readiness slightly below moderate and regulatory readiness being notably low. This suggests that while banks have some foundational capabilities to adopt blockchain technology, there is a significant gap in regulatory preparedness that may hinder the effective integration of blockchain for remittances. Furthermore, among the three readiness factors, organizational readiness and technical preparedness are significant determinants of blockchain adoption for remittance services within banks whereas regulatory readiness is not. This study underscores the need for internal capabilities and strategies to facilitate

blockchain implementation. The non-significant effect of the regulatory framework reveals underlying issues in the current regulatory landscape, particularly the banking sector. According to the result, current regulations are not enough to foster innovation among banks, particularly regarding the advancement of remittance services.

Moreover, bank size has a negative and significant moderating effect, particularly on the effects of organizational readiness on blockchain adoption for remittances. This observation counters the notion that larger banks are better positioned to leverage their organizational resources, expertise, and infrastructure, making the organizational dimension a pivotal enabler in these institutions. Rather, it argues that larger organizations tend to be less prepared for blockchain adoption compared to smaller banks due to several factors related to increased bureaucracy and rigidity, reduced collaboration and communication, resistance to or slower adaptation to change, and risk aversion. However, bank size does not significantly moderate the effects of regulatory and technical readiness, suggesting that these factors exert consistent influence across banks of varying sizes. This underscores the need for targeted interventions to improve regulatory frameworks and technical capabilities in all banks, regardless of size, to optimize blockchain adoption for remittance services and drive innovation in the financial sector.

5.5 Implications of the Study

The following are the policy, practical, and theoretical implications of the study:

5.5.1 Policy Implications

The study highlights the critical need for conducive regulatory frameworks for blockchain adoption in remittance services. With regulatory readiness being rated the least by respondents and not exhibiting a significant effect on blockchain adoption, regulating bodies like CBK, in close collaboration with KBA and other key industry stakeholders, should pay attention to the current regulatory conditions and their support for innovation among banks. Policymakers should consider industry-wide regulatory reforms to come up with clear, comprehensive guidelines that address the unique challenges of blockchain technology while fostering innovation within banking. This is particularly because out of the three readiness factors, organizational and technical factors are internal and within the control of commercial banks, whereas the regulatory environment, which

is beyond their control, does not currently exhibit meaningful effect on blockchain adoption. Also, policymakers should consider incentivizing blockchain adoption through supportive policies, such as tax breaks or grants, especially for banks that demonstrate preparedness in organizational and technical dimensions. These measures could accelerate blockchain integration and drive growth in the financial sector. Furthermore, Kenyan commercial banks should engage proactively with the regulators on internationally acceptable norms for technology adoption to ensure alignment with global operational standards.

5.5.2 Practical Implications

The study critically highlights that for commercial banks aiming to adopt blockchain technology for remittance services, prioritizing internal organizational and technical capabilities is paramount. This means banks should strategically focus on building internal infrastructure and fostering a supportive organizational environment. Specifically, efforts should be directed towards securing strong and sustained top management support, as leadership buy-in is essential for championing strategic shifts and resource allocation. Concurrently, significant investment in technological infrastructure is crucial to ensure robust IT systems, networks, and scalable platforms are in place for blockchain integration. Developing and retaining the necessary technical skills among their workforce is equally vital, encompassing expertise in areas such as cryptography, distributed ledger technology, smart contract development, and cybersecurity. By strengthening these core internal components, banks can significantly improve their overall preparedness and effectively drive the successful implementation of blockchain technology for more efficient and secure remittance services.

Given the non-significant effect of regulatory readiness on blockchain adoption, banks should adopt a proactive approach in working closely with industry regulators to address key policy gaps that may hinder seamless integration of blockchain technology in remittance services. Since regulations have not emerged as a primary driver of adoption, banks could shift their focus from passive compliance to active engagement with policymakers, ensuring that the regulatory framework evolves in a way that supports innovation while maintaining necessary safeguards. One crucial aspect of this collaboration should involve identifying outdated or ambiguous regulations that create uncertainty for financial institutions considering blockchain adoption. By conducting

joint reviews of existing policies, banks and regulators can pinpoint specific legal constraints, such as cross-border transaction approvals, digital identity verification, and anti-money laundering (AML) protocols, that need refinement for blockchain-enabled remittance solutions.

Furthermore, banks should advocate for pilot programs and regulatory sandboxes, where real-world blockchain applications can be tested under controlled environments, allowing regulators to assess risks and benefits before formal policy implementation. Engaging in knowledge-sharing forums, policy advisory groups, and public-private partnerships can help bridge the gap between technological advancements and regulatory expectations, ensuring that blockchain innovations align with consumer protection laws, financial stability concerns, and industry best practices. Fostering continuous dialogue and regulatory collaboration will enable banks to help shape a clear, adaptable, and innovation-friendly regulatory landscape to reduce uncertainty and encourage widespread adoption of blockchain for efficient and secure remittance services.

Lastly, given the negative moderating effect of bank size on organizational readiness, larger banks, particularly Tier 1 institutions, must recognize and address the structural challenges that may hinder their ability to adopt innovative technologies such as blockchain. While organizational readiness typically enhances adoption by fostering strategic alignment, leadership commitment, and agile decision-making, the size and complexity of larger organizations can introduce rigid hierarchies, bureaucratic inertia, and resistance to change, thereby weakening this effect. Larger banks often operate under strict regulatory oversight and legacy systems, which can slow down the decision-making process and complicate technological integration (Cirera et al., 2021; Mote et al., 2016). Additionally, deeply entrenched organizational cultures may create internal resistance, where employees and leadership prefer conventional systems over disruptive innovations, fearing operational risks and implementation challenges.

To counteract these barriers, larger commercial banks must prioritize organizational flexibility, such as streamlining governance structures, establishing dedicated innovation teams, and creating sandbox environments where blockchain solutions can be tested without major operational disruptions. Fostering an innovation-driven corporate culture through internal training programs, leadership buy-in, and cross-functional collaboration can help mitigate the negative effects of size and encourage a smoother transition toward blockchain adoption and other digital transformations.

By acknowledging and actively addressing these challenges, larger banks can leverage their scale effectively while remaining competitive in an evolving financial landscape.

5.5.3 Theoretical Implications

This study adds to the growing body of literature on blockchain adoption by providing a nuanced understanding of how readiness factors influence adoption within the banking industry. By demonstrating the influences of organizational, technical, and regulatory readiness towards blockchain adoption and the moderating effect of firm size, this research refines existing theories on technology adoption, including the TAM and the contingency theory. It highlights the interplay between organizational characteristics and external constraints, suggesting that future theoretical frameworks should account for the moderating effects of institution size and the influence of regulatory factors. The study opens pathways for further research into the sector-specific dynamics of blockchain adoption and its implications for technological innovation.

5.6 Limitations and Areas for Further Research

This study, despite providing valuable insights into the readiness of commercial banks in Nairobi for blockchain adoption in remittance services, is subject to several limitations that offer avenues for future research. Firstly, its geographical scope was limited to Nairobi, potentially limiting the generalizability of the findings to other regions within Kenya or other countries, which may be characterized by distinct banking landscapes. Secondly, the contextual scope focused solely on commercial banks, neglecting other significant financial institutions such as microfinance banks, SACCOs, and digital financial service providers that may also play a role in remittances. Thirdly, conceptually, the study concentrated on organizational, technical, and regulatory readiness, leaving room to explore other potentially influential readiness factors.

