FACTORS INFLUENCING THE IMPLEMENTATION OF RPA IN KENYA'S TIER-ONE BANKS

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DECLARATION AND APPROVAL

DECLARATION

I, Maureen Muita, 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, the 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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DEDICATION

This research is dedicated to the spirit of enterprise that drives business innovation and progress. To the giants of commerce and economics who came before, laying the foundations for our modern commercial world – I learned from your writings. To the professors who awakened my fascination with the machinery of markets and systems of trade. Thank you for the gift of curiosity. To my fellow students piecing together solutions for a brighter commercial future – you inspire me to aim high. And to my friends and family who encouraged me to pursue this path; your unwavering support made everything possible. With gratitude for those who lit the way, I take my next steps into the dynamic landscape of commerce may this work contribute insights and perspectives to empower those shaping the business world of tomorrow.

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ABSTRACT

This quantitative study investigated the implementation of RPA in tier-one commercial banks in Kenya, addressing the critical need for empirical evidence on RPA adoption in Kenya's banking sector. Grounded in the Technology Acceptance Model, Diffusion of Innovations theory, and Unified Theory of Acceptance and Use of Technologies, the research aimed to examine RPA implementation, perceived benefits, critical success factors, and challenges. Adopting a positivist philosophy, the study utilized a structured questionnaire to collect quantitative data from employees across three tier-one commercial banks in Kenya that had implemented RPA. The population consisted of 6,605 employees, with a sample size of 388 determined using Yamane's formula. Descriptive and inferential statistical analyses revealed a moderate to high level of RPA adoption among the surveyed banks. The study found that Kenya's tier-one banks have moderately adopted RPA, driven by the need for efficiency. Conversely, a significant negative relationship was observed between implementation challenges and success in adoption. High implementation costs and integration difficulties emerged as primary concerns, while alignment with business objectives, availability of skilled personnel, and senior management involvement were identified as critical success factors. Providing adequate training was deemed the most crucial strategy for successful implementation. Out of 388 respondents, 341 valid responses were returned, representing a response rate of 87.89%. Multiple regression analysis demonstrated that RPA adoption, implementation processes, strategies, and challenges collectively explained 72% of the variance in RPA implementation success ($R^2 = 0.72$, $p < 0.001$). This indicates that these factors significantly influence the success of RPA initiatives in the Kenyan banking context. This study contributes to the literature on RPA implementation in underdeveloped nations and provides insightful information for researchers, bank management, and policymakers. In order to guide strategies for successful RPA initiatives in the African banking sector, the findings support an exhaustive approach to RPA adoption that takes organizational, technological, and human variables into account.

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DEFINITION OF TERMS

Adoption - The process by which a person or other decision-making unit learns about an invention, develops an attitude toward it, decides whether to accept or reject it, puts the new concept into practice, and then confirms this conclusion (Rodgers, 2003).

Automation - The creation and application of technology that enables the production and delivery of products and services with minimal human oversight employing self-governing systems, often in regulated environments for a long period of time. (Goldberg, 2011).

Commercial banks- These are financial institutions that offer banking services to individuals and corporations (Papa, 2022).

Robotic process automation (RPA)- RPA refers to a type of technology for automating business processes, employing software robots to execute tasks typically carried out by humans (IBM, 2023).

Tier one- The term tier one typically refers to the largest and most prominent banks or financial institutions in a particular country or region (Gartner, 2024).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The digital revolution has compelled organisations globally to adopt emerging technologies to remain competitive. As Uskenbayeva et al. (2019) notes, meeting customer demands rapidly, boosting productivity, enhancing efficiency, and delivering superior value at lower costs have become imperative in the digital economy. Harnessing technological innovations is now critical for business success.

One rapidly emerging technology is RPA, which facilitates the automation of monotonous, rules-based workflows through software robots. RPA adoption can transform organizations by automating time-intensive manual work, freeing employees to focus on higher-value activities (Lacity et al., 2021). By eliminating human error in repetitive tasks, RPA enhances quality, consistency, and compliance. Studies indicate RPA implementation can reduce process costs by 25-50% in domains like banking, insurance, healthcare, and finance (Syed et al., 2020).

Despite such benefits, RPA adoption varies significantly across regions, influenced by technological, organizational, and environmental factors. Technologically, the complexity of existing IT infrastructure and the level of process standardization can impact RPA implementation (Syed et al., 2020). Organizationally, factors such as management support, employee skills, and organizational culture play crucial roles (Lacity et al, 2016). Environmentally, regulatory frameworks, competitive pressures, and market dynamics shape RPA adoption decisions (Moffitt et al., 2018).

While RPA uptake is rising in Western economies, developing countries have seen slower adoption (Mlambo, 2022). In Africa, RPA remains in its infancy, though a few large organizations have embarked on adoption. This disparity highlights a significant research gap in understanding how contextual factors in developing countries influence RPA adoption and implementation strategies.

Scholarly research on RPA implementation also remains scarce, particularly in developing country contexts like Africa. Existing studies are primarily fixated on developed economies (Hofmann et al., 2019; Romao et al., 2019), leaving a knowledge gap in understanding RPA assimilation strategies, challenges, and outcomes specific to the institutional environments of developing countries. Moreover, there is limited research on the long-term impacts of RPA on organizational performance and employee roles in these contexts.

Interestingly, some studies have reported conflicting findings regarding RPA's impact. While many highlight substantial cost savings and efficiency gains (Syed et al., 2020), others caution about potential job displacement and the need for significant organizational change management (Willcocks et al., 2017). These empirical gaps underscore the need for more nuanced, context-specific research.

This study focused on RPA adoption within Kenyan banks, a major economic sector yet underexplored in intelligent automation research. Although some tier-one Kenyan banks have started RPA pilots, adoption is still nascent with limited scholarly insight. The banking sector presents major efficiency improvement and cost reduction opportunities from large-scale RPA implementation. However, research is needed to guide decision-making by illuminating the realities of RPA deployment in the Kenyan context.

By examining RPA adoption processes, benefits, and hurdles in tier-one Kenyan banks, this study generates actionable intelligence to inform strategic technology management. The findings will also enrich the scant academic literature on RPA implementation in African organizations, addressing the identified research gaps. This includes exploring how technological factors (e.g., existing IT infrastructure), organizational factors (e.g., employee skills and resistance), and environmental factors (e.g., regulatory environment) influence RPA adoption in Kenyan banks.

Accordingly, this study made important theoretical and practical contributions by advancing a nuanced, evidence-based perspective on RPA assimilation specific to the Kenyan banking industry. It aimed to narrow down the knowledge gap between RPA implementation in developed and developing economies, providing insights that can guide future research and practice in similar contexts.

1.1.1 Robotics Process Automation

RPA is a technology within business process automation that streamlines repetitive, high-volume tasks using artificial intelligence (AI) and machine learning (ML) (Hofmann et al., 2019). RPA allows users to configure scripts, commonly referred to as Bots, to execute specific keystrokes automatically, mimicking selected tasks within various business or IT processes. Hofmann et al. described RPA as a productivity enhancer. These tasks may involve data manipulation, interfacing with triggering responses, other applications, or conducting transactions. RPA optimizes the automation process through a blend of user interface interaction and descriptor technologies.

RPA capabilities and architecture can contrast depending on the vendor and the specific implementation. RPA solutions can be structured as either stand-alone or client-server architectures to manage the automation 'robots' (Agostinelli et al., 2019). RPA solutions are also commonly segmented into two types: attended and unattended bots (Tornbohm and Dunie, 2017). Attended RPA bots are designed to work alongside human employees, where the employee may provide input data or take data from the robot as it executes its tasks. This makes attended bots suitable for scenarios where human decision-making or intervention is required. In contrast, unattended RPA bots operate without any human involvement. They are designed to execute pre-defined routines and tasks without the need for human input or interaction.

Unattended bots are often used for well-understood, repetitive tasks where all the execution paths can be properly coded (Volodymyr et al., 2020). The choice between attended and unattended bots depends on the specific business requirements and the nature of the tasks that need to be automated. Organizations can leverage both types of bots within their RPA deployments to achieve the desired level of automation and human-robot collaboration.