Further research should address these limitations to provide a more comprehensive understanding of blockchain adoption in the remittance sector. Investigating the readiness of a wider array of financial institutions would provide a more holistic view of the potential for blockchain adoption across the financial ecosystem. Future studies could also explore additional readiness constructs and incorporate the crucial perspective of end-users' readiness and acceptance of blockchain-based remittance services. Future studies should also consider employing mixed-methods approaches,

including qualitative data collection and longitudinal studies, which could offer richer and more dynamic insights into the adoption process. Given the rapidly evolving nature of the banking sector, regulatory environment, and blockchain technology itself, continuous research and replication of this study over time are warranted to track changes and inform ongoing strategies and policies.

REFERENCES

Adams, I. E., Van Belle, J. P., & Oosterwyk, G. (2023). Investigating the State of Blockchain Adoption in the South African Finance Industry. *Iberian Conference on Information Systems and Technologies, CISTI*, *2023-June*. https://doi.org/10.23919/CISTI58278.2023.10211902

Ahmed, I., & Ishtiaq, S. (2021). Reliability and validity: Importance in Medical Research. In *Journal of the Pakistan Medical Association* (Vol. 71, Issue 10). https://doi.org/10.47391/JPMA.06-861

Ahmed, W. A. H., MacCarthy, B. L., & Treiblmaier, H. (2022). Why, where and how are organizations using blockchain in their supply chains? Motivations, application areas and contingency factors. *International Journal of Operations and Production Management*, *42*(12). https://doi.org/10.1108/IJOPM-12-2021-0805

Aketch, S., Mwambia, F., & Baimwera, B. (2021). Effects of blockchain technology on performance of financial markets in Kenya. *International Journal of Finance and Accounting*, *6*(1). https://doi.org/10.47604/ijfa.1237

Al-Ashmori, A., Basri, S. Bin, Dominic, P. D. D., Capretz, L. F., Muneer, A., Balogun, A. O., Gilal, A. R., & Ali, R. F. (2022). Classifications of Sustainable Factors in Blockchain Adoption: A Literature Review and Bibliometric Analysis. In *Sustainability (Switzerland)* (Vol. 14, Issue 9). https://doi.org/10.3390/su14095176

Alharahsheh, H. H., & Pius, A. (2020). A review of key paradigms: positivism vs interpretivism. *Global Academic Journal of Humanities and Social Sciences*, *2*(3).

Ali Bare, U. A., Bani, Y., Ismail, N. W., & Rosland, A. (2022). Does financial development mediate the impact of remittances on sustainable human capital investment? New insights from SSA countries. *Cogent Economics and Finance*, *10*(1). https://doi.org/10.1080/23322039.2022.2078460

Allen, F., Carletti, E., Cull, R., Qian, J. Q. J., Senbet, L., & Valenzuela, P. (2021). Improving Access to Banking: Evidence from Kenya. *Review of Finance*, *25*(2).

https://doi.org/10.1093/rof/rfaa024

Alushula, P. (2025, January 17). Diaspora remittances surpass CBK forecast to hit record Sh640bn. *Business Daily*. https://www.businessdailyafrica.com/bd/markets/currencies/diaspora-remittances-surpass-cbk-forecast-to-hit-record-sh640bn-4892854

Amega, K. (2018). Remittances, education and health in Sub-Saharan Africa. *Cogent Economics and Finance*, *6*(1). https://doi.org/10.1080/23322039.2018.1516488

Asante Boakye, E., Zhao, H., Coffie, C. P. K., & Asare-Kyire, L. (2023). Seizing technological advancement; determinants of blockchain supply chain finance adoption in Ghanaian SMEs. *Technology Analysis and Strategic Management*. https://doi.org/10.1080/09537325.2022.2163384

Babbie, E. (2016). *The Practice of Social Research,* (14th ed.). Cengage Learning.

Balasubramanian, S., Shukla, V., Sethi, J. S., Islam, N., & Saloum, R. (2021). A readiness assessment framework for Blockchain adoption: A healthcare case study. *Technological Forecasting and Social Change*, *165*. https://doi.org/10.1016/j.techfore.2020.120536

Barnes III, B. W., & Xiao, B. (2019). Organizational Adoption of Blockchain Technology: An Ecosystem Perspective. *Proceedings of the 2019 DIGIT Workshop*.

Barrett, L., & Van Belle, J. P. (2022). Blockchain Technology Adoption in the South African Financial Service Sector: Perceived Advantages, Challenges and Potential Use Cases. *Lecture Notes in Networks and Systems*, *381 LNNS*. https://doi.org/10.1007/978-3-030-93677-8_20

Bostley, M. A. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*, *Vol. 6*, *No*(5).

Burrows, T., & Mulligan, G. (2019). *African Blockchain Report*. https://liquid.tech/wp-content/uploads/2023/01/LiquidBlockchainReport2018.pdf

Carletti, E., Senbet, L. W., Cull, R., Allen, F., Qian, J. "QJ," & Valenzuela, P. (2018). Improving

Access to Banking: Evidence from Kenya. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3305047

Cassim, R. (2023). *Factors influencing the adoption of blockchain technology by South African commercial banks* [University of Pretoria]. https://doi.org/https://doi.org/10.25403/UPresearchdata.23815284.v1

CBK. (2023). *Discussion Paper on Central Bank Digital Currency: Comments from the Public*. https://www.centralbank.go.ke/wp-content/uploads/2023/06/Discussion-Paper-on-Central-Bank-Digital-Currency-Comments-from-the-Public.pdf

Central Bank of Kenya. (2023). *Banking Sector Innovation Survey 2023*.

Central Bank of Kenya. (2024). *Bank supervision annual report 2023*. https://www.centralbank.go.ke/uploads/banking_sector_annual_reports/69043552_2023 Annual Report.pdf

Chee, C. C., Mahmood, R., & Mohamed-Isa, A. (2021). Factors Affecting Mobile Banking Adoption. *Journal of Information Technology Management*, *13*(3). https://doi.org/10.22059/JITM.2021.83117

Chege, K., & Otieno, O. (2020). Research Philosophy Design and Methodologies: A Systematic Review of Research Paradigms in Information Technology. *Global Scientific Journals*, *8*(5).