1.1.2 Adoption of Robotics automation in the Banking Sector

RPA is a rapidly emerging technology that is revolutionizing company operations globally. (Siderska, 2020). RPA is a form of software that automates monotonous tasks, such as data entry and processing, allowing organizations to reorganise their operations, cost reduction, and improve efficiency (Siderska, 2021). In recent years, RPA has gained significant traction in the banking sector, with many tier-one banks around the world adopting the technology (Osman, 2019). In the banking industry, RPA can be useful for repetitive tasks such as data entry, customer on-boarding,

compliance checks, and loan processing (Romao et al., 2019). According to Kokina and Blanchette (2019), banks can easily free up their personnel to focus on more complex and value-added activities by automating tasks, which can eventually lead to better customer service and increased profitability. RPA is an important tool for banks looking to stay competitive in an increasingly digital world.

In the United States, several tier one banks have implemented RPA, including JPMorgan Chase, Bank of America, and Wells Fargo (Garg et al., 2022). These banks have reported significant benefits from the implementation of RPA, including reduced costs, increased efficiency, and better customer satisfaction. JPMorgan Chase is a prime example of how RPA can revolutionize the mortgage division of a bank (JP Morgan, 2022). By integrating RPA, the bank was able to reduce processing time by 75% and cut costs by 40%. This resulted in faster loan processing times, which led to a better experience for the customers. Additionally, Madakam et al. (2019) highlight that RPA has helped these banks to reduce the risk of errors and improve compliance with regulations, as the software robots are programmed to follow the rules and regulations accurately. By freeing up employees from tedious and time-consuming tasks, RPA allows banks to allocate their human resources to more critical and complex activities with minimal error. This, in turn, increases overall productivity and customer satisfaction. With RPA gaining momentum in the banking sector, it is expected to become an essential tool in banks' digital transformation journey, leading to a more efficient and customer-centric banking experience.

RPA has also made inroads in the banking sector in Europe, with several tier-one banks implementing the technology (Patri, 2020). Deutsche Bank, Barclays, and HSBC are among the European banks that have integrated RPA into their operations (Czarnecki et al., 2021). These banks have reported similar benefits to their American counterparts. For instance, Deutsche Bank implemented RPA in its operations department, leading to a 60% reduction in processing time and a 30% reduction in costs (The Lab Consulting, 2018) With RPA, the bank was able to automate tasks such as data entry, reconciliation, and report generation, freeing up employees to focus on more strategic tasks (Maček et al., 2020). Similarly, Barclays has implemented RPA to automate back-office tasks, such as customer on-boarding and compliance checks, leading to improved customer satisfaction. The advantages of RPA in the European banking sector are not limited to cost and time savings. RPA can also improve compliance with regulatory requirements by ensuring

that processes are executed accurately and consistently (Maček et al., 2020). Moreover, it can enhance risk management by automating fraud detection and prevention processes, minimizing the risk of errors (Matos, 2021).

In Asia, tier one bank such as DBS Bank, Standard Chartered, and Citibank, have also implemented RPA in their operations. For example, DBS Bank implemented RPA in its trade finance operations, resulting in a 60% reduction in processing time and a 40% reduction in costs (DBS Bank, 2017). The bank automated tasks such as invoice processing and data entry, allowing employees to focus on more multifaceted and value-added tasks. Similarly, Standard Chartered has implemented RPA in its client on boarding process, leading to improved customer experience and faster turnaround times. With the increase of digital banking, RPA has become a vital tool for banks in Asia looking to stay competitive (Kapoor, 2018). RPA allows banks to automate repetitive and time-consuming tasks, leading to cost savings and increased efficiency. Additionally, RPA can help banks to comply with regulatory requirements by ensuring that processes are executed accurately and consistently.

In Africa, RPA adoption in the banking sector is still in its infancy, with only a few tier one banks having implemented the technology. However, the potential benefits of RPA are significant, and there is a growing interest in the technology (Mlambo, 2022). There are several reasons why RPA adoption is still in its infancy in Africa's banking sector. Firstly, the technology is still fairly new, and many banks may not be aware of its potential benefits (Iyamu & Mlambo, 2022). Moreover, there is a limited research and education on the benefits and challenges of RPA implementation in the African banking sector. Another challenge is the high costs of RPA implementation (CIO, 2021). Many banks in Africa may not have the financial resources to invest and capitalise in RPA, and the lack of skilled labour in the region may also make it difficult to implement the technology effectively. Furthermore, regulatory compliance is a significant concern for banks in Africa, and the implementation of RPA may require changes to prevailing procedures and processes, which can be time-consuming and costly (Syed et al., 2020). The digital infrastructure in Africa is still developing, and many banks may not have the much-needed IT infrastructure to support RPA implementation. The lack of reliable internet connectivity and limited access to cloud-based technologies can also make it challenging for banks in Africa to adopt RPA.

In Kenya, several tier one banks such as ABSA Bank have successfully implemented RPA in some of their processes like reconciliations, settlements and credit scoring while others like NCBA and KCB bank have started to explore the implementation of RPA. Yet, there is lack of significant research on the implementation, benefits and challenges of RPA implementation in the Kenyan banking sector. Studies such as Mbiu (2022) assess the benefits of RPA but focus on the insurance industry in Kenya. Nevertheless, the potential benefits of RPA for Kenyan tier one banks is significant. RPA can help banks to automate monotonous and time-consuming tasks, unburdening employees to focus on more critical and strategic activities. This, in turn, can lead to improved productivity, efficiency, and customer experience (Bhatti, 2019). Consequently, this study aims to assess the implementation of RPA and its perceived benefits in the tier-one banking sector in Kenya.

This study explores the factors influencing RPA adoption and implementation in Kenya's tier-one banks, analyzing critical success factors, challenges, and benefits. By addressing existing research gaps, the study provides empirical insights for policymakers, banking executives, and scholars.

1.2 Problem Statement

RPA adoption is a strategic imperative for Kenya's banking sector to drive operational efficiencies, reduce costs, and enhance customer satisfaction. Studies estimate that on average, bank employees spend 10-25% of their time on repetitive, manual tasks that can be automated through RPA (Dilmegani, 2024). Moreover, IT teams might allocate around 30% of their time to handling fundamental, rudimentary tasks. With increasing transaction volumes, this equates to significant productivity losses - a large Kenyan bank could conservatively save millions of dollars annually by implementing RPA to automate routine processes (Mckinsey, 2022). According to the Kenya Bankers Association (2022), by 2023, it was estimated that banks would save around $447 billion through the adoption of new technologies such as AI applications and RPA. By 2030, these innovations are expected to generate savings exceeding $1 trillion for the banking sector (Theuri & Olukuru, 2022).

However, within Kenya's banking landscape, RPA implementation remains nascent, revealing several critical research gaps. Most existing research focuses on Western and Asian contexts, yielding findings that may not be directly applicable to Kenya's unique socio-cultural environment

and human-centric operations. This gap necessitates investigation into tailored implementation strategies beyond imitating Western models (Iyamu & Mlambo, 2022). There is a pressing need to assess the specific technological, organizational, and environmental factors that influence RPA adoption and implementation in Kenyan banks. Understanding these factors is crucial for developing effective adoption strategies. While studies like Fiase et al.'s (2024) research in Ghana highlighted infrastructural deficits and lack of technical capabilities as key RPA adoption barriers, there is limited guidance on overcoming these hurdles specific to Sub-Saharan African contexts, particularly Kenya. The actual impact of RPA on operational effectiveness, cost savings, and customer satisfaction in Kenyan banks remains understudied. This gap hinders evidence-based decision-making regarding RPA investments. Furthermore, the human aspect of RPA adoption, including employee acceptance, skill development, and organizational culture shifts, requires further exploration in the Kenyan context. The interplay between RPA implementation and regulatory compliance in Kenya's banking sector is another area lacking substantial research.