Chen, U., Abdul-Hamid, A.-Q., & Zailani, S. (2024). Exploring factors influencing blockchain adoption's effectiveness in organizations for generating business value: a systematic literature review and thematic analysis. *Sustainability*, *16*(24), 10817. https://doi.org/https://doi.org/10.1080/17517575.2024.2379830

Chigova, L. E., & Hofisi, C. (2023). Bridging the gap: Harnessing diaspora philanthropy for sustainable rural infrastructure development in Zimbabwe. *Journal of Sustainable Development Law and Policy*, *14*(2). https://doi.org/10.4314/jsdlp.v14i2.3

Childs, M., Turner, T., Sneed, C., & Berry, A. (2022). A Contingency Theory Approach to

Understanding Small Retail Business Continuity During COVID-19. *Family and Consumer Sciences Research Journal*, *50*(3). https://doi.org/10.1111/fcsr.12434

Cirera, X., Comin, D., Cruz, M., Lee, K. M., Martinez, P., & Martins-Neto, A. (2022). *Firm-level Adoption of Technologies in Kenya*. World Bank. https://documents1.worldbank.org/curated/en/099240206302210426/pdf/P1707640534c2f0e90b5530dfa1c38ba5b8.pdf

Cirera, X., Comin, D., Cruz, M., Lee, K. M., & Martins-Neto, A. S. (2021). Firm-Level Technology Adoption in Vietnam. *World Bank Group: Finance, Competitiveness and Innovation Global Practice*, *March*.

Clohessy, T., & Acton, T. (2019). Investigating the influence of organizational factors on blockchain adoption: An innovation theory perspective. *Industrial Management and Data Systems*, *119*(7). https://doi.org/10.1108/IMDS-08-2018-0365

Çolak, H., & Kağnicioğlu, C. H. (2022). Acceptance of Blockchain Technology in Supply Chains: A Model Proposal. *Operations and Supply Chain Management*, *15*(1). https://doi.org/10.31387/oscm0480327

Coombs, W. T., & Tachkova, E. R. (2022). Elaborating the concept of threat in contingency theory: An integration with moral outrage and situational crisis communication theory. *Public Relations Review*, *48*(4). https://doi.org/10.1016/j.pubrev.2022.102234

Coutinho, K., Khairwal, N. K., & Wongthongtham, P. (2023). Towards a Truly Decentralized Blockchain Framework for Remittance. In *Journal of Risk and Financial Management* (Vol. 16, Issue 4). https://doi.org/10.3390/jrfm16040240

Dehghani, M., William Kennedy, R., Mashatan, A., Rese, A., & Karavidas, D. (2022). High interest, low adoption. A mixed-method investigation into the factors influencing organisational adoption of blockchain technology. *Journal of Business Research*, *149*, 393–411. https://doi.org/10.1016/j.jbusres.2022.05.015

Dickson, P., & Mahwera, D. A. (2022). Financial Institutions Readiness Towards Cryptocurrency

Adoption: A Case of Banks in Tanzania. *Journal of Business and Management Review*, *3*(10). https://doi.org/10.47153/jbmr310.4672022

Dowelani, M., Okoro, C., & Olaleye, A. (2022). Factors influencing blockchain adoption in the South African clearing and settlement industry. *South African Journal of Economic and Management Sciences*, *25*(1). https://doi.org/10.4102/sajems.v25i1.4460

Drescher, D. (2017). Blockchain basics: A non-technical introduction in 25 steps. In *Blockchain Basics: A Non-Technical Introduction in 25 Steps*. https://doi.org/10.1007/978-1-4842-2604-9

Ekwealor, V. (2019). *Formerly BitPesa, African currency trading solution startup AZA, raises $15m funding*. Techpoint Africa. https://techpoint.africa/2019/10/22/formerly-bitpesa-aza-raises-15-million-dollars/

Fatoki, O. I., & Wanjagi, J. (2019). The Future of Kenyan Banks: Mitigate Financial Risk Using Cryptocurrencies and Blockchain Technology. *RAIS Journal for Social Sciences*, *3*(2).

Gan, Q. Q., & Lau, R. Y. K. (2024). Trust in a 'trust-free' system: Blockchain acceptance in the banking and finance sector. *Technological Forecasting and Social Change*, *199*. https://doi.org/10.1016/j.techfore.2023.123050

Guest, G. (2015). Sampling and Selecting Participants in Field Research. *In Handbook of Methods in Cultural Anthropology*.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. In *European Business Review* (Vol. 31, Issue 1). https://doi.org/10.1108/EBR-11-2018-0203

Hamidu, K. M., Pastory, D., Massi, J., & Mrindoko, A. (2023). Towards Cryptocurrency Adoption in Tanzania: Potential Risks and Challenges to the Financial Ecosystem. *International Journal of Social Science Research and Review*, *6*(7). https://doi.org/10.47814/ijssrr.v6i7.1355

Hasan, S. B., Akhter, R., Al Abbasi, A. A., & Saha, S. (2019). Impact of Remittance on Economic Growth in Bangladesh. *American Journal of Trade and Policy*, *6*(1). https://doi.org/10.18034/ajtp.v6i1.346

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. In *Evidence-Based Nursing* (Vol. 18, Issue 3). https://doi.org/10.1136/eb-2015-102129

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management and Data Systems*, *116*(1). https://doi.org/10.1108/IMDS-09-2015-0382

Jannah, S. M., Sari, N., & Yuliana, I. (2022). Effect of Firm Size and Capital Structure on the value of the Company with Profitability as an Intervening Variable. *American Journal of Humanities and Social Sciences Research*, *6*.

Janssen, M., Weerakkody, V., Ismagilova, E., Sivarajah, U., & Irani, Z. (2020). A framework for analysing blockchain technology adoption: Integrating institutional, market and technical factors. *International Journal of Information Management*, *50*. https://doi.org/10.1016/j.ijinfomgt.2019.08.012

Jena, R. K. (2022). Examining the Factors Affecting the Adoption of Blockchain Technology in the Banking Sector: An Extended UTAUT Model. *International Journal of Financial Studies*, *10*(4). https://doi.org/10.3390/ijfs10040090

Kamau, C. G. (2022). The Cryptocurrency Market in Kenya: A Review of Awareness and Participation by the Youth. *Journal of Asian Business Strategy*, *12*(1). https://doi.org/10.55493/5006.v12i1.4599

Kanuku, M., Shitanda, D., & Nganu, M. (2020). Factors determining adoption of block chain in the insurance industry: a case of Kenya. *International Journal of Science and Research*, *9*(12), 881–889. https://repository.seku.ac.ke/handle/123456789/7471

Karashani, B. (2025). Kenya leads region in diaspora remittances: Somalia and South Sudan most dependent. *The East African*. https://www.theeastafrican.co.ke/tea/business-tech/kenya-

leads-region-in-diaspora-remittances-4871876#:~:text=Kenya's remittances-to-GDP ratio,flows in the past year.

Karisma, K., & Pardis, M. T. (2023). Blockchain: Legal and Regulatory Issues. In *Lecture Notes in Energy* (Vol. 98). https://doi.org/10.1007/978-3-031-30697-6_4

Katuwal, N. (2021). Contribution of Remittance to Rural Economy in Nepal. *IARJSET*, *8*(1). https://doi.org/10.17148/iarjset.2021.8103

Kaushik, S., Chadhar, M., Firmin, S., & Tatnall, A. (2024). *Innovation in Context: A Contingency Theory Perspective on Blockchain Adoption* (153; Australian Conference on Information Systems). https://aisel.aisnet.org/acis2024/153

Kawasmi, Z., Gyasi, E. A., & Dadd, D. (2019). Blockchain Adoption Model for the Global Banking Industry. *Journal of International Technology and Information Management*, *28*(4), 112–154.

Kianieff, M. (2019). Blockchain technology and the law: Opportunities and risks. In *Blockchain Technology and the Law: Opportunities and Risks*. https://doi.org/10.4324/9781351039222

Kidunda, E., & Pastory, D. (2021). Examination of factors influencing the intention to adopt cryptocurrencies in Tanzania. *Business Education Journal*, *10*(3), 11. https://doi.org/10.54156/cbe.bej.11.1.324

Kimani, D., Adams, K., Attah-Boakye, R., Ullah, S., Frecknall-Hughes, J., & Kim, J. (2020). Blockchain, business and the fourth industrial revolution: Whence, whither, wherefore and how? *Technological Forecasting and Social Change*, *161*. https://doi.org/10.1016/j.techfore.2020.120254

Kimoni, L. (2023). *Effect Of Digital Technology Adoption On The Performance Of Commercial Banks In Kenya*. KCA University.

Kirimi, P. N., Kariuki, S. N., & Ocharo, K. N. (2022). Ownership structure and financial performance: Evidence from Kenyan commercial banks. *PLoS ONE*, *17*(5 May).

https://doi.org/10.1371/journal.pone.0268301

Kori, B. W., Muathe, S. M. A., & Maina, S. M. (2020). Banks Regulation and Performance in the Context of Commercial Banks in Kenya. *International Journal of Academic Research in Business and Social Sciences*, *10*(10). https://doi.org/10.6007/ijarbss/v10-i10/7918

Kosgei, A. (2020). *Blockchain readiness assessment for domestic Horticulture traceability in Urban Kenya* [University of Nairobi]. http://erepository.uonbi.ac.ke/handle/11295/153196

Kpodar, K., & Amir Imam, P. (2024). How do transaction costs influence remittances? *World Development*, *177*. https://doi.org/10.1016/j.worlddev.2024.106537

La Cava, A., & Naatus, M. K. (2020). Disrupting Business as Usual. *International Journal of Innovation in the Digital Economy*, *11*(2). https://doi.org/10.4018/ijide.2020040104

Legesse, A., Beshah, B., Berhan, E., & Tesfaye, E. (2024). Exploring the influencing factors of blockchain technology adoption in national quality infrastructure: a Dual-Stage structural equation model and artificial neural network approach using TAM-TOE framework. *Cogent Engineering*, *11*(1), 2369220. https://doi.org/https://doi.org/10.1080/23311916.2024.2369220

Li, C., Zhang, Y., & Xu, Y. (2022). Factors Influencing the Adoption of Blockchain in the Construction Industry: A Hybrid Approach Using PLS-SEM and fsQCA. *Buildings*, *12*(9). https://doi.org/10.3390/buildings12091349

Liu, A., Goni, O., & Mitha, A. (2022). *Cryptocurrency in Africa*. https://www.undp.org/sites/g/files/zskgke326/files/2023-01/UNDP-DFS-Cryptocurrency-in-Africa_0.pdf

Liu, N., & Ye, Z. (2021). Empirical research on the blockchain adoption–based on TAM. *Applied Economics*, *53*(37). https://doi.org/10.1080/00036846.2021.1898535

Lustenberger, M., Malešević, S., & Spychiger, F. (2021). Ecosystem Readiness: Blockchain Adoption is Driven Externally. *Frontiers in Blockchain*, *4*.

https://doi.org/10.3389/fbloc.2021.720454

Mafike, S. S., & Mawela, T. (2022). Blockchain Design and Implementation Techniques, Considerations and Challenges in the Banking Sector: A Systematic Literature Review. In *Acta Informatica Pragensia* (Vol. 11, Issue 3). https://doi.org/10.18267/j.aip.200

Magaji, A., Suleiman, N., & Yahaya, L. (2018). Explored and Critique of Contingency Theory for Management Accounting Research. *Journal of Accounting and Financial Management*, *4*(July).

Magno, F., Cassia, F., & Ringle, C. M. (2024). A brief review of partial least squares structural equation modeling (PLS-SEM) use in quality management studies. *TQM Journal*, *36*(5). https://doi.org/10.1108/TQM-06-2022-0197

Mahajan, S., & Nanda, M. (2024). Revolutionizing Banking with Blockchain: Opportunities and Challenges Ahead. *Next-Generation Cybersecurity: AI, ML, and Blockchain*, 287–304. https://doi.org/https://doi.org/10.1007/978-981-97-1249-6_13

Malavolta, G., Moreno-Sanchez, P., Schneidewind, C., Kate, A., & Maffei, M. (2019). Anonymous Multi-Hop Locks for Blockchain Scalability and Interoperability. *26th Annual Network and Distributed System Security Symposium, NDSS 2019*. https://doi.org/10.14722/ndss.2019.23330

Malik, S., Chadhar, M., Vatanasakdakul, S., & Chetty, M. (2021). Factors affecting the organizational adoption of blockchain technology: Extending the technology–organization–environment (TOE) framework in the Australian context. *Sustainability (Switzerland)*, *13*(16). https://doi.org/10.3390/su13169404

Mansoor, M., Abbasi, A. Z., Abbasi, G. A., Ahmad, S., & Hwang, Y. (2024). Exploring the determinants affecting the usage of blockchain-based remittance services: an empirical study on the banking sector. *Behaviour and Information Technology*, *43*(10). https://doi.org/10.1080/0144929X.2023.2241564

Marengo, A., & Pagano, A. (2023). Investigating the Factors Influencing the Adoption of

Blockchain Technology across Different Countries and Industries: A Systematic Literature Review. In *Electronics (Switzerland)* (Vol. 12, Issue 14). https://doi.org/10.3390/electronics12143006

Mark, T., & Erude, S. U. (2023). Contingency Theory: An Assessment. *American Journal of Research in Business and Social Sciences*, *3*(2).

Mazorodze, T., Sibanda, V., & Tadu, R. (2022). Towards a Regulatory Framework for the Adoption and Use of Cryptocurrencies in Zimbabwe. In *Blockchain Technology: Exploring Opportunities, Challenges, and Applications*. https://doi.org/10.1201/9781003138082-6

Metzger, M., Riedler, T., & Pédussel Wu, J. (2020). Migrant Remittances : Alternative Money Transfer Channels. *Institute for International Political Economy Berlin*, *127*.

Mishra, R., Singh, R. K., Kumar, S., Mangla, S. K., & Kumar, V. (2023). Critical success factors of Blockchain technology adoption for sustainable and resilient operations in the banking industry during an uncertain business environment. *Electronic Commerce Research*. https://doi.org/10.1007/s10660-023-09707-3

Mohamad, M. M., Sulaiman, N. L., Sern, L. C., & Salleh, K. M. (2015). Measuring the Validity and Reliability of Research Instruments. *Procedia - Social and Behavioral Sciences*, *204*. https://doi.org/10.1016/j.sbspro.2015.08.129

Mote, J., Jordan, G., Hage, J., Hadden, W., & Clark, A. (2016). Too big to innovate? Exploring organizational size and innovation processes in scientific research. *Science and Public Policy*, *43*(3). https://doi.org/10.1093/scipol/scv045

Munyua, A. M. (2021). *The Model of Regulation for Virtual Currencies in Kenya*. University of Nairobi.