The scarcity of research explicating RPA assimilation prerequisites, optimal implementation pathways, and transformative impacts tailored to Kenya's financial institutions represents a glaring deficiency. This high-impact knowledge gap undermines evidence-based decision-making critical for maximizing RPA's potential in driving competitiveness and financial inclusion while generating operational efficiencies conservatively valued at over $500 million annually for the Kenyan banking industry (Papa, 2022). Through an in-depth investigation of RPA adoption within tier-one Kenyan banks via extensive stakeholder surveys, this study seeks to bridge this gap by investigating the critical factors influencing RPA adoption, the challenges encountered, and the strategies employed to overcome them. Understanding these aspects will enable banks to formulate informed strategies for successful RPA implementation, fostering operational efficiency and competitiveness. Bridging this significant scholarly void enables theoretical modelling of technology assimilation dynamics pertinent to Kenya's banking environment. Ultimately, this timely research provides the banking sector with a comprehensive, evidence-based guide for strategic RPA deployments that fortify efficiencies, strengthen competitiveness, and catalyse financial inclusion across Kenya's economy.

1.3 Research Objective

The main research objective of this study was to assess the implementation of RPA and its challenges in tier-one banking sector in Kenya.

1.3.1 Specific Research Objectives

i. To assess the rate of RPA adoption and integration within tier-one commercial banks in Kenya.
ii. To identify and evaluate the critical success factors influencing RPA adoption in tier-one banks in Kenya.
iii. To examine the challenges faced by tier-one banks in Kenya during RPA implementation and the strategies employed to overcome these challenges.

1.4 Research Questions

i. What is the rate of RPA adoption and integration in Kenya's tier-one banks?
ii. What are the critical success factors influencing the adoption and successful implementation of RPA in these banks?
iii. What challenges do tier-one banks face in implementing RPA, and how are these challenges mitigated?

1.5 Scope of the study

The scope of this study focused on RPA implementation across core banking functions within tier-one commercial banks in Kenya. This includes RPA adoption for front-office processes like retail customer on-boarding, loan origination, payments processing as well as back-office operations such as reconciliations, compliance reporting, trade processing and IT service management.

The Kenyan banking landscape comprises 46 commercial banks as of 2024, organized into four tiers based on asset size and market share (Kenya Bankers Association, 2024). Tier-one represents the largest banks like Equity, KCB, Co-operative Bank, ABSA holding over 50% of total industry assets. This study concentrates on these systemically important tier-one institutions. Specifically, on banks that have implemented RPA in Kenya for over six months which include KCB, NCBA, and DTB banks.

The sector is regulated by the Central Bank of Kenya under the Banking Act and monitored by the Kenya Bankers Association industry group. Recent policy developments like the 2022 Central Bank Digital Currency regulations are shaping technological transformation across banks. (CBK, 2024)

The study adopted a quantitative approach, utilizing structured questionnaires to capture insights from key personnel directly involved in driving RPA initiatives within the sampled tier-one banks. This includes representatives from operations, IT, digital transformation and C-suite leadership roles. Relevant theoretical lenses from technology adoption models like TAM, UTAUT and DOI supported interpretation within the Kenyan banking context.

The geographical scope covered RPA deployment within the head office locations of sampled tier-one banks based in Nairobi, Kenya's capital which serves as the financial services hub. Data collection was from June to August 2024 to comprehensively assess RPA implementation efforts underway.

This study generated invaluable insights enlightening RPA's transformative potential across core banking functions within Kenya's most crucial financial institutions, paving the way for sector-wide technology adoption aligned with policy objectives.

1.6 Significance of the study

The study was of significant interest to a wide range of stakeholders, including banks, government, academic scholars, and other relevant stakeholders. The study provided insights into the benefits and challenges of RPA implementation in the tier-one banking sector in Kenya. This information can help banks make informed decisions about whether to adopt RPA and how to do so successfully. The study will also provide recommendations for improving RPA adoption in the Kenyan banking sector, which can enhance the sector's efficiency and competitiveness. Also, the findings of this study can inform government policies and regulations related to RPA adoption in the banking sector. The government can use the recommendations provided by the study to create an enabling environment for RPA adoption and promote the competitiveness of the Kenyan banking sector. The study also contributes to the current literature on RPA adoption in the banking sector, specifically in the African context. The study utilized theoretical frameworks, including technology adoption theories, to provide a deeper knowledge of the factors that influence RPA

adoption in the banking sector. The study provided insights into the likely benefits and challenges of RPA adoption in the Kenyan banking sector, which can be useful for investors and consultants as they make their investment decisions within the country.

1.1.6 The Kenyan Banking Sector

The Kenyan banking sector plays an essential role in the country's financial services industry and broader economic growth agenda. Kenya has 46 commercial banks that held over Ksh. 7.41 trillion in assets in 2023, indicating the sector's dominance within the financial system (CBK, 2023). Banks enable critical functions like capital mobilization, payment infrastructure, credit provision to consumers and businesses, and support for government developmental priorities. However, the sector faces pressures to increase efficiency, reduce costs, expand financial inclusion and improve customer experience in a highly competitive, increasingly tech-driven environment. These imperatives make the adoption of emerging technologies like RPA urgent to radically transform operations.

RPA enables automation of monotonous, rule-based processes through software robots, delivering major productivity and efficiency gains (Romao et al., 2019). By automating manual workflows in functions like payments processing, loan management, customer on boarding, compliance and reporting, RPA can allow banks to cut costs, operate with leaner teams, and enable staff to undertake higher-value tasks (Wewege et al., 2020). Error reduction and faster processing are other key benefits, along with driving standardization, consistency and compliance across banking processes. Despite such advantages, RPA adoption in Kenya's banking industry remains at an early stage.

While leading banks have piloted RPA in certain functions, widespread implementation is yet to occur (Papa, 2022). Scholarly investigation on drivers, challenges and strategies for successful RPA assimilation in the sector is also sparse. This underscores the need for in-depth research on Kenyan banks' RPA adoption journey to inform theory, policy and practice. The study can uncover implementation realities, key success factors, and barriers specific to the Kenyan banking context. By surveying stakeholders directly involved in adoption initiatives and collecting real-world data, rich insights emerged to guide decision-makers.

As a major bank market in Africa, Kenya provides an ideal developing country perspective on RPA deployment in banking. Findings can be extended to other African nations while adding diversity to the field dominated by Western contexts. For practice, the study provided a roadmap for banks to implement RPA effectively by learning from early adopters' experiences. Theoretically, it expands limited scholarly work on RPA in African organizations. For policy, results can guide interventions like tax incentives, training programs, and regulatory changes to spur RPA assimilation. Thus, by providing an in-depth, empirical investigation of a strategically important phenomenon, this study can enormously benefit theory, practice, and policymaking on banking technology adoption. This study specifically focused on tier-one banks in Kenya. Tier-one banks, also known as large peer banks, are the largest and most stable financial institutions in the country, holding significant market share and having substantial influence on the nationally.

1.7 Chapter Summary

This chapter provides a summary of the study and breaks down into multiple sections, including the study's background, problem statement, research objective, specific research objectives, research questions, study scope, and study significance. The study's background gave context and explanation for the research. The problem statement identified the issue that the study intends to address. The research objectives and questions highlighted the study's main objectives and questions, which were to examine RPA implementation in Kenya's banking sector. The scope of the study identified the boundaries of the research. It explains what the study covered and what it did not cover. The significance of the study explained the importance of the study and highlighted its contribution to the banking sector in Kenya, the government, and other key stakeholders such as investors.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter of the study covered the literature review. The discussion is based on the previous scholarly material related to the study of RPA implementation and Adoption. A theoretical review was presented first, presenting the theories related to RPA implementation and its adoption in the banking Sector. Subsequently, the chapter presents the empirical review of the study based on previous studies related to RPA adoption. The chapter further provides a research gap, the conceptual framework upon which the research was based, the operationalization of variables, and finally the chapter summary.

2.2 Theoretical Framework

Numerous researchers have studied how quickly consumers adopt new technologies. How quickly customers adopt new technologies as they improve and develop depends on a variety of factors, including the availability of the technology, convenience, consumer need, security, and cost. This chapter reviews past studies carried out on RPA adoption, barriers to adoption, and benefits of its adoption in the banking sector.