Mwangi, K. (2023, April 26). Kenyan Blockchain start-ups raised Sh3.5 billion last year, says report. *Business Daily*. https://www.businessdailyafrica.com/bd/markets/market-news/kenyan-blockchain-start-ups-raised-sh3-5-billion-last-year--4213586

Naderi, N. (2021). Utilizing Blockchain Technology in International Remittances for Poverty Reduction and Inclusive Growth. In *Economics, Law, and Institutions in Asia Pacific*. https://doi.org/10.1007/978-981-16-1107-0_7

Naidu, S., Singh, G., & Narayan, J. (2023). Revisiting the contingency theory: dissection of entrepreneurial orientation elements in retail franchisee performance. *International Journal of Emerging Markets*, *18*(9). https://doi.org/10.1108/IJOEM-03-2021-0467

Ngila, F. (2021, June 7). Inside Kenya's blockchain ecosystem: What the future holds. *Nation Africa*. https://nation.africa/kenya/business/inside-kenya-s-blockchain-ecosystem-what-the-future-holds-248804

Norbu, T., Park, J. Y., Wong, K. W., & Cui, H. (2024). Factors Affecting Trust and Acceptance for Blockchain Adoption in Digital Payment Systems: A Systematic Review. In *Future Internet* (Vol. 16, Issue 3). https://doi.org/10.3390/fi16030106

Oates, N. L., Roodt, S., & Mulaji, S. M. (2024). Perceptions on the Adoption of Blockchain for FinTech Applications in the Banking Industry in Developing Countries. In *International Conference on Implications of Information and Digital Technologies for Development* (pp. 251–266). Springer Nature Switzerland. https://link.springer.com/chapter/10.1007/978-3-031-66986-6_19#citeas

Oni, S. O., & Oyedokun, G. E. (2023). Adopting Cryptocurrency in Nigeria: Tax, Legal and Financial Implications. *BIS Quarterly Review*. https://www.researchgate.net/publication/373598276_Adopting_Cryptocurrency_in_Nigeria_Tax_Legal_and_Financial_Implications

Orji, I. J., Kusi-Sarpong, S., Huang, S., & Vazquez-Brust, D. (2020). Evaluating the factors that influence blockchain adoption in the freight logistics industry. *Transportation Research Part E: Logistics and Transportation Review*, *141*. https://doi.org/10.1016/j.tre.2020.102025

Ouma, S. O., & Ndede, F. W. . (2020). Adoption of Digital Banking Technology and Financial Performance of Commercial Banks in Kenya. *International Journal of Current Aspects in*

Finance, Banking and Accounting, *2*(1). https://doi.org/10.35942/ijcfa.v2i1.108

Pawar, N. (2020). 6. Type of Research and Type Research Design. *Social Research Methodology*, *December 2020*.

Post, R., Smit, K., & Zoet, M. (2018). Identifying Factors Affecting Blockchain Technology Diffusion. *Americas Conference on Information Systems 2018: Digital Disruption, AMCIS 2018*.

Prisco, A., Abdallah, Y. O., Morande, S., & Gheith, M. H. (2024). Factors affecting blockchain adoption in Italian companies: the moderating role of firm size. *Technology Analysis and Strategic Management*, *36*(10). https://doi.org/10.1080/09537325.2022.2155511

Qiu, T., Zhang, R., & Gao, Y. (2019). Ripple vs. SWIFT: Transforming Cross Border Remittance Using Blockchain Technology. *Procedia Computer Science*, *147*. https://doi.org/10.1016/j.procs.2019.01.260

Ratha, D. (2005). Workers' Remittances : An Important and Stable Source of External Development Finance. *Economic Seminar Series*, *9*.

Rauchs, M., Blandin, A., Bear, K., & McKeon, S. B. (2019). 2nd Global Enterprise Blockchain Benchmarking Study. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3461765

Reeves, P., & O'grady, R. (2022). Blockchain & Cryptocurrency Laws and Regulations | Australia. *Globallegalinsights.Com/*.

Rella, L. (2019). Blockchain Technologies and Remittances: From Financial Inclusion to Correspondent Banking. *Frontiers in Blockchain*, *2*. https://doi.org/10.3389/fbloc.2019.00014

Ruangkanjanases, A., Hariguna, T., Adiandari, A. M., & Alfawaz, K. M. (2022). Assessing Blockchain Adoption in Supply Chain Management, Antecedent of Technology Readiness, Knowledge Sharing and Trading Need. *Emerging Science Journal*, *6*(5). https://doi.org/10.28991/ESJ-2022-06-05-01

Safari, A., & Saleh, A. S. (2020). Key determinants of SMEs' export performance: a resource-based view and contingency theory approach using potential mediators. *Journal of Business and Industrial Marketing*, *35*(4). https://doi.org/10.1108/JBIM-11-2018-0324

Salome, P. (2017). *Blockchains, Distributed Ledgers and Funds Transfer: An Overview*. *August*.

Sanda, O., Pavlidis, M., & Polatidis, N. (2022). A Regulatory Readiness Assessment Framework for Blockchain Adoption in Healthcare. *Digital*, *2*(1). https://doi.org/10.3390/digital2010005

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial Least Squares Structural Equation Modeling. In *Handbook of Market Research*. https://doi.org/10.1007/978-3-319-57413-4_15

Saunders, M., Lewis, P., & Thornhill, A. (2019). Understanding research philosophy and approaches to theory development. In *Research Methods for Business Students* (pp. 128–171). Pearson education.

Schmitt, G., Mladenow, A., Strauss, C., & Schaffliauser-Linzatti, M. (2019). Smart contracts and internet of things: A qualitative content analysis using the technology-organization-environment framework to identify key-determinants. *Procedia Computer Science*, *160*. https://doi.org/10.1016/j.procs.2019.09.460

Shalender, K., Singla, B., & Sharma, S. (2023). Blockchain adoption in the financial sector: Challenges, solutions, and implementation framework. In *Revolutionizing Financial Services and Markets Through FinTech and Blockchain*. https://doi.org/10.4018/978-1-6684-8624-5.ch017

Shehzad, H. M. F., Ibrahim, R., Khaidzir, K. A. M., Alrefai, N., Chweya, R. K., Zrekat, M. M. Y., & Hassan, O. H. A. (2022). A Literature Review of Technology Adoption theories and Acceptance models for novelty in Building Information Modeling. In *Journal of Information Technology Management* (Vol. 14). https://doi.org/10.22059/JITM.2022.84886

Sood, A., & Simon, R. (2019). Implementation of Blockchain in Cross Border Money Transfer. *2019 4th International Conference on Information Systems and Computer Networks, ISCON 2019*. https://doi.org/10.1109/ISCON47742.2019.9036283

Soufaih, A. (2021). *Revolutionizing the International Remittance Payment Industry Using Cryptocurrency and Blockchain-based Technology* [University of Pennsylvania]. https://repository.upenn.edu/server/api/core/bitstreams/f4a63a05-8edf-4113-a9c2-e84797629a48/content

Soutter, L., Ferguson, K., & Neubert, M. (2019). Digital payments: Impact factors and mass adoption in sub-saharan africa. *Technology Innovation Management Review*, *7*(10). https://doi.org/10.22215/TIMREVIEW/1254

Su, J., Zhang, Y., & Wu, X. (2023). How market pressures and organizational readiness drive digital marketing adoption strategies' evolution in small and medium enterprises. *Technological Forecasting and Social Change*, *193*. https://doi.org/10.1016/j.techfore.2023.122655

Sugiarta, R. D., Arofiati, F., & Rosa, E. M. (2023). Validity and Reliability of Research Instruments on the Effect of Motivation on Nurse Performance in Moderation with Nurse Credentials. *JMMR (Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit)*, *12*(1). https://doi.org/10.18196/jmmr.v12i1.6

Sydow, A., Sunny, S. A., & Coffman, C. D. (2020). Leveraging blockchain's potential – The paradox of centrally legitimate, decentralized solutions to institutional challenges in Kenya. *Journal of Business Venturing Insights*, *14*. https://doi.org/10.1016/j.jbvi.2020.e00170

Taherdoost, H. (2022). A Critical Review of Blockchain Acceptance Models—Blockchain Technology Adoption Frameworks and Applications. In *Computers* (Vol. 11, Issue 2). https://doi.org/10.3390/computers11020024

Tamminen, K. A., & Poucher, Z. A. (2020). Research philosophies. In *The Routledge International Encyclopedia of Sport and Exercise Psychology*. https://doi.org/10.4324/9781315187259-39

Tauda, G. A., Omara, A., & Arnone, G. (2023). Cryptocurrency: Highlighting the Approach, Regulations, and Protection in Indonesia and European Union. *Bestuur*, *11*(1). https://doi.org/10.20961/bestuur.v11i1.67125

The Central Bank of Kenya. (2020). *the Afro-Asia Fintech Festival Nairobi Online City Shines the spotlight on the Fintech ecosystem*.

The Central Bank of Kenya. (2021). *Press Release: Announcing the Diaspora Remittances Survey*.

Thegeya, A. (2023). The Economics of Blockchain Within Africa. In *Data Governance and Policy in Africa*. https://doi.org/10.1007/978-3-031-24498-8_8

Ullah, A. K. M. A., Ferdous, J., & Chattoraj, D. (2024). Social, Political and Cultural Remittances: Implications for the Origin and Destination Countries. *Millennial Asia*, *15*(1). https://doi.org/10.1177/09763996221088639

Ursavaş, Ö. F. (2022). *Technology Acceptance Model: History, Theory, and Application*. https://doi.org/10.1007/978-3-031-10846-4_4

Wagh, S., & Pattillo, C. (2021). Impact of Remittances on Poverty and Financial Development in Sub-Saharan Africa. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.967879

Waihenya, J. W. (2020). *Decoding the Dilemma of Cryptocurrency Regulation in Kenya University of Nairobi*. University of Nairobi.

Wambui, W. M., & Thomas, D. M. (2024a). Blockchain technology adoption and performance of commercial banks in Nairobi City County, Kenya. *International Journal of Social Sciences Management and Entrepreneurship*, *8*(4), 198–210.

Wambui, W. M., & Thomas, D. M. (2024b). Blockchain technology adoption and performance of commercial banks in Nairobi City County, Kenya. *Int Journal of Social Sciences Management and Entrepreneurship*, *8*(4), 198–210.

Wangui, R. (2018). *Perception of Procurement Professionals on the Adoption of Blockchain Technologies and Its Impact on Supply Chain Management in Kenya* [University of Nairobi]. http://erepository.uonbi.ac.ke/handle/11295/106332

Weerawarna, R., Miah, S. J., & Shao, X. (2023). Emerging advances of blockchain technology in

finance: a content analysis. *Personal and Ubiquitous Computing*, *27*(4). https://doi.org/10.1007/s00779-023-01712-5

Wilhelm, A. (2019). Blockchain Technology and the Development of African Economies: Promises, Opportunities, and the Legal Issues at Stake. *Recht in Afrika*, *22*(1). https://doi.org/10.5771/2363-6270-2019-1-3

Wong, L. W., Leong, L. Y., Hew, J. J., Tan, G. W. H., & Ooi, K. B. (2020). Time to seize the digital evolution: Adoption of blockchain in operations and supply chain management among Malaysian SMEs. *International Journal of Information Management*, *52*. https://doi.org/10.1016/j.ijinfomgt.2019.08.005

World Bank. (2023). *Remittances Remain Resilient but Likely to Slow*. https://www.worldbank.org/en/news/press-release/2023/06/13/remittances-remain-resilient-likely-to-slow

Yadav, S. P., Agrawal, K. K., Bhati, B. S., Al-Turjman, F., & Mostarda, L. (2022). Blockchain-Based Cryptocurrency Regulation: An Overview. *Computational Economics*, *59*(4). https://doi.org/10.1007/s10614-020-10050-0

Yunusa, E., & Ocheni, D. E. (2024). The place of industrial policy in the adoption of blockchain technology in Nigeria. *GPH-International Journal of Applied Management Science*, *5*(2), 10–22.

Zika, J. (2007). *Remittances : the service provider perspective Remittances : the service provider perspective*.