According to a report on innovation adoption research by Lai (2017), the Diffusion of Innovation Theory, Perceived Innovation Characteristics, Theory of Reasoned Action, Theory of Planned Behaviour, Technology Acceptance Model, Technology Acceptance Model 2, Technology Acceptance Model 3, Technology, Organization and Environment Model, and Unified theory of Technology Acceptance model were the most commonly used models of all innovation adoption theories.

The theoretical foundation for the study on the Implementation of RPA & its perceived benefits in the Kenyan tier one banks is based on three key theories: The Diffusion of Innovations Theory, Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technologies (UTAUT).

2.2.1 The Diffusion of Innovations Theory

The Diffusion of Innovations Theory was developed by renowned scholar Everett Rogers in 1962, based on his synthesis of over 508 diffusion studies (Rogers, 2003). This well-established theory proposes that the adoption of any new innovation or technology follows a predictable S-shaped pattern, going through distinct stages before reaching widespread assimilation in a social system. According to Rogers (2003), Knowledge/awareness, persuasion, decision, implementation, and confirmation are the five steps in the invention adoption process. At every level, consumers' perceptions of the innovation's features—such as relative advantage, compatibility, simplicity, trialability, and observability—determine their attitudes and decisions towards the new technology. Decision-making also depends on adopters' individual traits, wider institutional and socio-cultural norms as well as modes by which information about the innovation spreads via communication channels over time through society (Kaminski, 2011). While the Diffusion of Innovations Theory has been widely applied across various disciplines, it is not without criticism. One significant critique is its pro-innovation bias, which assumes that innovations are always beneficial and should be adopted (Lyytinen & Damsgaard, 2001). This perspective may overlook potential negative consequences of innovation adoption or fail to account for situations where non-adoption might be a rational choice.

The Diffusion of Innovations theory is highly relevant to this study exploring the adoption of an emerging banking technology like RPA in the Kenyan context. As Rogers (2003) highlights, organizational innovation is a process that is influenced by both technological as well as social factors. RPA adoption decisions within Kenyan banks would similarly depend on perceptions of the relative advantage of RPA in enhancing efficiency, potential compatibility issues with existing systems, its ease of use as determined by the technological skills and involvement of bank staff across hierarchies, possibilities to experiment with RPA on a limited trial basis as well as the demonstrability of RPA benefits within the wider Kenyan banking industry over time (Asatiani & Penttinen, 2018). By understanding diffusion dynamics, banks can proactively develop strategies to facilitate transitioning through each stage, overcoming adoption barriers at individual, organizational and industry levels (Sonnenwald et al., 2001). This makes Rogers' theory uniquely suited for in-depth investigation of multi-level technological, social and cultural challenges that can permeate innovation propagation within Kenyan banks undergoing digital transformation.

2.2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was originally proposed by Fred Davis in his 1986 doctoral thesis, and further developed in subsequent works with Richard Bagozzi and Paul Warshaw throughout the late 1980s and early 1990s (Davis et al., 1989; Bagozzi et al., 1992). As one of the most influential and extensively utilized theoretical models in information systems research, TAM aims to explain the psychological and social factors driving user acceptance of new technologies by individuals within organizations (Venkatesh & Davis 2000; Turner et al., 2010). The Technology Acceptance Model (TAM) has been a cornerstone in information systems research for decades, offering valuable insights into the factors driving technology adoption (Davis et al., 1989). However, despite its widespread use and influence, TAM is not without its criticisms. While its parsimony and robustness have contributed to its popularity, these same qualities have also led to concerns about oversimplification (Bagozzi, 2007). The model's straightforward approach, focusing primarily on perceived usefulness and ease of use, may not capture the full complexity of technology acceptance processes in real-world scenarios. Furthermore, TAM's limited consideration of social and organizational factors has been a point of contention, as these elements can significantly influence adoption behaviours (Legris et al., 2003).

Critics have also pointed out that TAM's reliance on self-reported data and its somewhat deterministic approach may limit its ability to accurately predict actual system usage and long-term adoption patterns (Turner et al., 2010). The model's emphasis on cognitive factors at the expense of emotional considerations has been questioned, particularly in light of growing research on the role of affect in decision-making (Venkatesh, 2000). Additionally, while TAM has been applied globally, its cross-cultural validity and reliability have been debated, raising questions about its universal applicability (Straub et al., 1997).

Specifically, TAM theorizes that users' decisions to adopt and utilize a new technology are driven primarily by two key beliefs - perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989). Perceived usefulness refers to the degree to which using the technology enhances job performance, productivity and effectiveness. Perceived ease of use focuses on whether using the technology requires minimal effort. TAM proposes that users evaluate positively technologies that are useful for relevant tasks and easy to apply with minimal obstacles or frustrations. If users

believe the technology meets both criteria, they develop a positive attitude and stronger intention to adopt it, ultimately translating to actual system usage.

TAM offers valuable explanatory potential regarding user acceptance issues surrounding the implementation of an emerging banking technology like RPA within large commercial banks in the Kenyan context. As Koul (2018) finds, TAM factors like perceived value and ease of use play a key role in driving RPA adoption decisions across bank departments handling processes like financial reporting, compliance, claims processing and credit approval assessments. By optimizing user experience via organizational mechanisms that promote RPA's utility and usability, Kenyan banks can positively influence staff beliefs and technology acceptance levels across operative units and managerial tiers. As Lu et al. (2019) highlight, TAM further enables assessment of variances in RPA assimilation across demographic categories classified by age, professional tenure and technological proficiency. Applying TAM can thus provide multi-level, empirically-grounded and actionable insights to address organizational and individual barriers undermining the perceived fit and adoption of RPA for enhanced efficiency in the Kenyan banking industry.

2.2.3 Unified Theory of Acceptance and Use of Technologies (UTAUT)

UTAUT was formulated in 2003 by information systems researchers Viswanath Venkatesh, Dael G. Morris, Gordon B. Davis, and Fred D. Davis, following an extensive review and consolidation of eight major technology adoption frameworks prevailing since the 1980s (Venkatesh et al., 2018).

As an integrated model, UTAUT theorizes that user acceptance and usage behaviour towards new technologies is jointly determined by four key constructs: performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). Performance expectancy refers to perceived benefits of the technology in boosting productivity and performance within domain-specific tasks and goals. Effort expectancy focuses on the degree of ease in application of the technology. Social influence measures whether important referents and peers encourage or discourage usage, while facilitating conditions assess the availability of organizational resources like training and technical support for system utilization (Venkatesh et al., 2018).

UTAUT also identifies four moderating variables – gender, age, experience and voluntariness of use that influence construct relationships and contribution levels, with greater explanatory precision compared to preceding models (Imran et al, 2019).

For an emerging technology like RPA within the commercial banking sector in Kenya, UTAUT lends useful insights for facilitating adoption and improving implementation outcomes (Venkatesh et al., 2018). Assessing staff performance, effort and social expectations as well as supporting infrastructure can help Kenyan banks evaluate acceptance levels, diagnose assimilation barriers and devise targeted interventions addressing user concerns. Gender, age and experiential differences can also be incorporated for customized strategies promoting RPA buy-in across diverse bank stakeholders (Syed et al., 2020). Integrating both technological and human perspectives, UTAUT serves as a comprehensive decision-making tool for bank leaders responsible for technological transformation initiatives within complex organizational contexts.

The three theories - Diffusion of Innovations, Technology Acceptance Model (TAM), and Unified Theory of Acceptance and Use of Technologies (UTAUT) - offer a comprehensive theoretical lens to examine the implementation of RPA in Kenyan banks. While the Diffusion of Innovations theory provides an overarching perspective on the stages and factors influencing the spread of technological innovations within social systems, TAM delves into the specific psychological determinants driving individual adoption decisions. UTAUT, as an integrated model, expands on TAM by incorporating social influences and facilitating conditions alongside performance and effort expectancies.

By employing all three theories synergistically, this study can capture the multi-level technological, organizational, and socio-cultural dynamics shaping RPA implementation in Kenyan banks. The Diffusion of Innovations theory serves as the anchor, elucidating the innovation-decision process while TAM and UTAUT complement it by explaining user beliefs, attitudes, and intentions towards RPA adoption at individual and organizational levels respectively. This triangulation of theoretical viewpoints is essential to gain a holistic understanding of the perceived benefits, challenges, and success factors surrounding the assimilation of such a disruptive automation technology within a complex banking environment undergoing digital transformation.

Potential criticisms of solely relying on any one theory are mitigated by the combined application of all three frameworks. While the Diffusion of Innovations theory primarily examines macro innovation characteristics and system-level diffusion patterns, integrating the micro-level constructs from TAM and UTAUT provides insights into the cognitive mechanisms influencing adoption among diverse bank employees and stakeholders across hierarchies.

2.3 Empirical Review

This segment of the study discusses available academic journals, articles, or books related to the RPA adoption and implementation success as well as the perceived benefits.

2.3.1 Automation Adoption in the Kenyan banking sector

As commercial banks aim to enhance customer service and build stronger relationships with their consumers, technology continues to be a major driving factor in the banking sector. According to Haabazoka (2018), technology has grown ingrained in banking, making it simpler and less expensive to design and supply financial services. Technology has had a noteworthy impact on the banking sector in recent years. Several ways in which technology has been adopted in the banking sector is through automation.

Automation refers to the use of technology, specifically computers and machines, to perform tasks that were previously done by humans (Suhel et al., 2020). This technology is designed to streamline processes, increase efficiency, and reduce the use of manual labour. In the banking sector, automation has become a crucial tool for reducing costs, enhancing customer experience, and increasing operational efficiency. Romao et al. (2019) states that automated systems have the capability to swiftly and precisely handle substantial amounts of data, thereby diminishing the likelihood of human error. Automation has made it easier for banks to manage risk and comply with regulations and improve both employee and customer experience while transacting (Mehdiabadi et al., 2020). Advanced risk management systems can analyse data in real-time, helping banks identify and manage potential risks more effectively. Automated systems can also help banks comply with regulations by ensuring that all transactions and financial data are recorded and reported accurately and in a timely manner.

The adoption of automation in the banking sector in Africa has been slower compared to other regions such as the USA, Europe, and Asia. According to Famubode (2018), this is caused by

several factors, including the lack of infrastructure and connectivity in some areas, the lack of investment in technology, and the limited regulatory framework. However, in recent years, the adoption of automation in the African banking sector has been increasing as more banks recognize the benefits of automation. This has been driven by the growing demand for financial services and the need for banks to improve efficiency and security and reduce operating costs.

The emergence of mobile banking pioneered by telecom firms such as Safaricom in Kenya, notably with its M-Pesa system, heralded the onset of the digital transformation. This innovation quickly outpaced traditional banks. Leveraging their proximity to customers and mobile terminals, telecom operators in collaboration with banks have capitalized on both basic phones, known as 'Feature phones,' utilizing the USSD protocol, and smartphones to provide a diverse range of mobile banking services. This development has been particularly significant in regions where banking accessibility was historically low, with African countries averaging banking rates between 5 to 15%.Mobile banking has become increasingly popular in Africa, with many banks offering mobile banking services to their customers (Kheira, 2021). This has enabled banks to access a larger customer base and offer financial services to those living in distant and underserved locations. Another area of automation in the African banking sector is in the management of back-office operations, such as accounting, reconciliation, treasury management, triggered customer response and compliance., improving the speed and accuracy of data processing and reducing the risk of mistakes, 360 customer engagement and fraud management. (Kasik, 2020)

Despite the growing adoption of automation in the banking sector, there are still challenges that need to be addressed. One of the main challenges is the high cost of investment in technology, which can be a barrier for smaller banks and those in less developed economies (Wireko et al., 2016).

In Kenya, the banking sector has been experiencing significant changes in recent years, with the adoption of automation being one of the key drivers. The tier one commercial banks in Kenya have been at the forefront of this change, investing heavily in automation technologies to stay viable and meet the evolving needs of their customers (Muthinja & Chipeta, 2017). Despite these efforts, the adoption of automation in Kenya's tier one commercial banks has been slow, with many banks facing a range of challenges that have impeded their progress. Some of the key challenges facing

the adoption of automation in tier one commercial banks in Kenya include the high costs associated with technology investment, the lack of a workforce to operate and maintain automated systems, and the resistance to change among bank employees and leadership. Additionally, the expensive and limited infrastructure and connectivity in certain parts of the country, as well as the lack of a supportive regulatory framework for technology adoption, have also been obstacles for banks in Kenya. (Olwande & Ngaba, 2019).

2.3.3 Application of RPA in the Tier One Banks

Retail banking operations involve high volumes of customer transactions and service requests, making them prime candidates for RPA. Studies reveal that RPA applications automate retail customer on-boarding, i.e., acquiring and verifying new customers to provide banking services (Asatiani & Penttinen, 2018), loan underwriting and processing, payments processing, and identity verification. Software bots execute these repetitive tasks faster and more accurately than employees, enabling banks to improve service quality and turnaround times for retail customers, while reducing costs and manual errors (errors that occur due to human intervention in repetitive processes (Nedelcu, 2022). Staffs can then concentrate on value-added advisory roles offering personalized financial guidance or customer engagement services.

RPA streamlines essential workflows in corporate banking like client on-boarding, loan administration, payments processing, and compliance reporting (generating mandatory reports that adhere to financial regulations as per Madakam et al. (2019). Bots automate repetitive data entry and report generation (tasks such as copying data across systems and preparing standardized reports), reducing labour costs and errors, while improving accuracy and efficiency for banks. This enables more strategic focus on relationship management roles for corporate bankers building and maintaining relationships with key corporate clients to drive business growth (Gupta & Grover, 2020).

Treasury operations and control functions utilize RPA to reconcile voluminous transactions matching transaction data from different sources to ensure consistency, monitor account balances, book trades, produce reports, and track financial instrument positions keeping records of positions in stocks, bonds, and other investments (Cabrita et al., 2021). Automating these repetitive,

intensive reconciliation and control tasks minimizes manual errors for improved accuracy and efficiency reduced time and resources spent correcting mistakes) (Nedelcu, 2022).

Risk assessment modelling, predictive analytics, regulatory reporting, transaction monitoring, audits, and compliance processes often employ RPA given their rules-based repetitive nature involving extensive data processing such as monitoring financial transactions for anomalies or creating compliance reports according to regulatory standards (Abdul-Jabbar et al., 2022). RPA bots apply pre-defined rules consistently to large datasets, strengthening fraud detection and compliance while enabling faster, more accurate outputs than manual approaches detecting and reporting suspicious activities and generating audit reports automatically (Moffitt et al., 2018).

Banks use RPA chatbots and virtual assistants to automate routine customer service interactions like answering frequently asked questions or providing basic account information, enhance query response times, and improve service accessibility making services available around the clock without requiring human intervention (Mogaji et al., 2021). This empowers human agents to resolve more complex issues and focus on value-adding advisory roles (helping customers with personalized advice or resolving non-standard inquiries. IT teams in banks deploy RPA to handle repetitive helpdesk tickets, user access requests, and basic system administration tasks (like password resets or user provisioning as per Leopold et al. (2018). By removing such manual repetitive work, RPA enables IT staff to focus on specialized technical roles and new technology implementations like adopting new software systems or improving cybersecurity measures.

Research shows RPA improves customer service, operational efficiency, quality, and cost savings in banking across front, middle, and back office operations covering customer-facing services, internal processes, and back-end support activities. Key benefits include faster process execution, reduced errors, improved compliance, and scalability to handle increasing transaction volumes accommodating growth in customer base and transaction load seamlessly. This allows banks to reduce redundant manual work and labour costs while enabling staff to focus on judgment-intensive tasks and providing strategic value like critical decision-making or complex problem-solving roles. With large-scale automation potential, RPA adoption is accelerating across the global banking industry (indicating widespread recognition of RPA's benefits in banking.