APPENDICES

Appendix 1: List of Commercial Banks in Kenya

		Market size		Total Net Assets		Total Deposits		Shareholders' funds		No. of Deposit accounts		No. of loan accounts	
		%	Rank	Ksh.000	%	Ksh.000	%	Ksh.000	%		%		%
	Weighting (%)			0.33		0.33		0.33		0.005		0.005	
	Large Peer Group >5												
1	KCB Bank Kenya Limited	17.4	1	1,425,369,827	18.5	1,129,288,810	19.1	138,717,804	14.2	37,734,074	39.9	1,882,500	14.6
2	Equity Bank (Kenya) Ltd	12.2	2	1,004,243,929	13.1	792,374,900	13.4	100,766,641	10.3	12,901,368	13.6	883,078	6.8
3	NCBA Bank Kenya PLC	9.2	3	661,743,852	8.6	529,104,090	9.0	87,817,057	9.0	30,803,966	32.5	8,338,595	64.5
4	Co-operative Bank of Kenya Ltd	8.8	4	624,254,621	8.1	438,300,382	7.4	106,560,269	10.9	4,193,175	4.4	966,686	7.5
5	Absa Bank Kenya PLC	6.6	5	520,301,038	6.8	378,588,333	6.4	65,424,361	6.7	2,235,965	2.4	291,465	2.3
6	Standard Chartered Bank (K) Ltd	5.9	6	429,278,578	5.6	347,180,286	5.9	61,258,308	6.2	310,633	0.3	47,852	0.4
7	Stanbic Bank Kenya Ltd	5.8	7	449,614,899	5.8	337,798,651	5.7	58,358,359	6.0	293,890	0.3	56,669	0.4
8	I & M Bank Limited	5.4	8	405,613,032	5.3	313,540,057	5.3	56,755,091	5.8	243,729	0.3	31,380	0.2
9	Diamond Trust Bank Kenya Ltd.	5.3	9	399,615,631	5.2	299,473,088	5.1	56,692,780	5.8	785,994	0.8	29,426	0.2
	Sub-Total	**76.6**		**5,920,035,406**	**77**	**4,565,648,597**	**77.4**	**732,350,670**	**74.7**	**89,502,794**	**94.6**	**12,527,651**	**0.97**
	Medium Peer Group (1-5)												
1	Bank of Baroda (Kenya) Limited	2.8	10	201,938,448	2.6	170,817,666	2.9	27,901,033	2.8	67,841	0.1	4,002	0.0
2	Prime Bank Ltd	2.7	11	166,064,763	2.2	127,563,560	2.2	36,857,362	3.8	48,358	0.1	4,756	0.0
3	Citibank N.A. Kenya	2.3	12	151,772,199	2.0	111,766,170	1.9	30,296,174	3.1	2,250	0.0	267	0.0
4	Family Bank Ltd.	1.8	13	142,315,712	1.9	107,522,305	1.8	16,402,160	1.7	2,880,619	3.0	173,246	1.3
5	Bank of India	1.8	14	103,082,409	1.3	70,836,680	1.2	27,155,734	2.8	13,000	0.0	584	0.0
6	National Bank of Kenya Ltd	1.7	15	161,106,364	2.1	123,466,636	2.1	10,573,067	1.1	529,601	0.6	40,291	0.3
7	SBM Bank (Kenya) Ltd	1.1	16	94,919,435	1.2	63,768,529	1.1	8,782,860	0.9	129,371	0.1	19,764	0.2
8	Ecobank Kenya Ltd	1.0	17	103,936,673	1.4	99,680,027	1.7	-281,890	0.0	317,390	0.3	3,930	0.0
	Sub-Total	**15.1**		**1,125,136,003**	**14.6**	**875,421,573**	**14.8**	**157,686,500**	**16.1**	**3,988,430**	**4.2**	**246,840**	**0.0**
	Small Peer Group < 1												
1	HFC Ltd	0.8	18	59,145,971	0.8	43,872,141	0.7	8,301,824	0.8	275,705	0.3	13,124	0.1
2	Victoria Commercial Bank Plc	0.7	19	59,200,750	0.8	41,835,199	0.7	7,598,678	0.8	6,954	0.0	1,780	0.0
3	Bank of Africa Ltd	0.6	20	51,723,886	0.7	35,728,806	0.6	6,054,356	0.6	61,160	0.1	10,101	0.1
4	Gulf African Bank Limited	0.6	21	42,125,681	0.5	34,062,615	0.6	7,067,695	0.7	88,527	0.1	18,359	0.1
5	Guaranty Trust Bank (Kenya) Ltd	0.6	22	30,112,267	0.4	18,741,217	0.3	10,766,422	1.1	23,324	0.0	1,172	0.0
6	African Banking Corporation Ltd	0.5	23	41,775,949	0.5	34,153,958	0.6	4,389,165	0.4	26,624	0.0	880	0.0
7	Sidian Bank Ltd	0.5	24	44,738,527	0.6	28,633,742	0.5	4,703,830	0.5	164,029	0.2	20,895	0.2
8	Habib Bank AG Zurich	0.4	25	36,125,057	0.5	31,908,017	0.5	3,046,671	0.3	6,051	0.0	567	0.0
9	DIB Bank Kenya Ltd	0.4	26	26,489,664	0.3	21,051,552	0.4	4,878,107	0.5	6,386	0.0	778	0.0
10	UBA Kenya Bank Ltd	0.4	27	31,209,553	0.4	26,589,766	0.5	2,078,783	0.2	13,808	0.0	530	0.0
11	Premier Bank Kenya Ltd	0.3	28	23,304,561	0.3	11,834,599	0.2	5,261,889	0.5	71,897	0.1	1,747	0.0
12	Credit Bank PLC	0.3	29	25,721,643	0.3	18,247,392	0.3	3,267,287	0.3	43,456	0.0	1,658	0.0
13	Commercial International Bank (CIB) Kenya Limited	0.3	30	17,543,453	0.2	12,890,373	0.2	4,191,483	0.4	3,513	0.0	410	0.0
14	Kingdom Bank Kenya Limited	0.3	31	36,720,398	0.5	12,296,313	0.2	1,476,758	0.2	189,490	0.2	25,891	0.2
15	Development Bank of Kenya Ltd	0.3	32	18,840,315	0.2	10,942,810	0.2	3,783,689	0.4	1,807	0.0	1,153	0.0
16	Guardian Bank Limited	0.3	33	15,853,010	0.2	11,773,111	0.2	3,577,591	0.4	10,722	0.0	945	0.0
17	M-Oriental Bank Kenya Ltd	0.2	34	13,859,858	0.2	10,326,600	0.2	3,384,465	0.3	4,374	0.0	565	0.0
18	Middle East Bank (K) Ltd	0.2	35	18,848,303	0.2	13,697,919	0.2	2,138,770	0.2	3,833	0.0	28,386	0.2
19	Paramount Bank Ltd	0.2	36	15,439,383	0.2	12,122,569	0.2	2,576,948	0.3	6,482	0.0	2,165	0.0
20	Access Bank (Kenya) PLC	0.2	37	17,119,500	0.2	13,592,039	0.2	1,806,825	0.2	98,175	0.1	8,491	0.1
21	Consolidated Bank of Kenya	0.1	38	15,209,512	0.2	10,997,740	0.2	651,981	0.1	45,784	0.0	4,353	0.0
22	Spire Bank Limited	0.0	39	2,882,182	0.0	2,115,508	0.0	-838,493	-0.1	-	0.0	-	0.0
	Sub-Total	**8.4**		**643,989,423**	**8.4**	**457,413,987**	**7.8**	**90,164,724**	**9.2**	**1,152,101**	**1.2**	**143,950**	**1.11**
	Grand-Total	**100**		**7,689,160,833**	**100**	**5,898,484,157**	**100**	**980,201,894**	**100**	**94,643,325**	**100**	**12,918,441**	**100**

Source: (Central Bank of Kenya, 2024)

Appendix 2: Research Instrument

The purpose of this study is to investigate the **Determinants of Blockchain Adoption Readiness in Kenyan Commercial Banks' Remittance Systems** while **Examining the Role of Bank Size as a Moderator**. This study is being conducted as part of the fulfilment of the requirements for a Master's Degree in the Science of Development Finance at Strathmore University. Your insights will be invaluable in gaining knowledge about commercial banks' readiness for blockchain technology adoption in remittance systems. Please note that participation is voluntary, and all the information you provide will be kept confidential and used for academic purposes only.

Instructions:
Read each question carefully.
Tick only one answer (✓) on the box.
Do not specify your name on the questionnaire.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

1. Please indicate your gender

☐ Male ☐ Female

2. Please indicate your age bracket

☐ 18-30 years ☐ 31-40 years

☐ 41-50 years ☐ Above 50 years

3. Please indicate your highest level of education

☐ Diploma ☐ Undergraduate

☐ Masters ☐ Postgraduate

4. Department/division

☐ General management ☐ IT

☐ Legal/ regulatory compliance ☐ Foreign exchange

5. Level of seniority within the department

☐ Executive level ☐ Senior level

☐ Mid-level ☐ Junior level

6. Years of employment in banking?

☐ Less than 5 years ☐ 5-10 years

☐ 15-20 years ☐ More than 20 years

7. Familiarity with blockchain technology

☐ Not at all familiar ☐ Slightly familiar

☐ Somewhat familiar ☐ Very familiar

8. Familiarity with current remittance processes and challenges

☐ Not familiar ☐ Slightly familiar

☐ Somewhat familiar ☐ Very familiar

9. Name of your bank_____

SECTION B: THE BANK'S REMITTANCE SYSTEM READINESS FOR BLOCKCHAIN

This section seeks to gather your perspectives on your bank's readiness for blockchain integration within its remittance systems. Please carefully review each question and select the most appropriate answer.