2.3.4 Benefits & opportunities RPA offers to the banking sector

RPA offers significant benefits and opportunities to banks by automating high-volume, repetitive manual processes across operations. Studies reveal major efficiency gains, cost savings, improved accuracy and superior customer service from RPA adoption. An Australian bank's 1,000+ bots achieved $50 million in annual savings through automating account openings, loan processing and customer queries (Asatiani & Penttinen, 2018).

RPA streamlines retail banking workflows including customer on-boarding, loan underwriting, payments processing and identity verification (Asatiani & Penttinen, 2018; Nedelcu, 2022). Bots process transactions and requests faster than employees, enabling banks to improve turnaround times and service quality. Employees can focus on value-added advisory roles rather than repetitive tasks. In corporate banking, RPA automates client on-boarding, loan administration, payments and compliance reporting (Madakam et al., 2019). By reducing repetitive data entry and manual reporting, RPA cuts costs and errors for banks while improving efficiency and accuracy (Gupta & Grover, 2020). This allows corporate bankers to focus on relationship management.

RPA assists treasury operations by automating high-volume reconciliations, account balance monitoring, trade booking, reporting and financial instrument tracking (Cabrita et al., 2021). This minimizes manual errors and frees staff time. Risk management, compliance, audits and reporting leverage RPA's consistent rules-based processing of large datasets, improving fraud detection, strengthening compliance and enabling faster outputs (Abdul-Jabbar et al., 2022; Moffitt et al., 2018).

Customer service RPA chatbots automate routine queries, enhancing response times and accessibility for improved customer experience (Mogaji et al., 2021). This empowers human agents to resolve complex issues. RPA bots handle repetitive IT helpdesk tickets, user access requests and basic system tasks, enabling IT staff to focus on technical roles and new technologies (Leopold et al., 2018). Across operations, RPA drives efficiency gains through faster process execution, reduced manual errors, improved compliance and scalability to growing volumes. This allows banks to reduce labour costs associated with redundant roles, while existing staff specialize in judgment-intensive work providing greater strategic value. With immense potential for large-scale automation, RPA adoption is accelerating globally. A survey found 81% of banking

executives planned to implement RPA, citing quality, speed, cost reduction and improved customer satisfaction as key goals (Nedelcu, 2022).

Processes ripe for RPA include account openings, loan origination, credit adjudication, payments processing, regulatory reporting, customer service and IT support. As RPA penetrates further across banking, analysts forecast cost savings exceeding $7 billion for the sector by 2024, primarily by eliminating repetitive manual roles (Gupta & Grover, 2020). This enables re-deployment of staff to assistive and knowledge-based roles. However, change management is critical to smooth RPA adoption, assuage job security fears and gain staff buy-in through upskilling with intelligent automation, RPA is evolving beyond basic task execution. Emerging capabilities include machine learning-enabled bots, conversational interfaces, cognitive automation using natural language processing, and augmented analytics. This promises even wider automation of complex workflows and unstructured data tasks alongside traditional rules-based processes.

2.3.5 Critical Success factors in the implementation of RPA

Implementing RPA successfully in banking requires a thoughtful approach and managing organizational change. Banks need a well-defined RPA strategy and roadmap aligned to business goals, with stakeholder buy-in driven by quantifying expected benefits like improved efficiency, cost reductions, and enhanced risk management and control. Suitable processes should be selected for automation based on high transaction volumes, potential for speed improvements, and feasibility factors (Jones et al., 2021).

Securing strong executive leadership sponsorship and oversight of the RPA program is critical to drive organizational alignment and change management. Proactive communication and training help minimize staff resistance by clarifying that RPA complements employees' work rather than replacing jobs. Upskilling staff in RPA further builds buy-in establishing centralized governance, facilitating scaling RPA across business units through enterprise-wide standards and performance tracking (Li, 2022). Dedicated internal RPA technical teams should be created through training IT staff or partnerships with vendors to master skills like process analysis, solution design, development, testing and maintenance (Dahlia, 2021).

User-friendly RPA solutions modelled on existing workflows smoothens adoption. Ongoing performance monitoring with metrics like cycle times and error reduction enables continuous

improvement. Control frameworks are imperative to manage risks like bot failures, credential misuse and errors. Banks succeeding with large RPA programs undertook meticulous process selection, internal talent development, and extensive change management and communication (Nirvikar et al., 2024) others ran awareness campaigns pre-implementation to secure buy-in. With careful planning and execution, banks can maximize the benefits of RPA as an enabling technology for staff to enhance their work. (Lopes et al., 2023).

2.3.6 Potential Risks & challenges of adopting RPA in the banking sector

RPA adoption is accelerating across banking for its myriad benefits, however prudent risk management is key. As bots gain more responsibility, sound controls must be instituted to address emerging challenges. One major risk is bot failures and errors disrupting critical workflows. Studies reveal bots make mistakes from logic gaps, execution failures, system changes or input data errors (Asatiani & Penttinen, 2018). Extensive testing, performance monitoring, human oversight and process controls are imperative to quickly identify and rectify errors. Educating users on seeming bot flaws due to incomplete user understanding versus actual malfunction is also important.

Information security vulnerabilities pose threats if bots access sensitive customer data (Madakam et al., 2019). Credentials may be compromised and bots potentially hacked. Banks need RPA-specific cybersecurity controls like credential vaulting, proper access controls and bot deployment restrictions. Security should be backed into RPA design through secure coding practices. RPA distributes control to business users for bot training and deployment, increasing insider risks from intentional or accidental bot misuse (Abdul-Jabbar et al., 2022). Controls like user access reviews, activity monitoring and automated triggers to identify unusual bot behaviours are vital.

Compliance risks can emerge from inconsistent bot rule application or gaps in complex edge case handling (Nedelcu, 2022). Ongoing compliance monitoring, bot audits and founder control principles are required. RPA risks falling outside regulatory perimeters if not properly supervised. Overdependence on bots' risks deskilling employees, so balancing bot augmentation and human work is key (Moffitt et al., 2018). Job displacement fears should be pre-empted through change management and workforce training. Scalability challenges can arise if RPA is not developed on

robust, enterprise-grade platforms (Gupta & Grover, 2020). Fragmented bot deployments should be avoided. Integrations with core banking systems need design.

Vendors going bust or technology obsolescence are continuity risks if RPA platforms are not future-proofed (Nedelcu, 2022). Banks must ensure vendor viability, platform longevity through cloud hosting, and keep pace with RPA feature upgrades. High upfront costs of proprietary RPA tools are deterrents for smaller banks, though cloud-based solutions are emerging (Cabrita et al., 2021). The ROI of RPA investments should be quantified before embarking on large programs.

Succeeding with RPA requires acknowledging these risks. Banks need holistic frameworks encompassing preventive controls, ongoing monitoring, and mitigation protocols. Assessing risks should begin during solution design. Employee communication, training and oversight cultivates a culture of responsible bot usage. Platform selection, vendor management and cloud migrations future-proof RPA programs. With prudent adoption, RPA's process transformation potential can be harnessed while promoting employee collaboration alongside bots.

2.4 Research Gaps Summary

The existing literature on RPA in banking largely focused on developed country contexts, with limited research exploring RPA adoption in African banking sectors. This research study purposed to address this gap by investigating RPA implementation specifically within the Kenyan banking industry, where uptake remains at an early stage. While previous scholars have examined RPA deployment in global banks, this research took a contextualized approach to understand drivers, benefits, critical success factors, and challenges for RPA adoption in Kenya's unique banking environment. The quantitative study gathered insights from key stakeholders at three leading Kenyan banks and generated empirical evidence to advance theoretical and practical knowledge on RPA assimilation in this understudied developing economy setting. Significantly, this study is among the first to bridge the research gap on RPA adoption in the African banking sector, particularly in Kenya where technology assimilation is rapidly evolving. By providing an in-depth assessment of RPA implementation issues tailored to the Kenyan banking context, this study stands to make important contributions toward guiding technology strategy and policy for Kenyan banks seeking to harness the immense potential of RPA. The nuanced perspective aims to unlock

the transformational capabilities of RPA to drive enhanced productivity, cost efficiencies and customer experiences in Kenya's banking industry.

Table 2.1: Summary of Research Gap

Authors	Titles of Studies	Methodologies Used	Findings	Research Gaps	Type of Research Gaps	How Current Studies Addressed Research Gaps
Mlambo, N. (2022)	The adoption of RPA in a financial institution in South Africa	Case study, qualitative interviews	Examined the adoption of RPA in a financial institution.	Lack of comprehensive guidelines for successful RPA implementation.	Methodological gaps	The study highlighted challenges faced during adoption but did not propose specific guidelines.
Papa, E. O. (2022)	The Impact of Barriers and Benefits on Adoption Readiness of RPA in Kenyan Commercial Banks	Survey research, statistical analysis	Investigated barriers and benefits affecting RPA adoption readiness in Kenyan banks.	The need to address cultural and organizational barriers specific to Kenyan banks.	Contextual gaps	The study emphasized the importance of addressing cultural factors but did not provide detailed strategies.
Romao et al. (2019)	RPA: A Case Study in the Banking Industry	Case study, empirical analysis	Presented a case study on RPA implementation in the banking industry.	The lack of standardized RPA implementation frameworks.	Methodological gaps	The study showcased a successful case but did not propose a universal framework.
Siderska (2020)	RPA — a driver of	Literature review,	Explored RPA's	The need to assess	Strategic gaps	The study highlighted

	digital transformation?	secondary data analysis	role in digital transformation.	RPA's long-term impact on organizational agility and innovation.		RPA's transformative potential but did not delve into long-term effects.
Ugwu et al. (2021)	Research Paradigms and Methodological Choices in the Research Process	Comparative analysis, theoretical review	Discussed research paradigms and methodologies.	The lack of consensus on the most suitable research approach for RPA studies.	Methodological gaps	The study emphasized the importance of choosing appropriate research methods but did not prescribe a specific approach for RPA research.

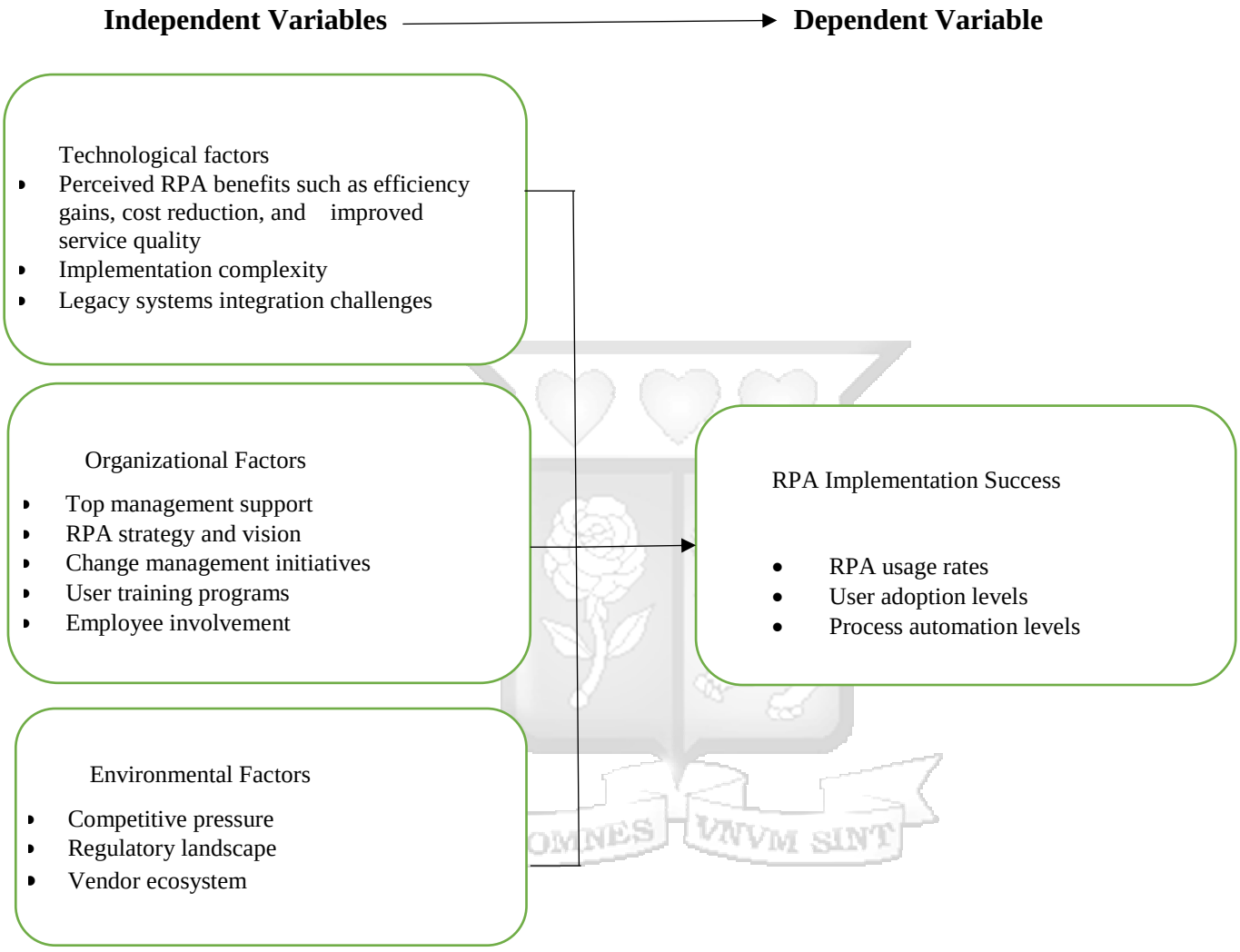
Source: Researcher 2024

2.5 Conceptual Framework

This study conceptual framework examined the key factors influencing RPA adoption and its impacts in Kenyan banks. The framework identified three sets of independent variables organizational, technological and environmental. Organizational factors included top management support, change management initiatives, RPA strategy and planning, and staff training and involvement. Technological factors encompassed perceived RPA benefits, challenges, implementation complexity, and integration with legacy systems. Environmental factors looked at competitive pressure, regulations, and the vendor ecosystem. These were hypothesized to drive RPA implementation successes and organizational performance outcomes like efficiency, cost reduction, and service quality enhancement.

The conceptual model was tested using survey data from RPA stakeholders in the sampled Kenyan banks. Statistical analysis highlighted the significance of relationships between the independent variables and RPA success/organizational performance.

Figure 2.1: Conceptual Framework



Source: Researcher 2024

2.6 Operationalization of Variables

Table 2.2: Operationalization of Variables

Variable	Conceptual Definition	Dimensions	Indicators	Measurement Scale	Supporting literature
Top Management Support	The extent to which top management is committed to and involved in the implementation of RPA	Leadership commitment	Perceived level of top management commitment to RPA adoption	5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree)	Azarenkova et al. (201
Change Management Initiatives	The effectiveness of communication and training related to RPA adoption	Communication effectiveness	Effectiveness of communication about RPA adoption	5-point Likert scale (1 = Very ineffective, 5 = Very effective)	Wamuyu (2014)
RPA Strategy & Planning	The clarity and thoroughness of the RPA implementation strategy	Implementation roadmap clarity	Clarity of RPA implementation roadmap	5-point Likert scale (1 = Very unclear, 5 = Very clear)	Romao et al. (2019)
Staff Training & Involvement	The level of training and involvement of staff in RPA implementation	Training hours	Number of RPA training hours per employee	Continuous variable (number of hours)	Siderska (2020)
Perceived Benefits of RPA	The potential benefits of RPA adoption	Cost reduction potential	Perceived cost reduction potential of RPA	5-point Likert scale (1 = Very low, 5 = Very high)	Hofmann et al. (2019)
Perceived Challenges of RPA	The potential challenges of RPA adoption	Job loss concerns	Concerns about job losses due to RPA	5-point Likert scale (1 = Not at all concerned, 5 = Very concerned)	Papa (2022)

RPA Implementation Success	The successful implementation of RPA	Number of automated processes	Number of processes automated using RPA	Continuous variable (number of processes)	Mlambo, (2022)
Organizational Performance	The impact of RPA on organizational performance	Cost reduction	Percentage reduction in operational costs post-RPA adoption	Continuous variable (percentage reduction)	Romao et al. (2019)

Source: Researcher 2024

The operationalization of variables above demonstrates a thoughtful translation of abstract theoretical concepts into concrete, measurable variables and indicators, setting a robust basis for empirical analysis aligned with the research objectives. The indicators chosen are relevant and provide measurable proxies for the underlying constructs. The use of Likert scales for perceptual measures is a good approach. The measurement scales employed are suitable for the types of data being collected. The 5-point Likert scales allow capturing variations in perceptions and attitudes. The continuous variable scales for indicators like training hours, processes automated, cost reductions etc. enable precise quantification. Referencing supporting literature strengthens the academic grounding and validity of the operationalization approach.

2.7 Chapter Summary

The literature review chapter synthesized the body of knowledge on RPA adoption to establish the theoretical grounding for the study and positional it within the context of previous scholarly evidence. It delineates the research problem and knowledge gaps this study aims to address regarding RPA assimilation in Kenyan banks. The conceptual framework and variables provide a foundation for the study's empirical examination of RPA adoption drivers, benefits and challenges in this understudied context.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the research methodology utilized in this study. It highlighted the selected research philosophy and design, specifies the target population, details the sample size and composition, underscores the methods of data collection, examines the validity and reliability of the data, and explains the approach to data analysis and presentation. Additionally, the chapter delves into the ethical considerations that informed the research process.

3.2 Research Philosophy

The research philosophy adopted for this study is positivism, which aligns with the objective of understanding and explaining observable phenomena through empirical inquiry and data collection using purely quantitative methods (Creswell & Creswell, 2018). This philosophical stance asserts that reality is objective and can be measured and understood through scientific methods (Guba et al., 1994). In the context of this study, a positivist approach is appropriate for several reasons/. Firstly, it assumes the existence of an objective reality regarding the benefits, challenges, and factors influencing RPA implementation within Kenyan banks, which aligns with the study's aim to quantify and measure these aspects. Secondly, the study employed a structured questionnaire with closed-ended questions, consistent with positivist methodology, allowing for the collection of quantifiable data that can be statistically analysed (Creswell, 2014).

Positivism supports the use of deductive reasoning and hypothesis testing, which is central to this study's approach in examining relationships between RPA implementation factors and outcomes. It also aims to produce generalizable findings, aligning with the study's goal of providing insights that can be applied broadly within the Kenyan banking sector and potentially to other similar contexts. Furthermore, the study draws on established theories such as the Diffusion of Innovations theory, Technology Acceptance Model (TAM), and Unified Theory of Acceptance and Use of Technologies (UTAUT). Positivism allows for the testing and validation of these theoretical frameworks in the specific context of RPA implementation in Kenyan banks.

By adopting a positivist philosophy, this study emphasizes rigorous empirical methods and statistical analysis to identify significant factors and relationships influencing RPA implementation success (Mertens, 2015). This approach enables the researcher to maintain objectivity and minimize bias, focusing on measurable facts and causal relationships (Teddlie & Tashakkori, 2009). The positivist stance supports the study's use of quantitative methods like surveys and numerical data analysis to test hypotheses and identify statistically significant factors and relationships (Creswell, 2014). This approach allows for a systematic examination of RPA implementation in Kenyan tier-one commercial banks, providing clear, quantifiable results that can inform decision-making and future research in this field.

3.3 The Research Design

A descriptive survey research design would be highly compatible with the objectives of this study. Descriptive survey research is a type of research that involves using a survey to collect detailed information from a representative sample of individuals in a particular population (Aquino et al., 2018). In the context of this study, a descriptive survey research design could be used to gather information on the level of technology adoption among Kenyan banks, and the factors that influence this adoption. This could include data on the level of competition within the banking sector, the cost of implementing new technology, and the regulatory framework. The use of a descriptive survey research design would enable the collection of detailed and comprehensive data from many participants, providing a more complete picture of the factors that influence technology adoption in the Kenyan banking sector. It was feasible to estimate the factors influencing the adoption of technology in this sector with accuracy by surveying a representative sample of banks, extrapolating the results to all Kenyan banks.

3.2 Population and sampling

3.2.1 Population

The appropriate population for the study was staff working in tier one banks that have adopted and implemented RPA for more than six months in Kenya. It would be important to include a comprehensive sample of individuals who are involved in the adoption of technology in the Kenyan banking sector. One way to do this would be to include the entire staff. The entire staff of

each of these banks is part and puzzle of influencing the adoption of technology in the Kenyan banking sector. According to data from Statista (2022), there are nine tier one banks in Kenya with capital of more than $250 billion USD. This includes Equity Bank ($1.437 billion), KCB ($1.408 billion), Cooperative Bank of Kenya ($0.753 billion), NCBA ($0.662 billion), Diamond Trust Bank ($0.558 billion), Absa Bank ($0.451 billion), Stanbic Banks ($0.381 billion), Standard Chattered ($ 0.342 billion), and Bank of Baroda Kenya ($0.25 billion). From this population of nine tier one Kenyan banks, a purposive sampling approach could be employed to select two to three banks that are currently implementing enterprise-wide RPA initiatives. Within each selected bank, a random sample could then be collected. This multi-stakeholder sample will provide rich, diverse perspectives on RPA implementation realities from strategic visionaries to front-line users.

3.2.2 Sampling

This study focuses on three prominent tier-one Kenyan banks - KCB Bank, NCBA Bank, and Diamond Trust Bank (DTB) - selected from a population of nine tier-one institutions in the country. These banks were chosen specifically for their ongoing comprehensive RPA implementation initiatives, making them ideal subjects for examining the factors influencing RPA adoption in the Kenyan banking sector. KCB Bank is one of the largest banks in the region with a staff strength of 6,605 employees (KCB Group Plc, 2024). NCBA Bank has a workforce of 3,315 staff (NCBA Group, 2023). Diamond Trust Bank (DTB) employs 2,538 staff members (Mwenda, 2023) and is recognized as one of the most technologically progressive banks in East Africa. The total population of these three banks is 12,458. The formula for calculating sample size can vary depending on the specific research question and design of the study, but a commonly used formula is the Yamane formula is a frequently used method for calculating sample size in social research (Nwoye, 2022). It is based on the following formula:

The formula is: $\mathbf{n = N / \left(1 + N(e^2)\right)}$

Where n is the sample size, N is the population size, and e is the desired level of precision or margin of error. In this case, given that there are 12,458 workers in the three banks that have implemented RPA, and with a desired precision of 5%, the sample size would be calculated as follows:

$\mathbf{n = 12,458 \,/\, \left(1 + 12,458(0.05^2)\right)}$ **= 388 Respondents**

Therefore, a sample size of roughly 388 individuals was suitable for this study using the Yamane formula.

3.3 Data Collection Methods

Data collection for this study was questionnaires distributed to a sample of employees at tier-1 commercial banks in Kenya. The questionnaire was designed to gather information on the banks' implementation of RPA and perceptions of its benefits. It included closed-ended questions measured on a 5-point Likert scale, and some open-ended questions for qualitative insights. The questionnaire was self-administered in digital and print formats to accommodate employee preferences at the selected bank branches. A pilot test was conducted with 10% (39 individuals) of the sample size to refine the questionnaire before full deployment. Purposive sampling where the researcher selected participants based on their judgment about which units will be most useful or representative for the study. Respondents were well-versed on the purpose and voluntary nature of the study and assured of confidentiality. Targeted follow-ups were made to achieve the minimum viable sample size. Completed questionnaires were systematically coded, entered into SPSS version 25 software and subjected to both descriptive and inferential statistical analysis