Note that*: 1=No extent at all, 2=Little extent, 3=Moderate extent, 4=Large extent, 5=Very large extent.*

	1	2	3	4	5
To what extent do you believe blockchain technology is useful for remittance services?					
To what extent do you believe blockchain technology is easy to use for remittance services?					
To what extent do you believe the bank is likely to adopt blockchain for remittance services?					

To what extent do you believe the adoption of blockchain for remittances aligns with the bank's overall strategic direction and business goals?					

SECTION C: ORGANIZATIONAL READINESS

This section seeks to gather your perspectives on your bank's level of organizational preparedness for blockchain integration within its remittance system. Please carefully review each question and select the most appropriate answer.

Note that*: 1=No extent at all, 2= Little extent, 3=Moderate extent, 4=Large extent, 5=Very large extent.*

	1	2	3	4	5
To what extent do you believe the bank has a dedicated budget and resources for technological initiatives including blockchain?					
How well-prepared is the bank’s workforce to effectively work with blockchain tools and technologies for remittances?					
How engaged is (are you as) leadership in championing and driving support for the bank to adopt blockchain for remittances?					
To what extent do you believe the company culture in place can support the integration of blockchain for remittances?					
To what extent do you believe the bank's inclination to innovation is adequate to explore blockchain for remittances?					

SECTION D: TECHNICAL READINESS

This section seeks to gather your perspectives on your bank's level of technical preparedness for blockchain integration within its remittance system. Please carefully review each question and select the most appropriate answer.

Note that*: 1=No extent at all, 2= Little extent, 3=Moderate extent, 4=Large extent, 5=Very large extent.*

	1	2	3	4	5

How prepared is the bank's IT infrastructure to support the deployment, integration, and scaling of blockchain for remittances?					
To what extent do you believe the bank's existing systems are compatible with integrating blockchain for remittances?					
To what extent of complexity do you believe blockchain integration is for the bank's remittance system?					
To what extent has the bank identified use cases, tested and experimented with blockchain for remittance services?					
To what extent do you believe the bank's security and privacy measures are enough to address issues of blockchain integration for remittance services?					
To what extent do you believe is the quality, reliability and accessibility of the bank's data for blockchain adoption for remittance services?					

SECTION E: REGULATORY READINESS

This section seeks to gather your perspectives on regulatory readiness for blockchain adoption for your bank's remittance system. Please carefully review each question and select the most appropriate answer.

Note that*: 1=No extent at all, 2= Little extent, 3=Moderate extent, 4=Large extent, 5=Very large extent.*

	1	2	3	4	5
To what extent are existing regulations clear on the adoption and use of blockchain technology?					
To what extent are regulations in the banking sector adequate for addressing blockchain adoption in remittance services?					
To what extent do you believe your organization is prepared for any upcoming regulations around blockchain technology?					
To what extent does the governance strategy of the bank clearly outline and account for adoption of new technology including blockchain?					

To what extent, if any, does the bank effectively monitor blockchain technology risks and ensure auditability?					

Thank you for your participation

Appendix 3: Budget

Item	**Number of Units**	**Unit Cost (KES)**	**Total Cost (KES)**
Enumerators wages	2	1,500.00	3,000.00
Data entry and analytical support	1	10,000.00	10,000.00
Transport	Lumpsum	2,000.00	2,000.00
Printing and binding costs	Lumpsum	5,000.00	5,000.00
Sub-total			***20,000.00***
Contingencies (10% of total budget)			***2,000.00***
Grand Total			**22,000.00**

Appendix 4: Work Plan

Stage	Activities	Expectations	Timeline
Stage 1: Proposal Development	- Identifying the research problem, objectives, questions and stakeholders. - Conducting literature review including identification of the theoretical framework - Empirical review and identification of research gaps - Development of the conceptual framework and variable operationalization - Development of research philosophy & design - Identifying target population and sampling technique - Development of the research instrument - Seeking approval from supervisor - Preparation for proposal defense	Research proposal draft	Oct 2024 - Jan 2025
Stage 2: Proposal Defense	- Review of any corrections from the supervisor - Obtain Turnitin index report	Feedback on proposal draft from examiners	Feb 2025

	- Submission for defense - Preparation of defense presentation - Defense		
Stage 3: Ethics & Data Collection Preparation	- Addressing corrections based on proposal defense - Submission of corrected proposal to supervisor - Obtaining approval from supervisor for ethical submission - Submitting for ethical approval with SU-ISERC - Obtaining Ethical approval letter from SU-ISERC and NACOSTI license - Conducting pilot study to refine research instrument - Preparing and refining of research instrument (questionnaire) - Refining data collection tools	Approved research instruments	Mar 2025
Stage 4: Data Collection	- Contacting participants and obtaining informed consent - Conducting surveys using the research instrument (questionnaire)	Raw dataset	Mar 2025 – Apr 2025
Stage 5: Data Analysis	- Cleaning and coding data using the identified research tool - Analyzing data using the identified statistical model - Interpreting results	Analyzed data and results	Apr 2025

Stage 6: Writing & Reviewing Findings	- Writing research findings - Discussing results with the supervisor - Drafting dissertation chapters	Research findings report	Apr 2025 - May 2025
Stage 7: Dissertation Development	- Writing full dissertation - Editing and formatting - Review of any corrections from the supervisor - Obtaining approval from supervisor - Preparation for dissertation defense	Dissertation	May 2025
Stage 8: Dissertation Defense	- Obtain Turnitin index report - Submission for defense - Preparation of defense presentation - Defense	Feedback on dissertation from examiners	May 2025
Stage 9: Final Thesis & Submission	- Addressing corrections based on dissertation defense - Submission of corrected dissertation to supervisor - Obtaining final approval from supervisor - Final documentation: proof-reading and final edits	Final approved dissertation	May 2025

	- Printing and binding hard copies - Final submission		

Appendix 5: Clearance for Ethcial Approval

Strathmore UNIVERSITY

1st April 2025

Ms Anjichi Elizabeth,
elizabeth.anjichi@strathmore.edu

Dear Ms Anjichi,

RE: Determinants of Block chain Adoption Readiness in Kenyan Commercial Banks' Remittance Systems: Examining the Role of Bank Size as a Moderator

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2760/25.** The approval period is from **1st April 2025 to 31st March 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Appendix 6: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 641637

Date of Issue: 03/April/2025

RESEARCH LICENSE

This is to Certify that Miss.. Elizabeth Chungune Anjichi of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Determinants of Blockchain Adoption Readiness in Kenyan Commercial Banks' Remittance Systems: Examining the Role of Bank Size as a Moderator for the period ending : 03/April/2026.

License No: NACOSTI/P/25/418045

641637

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions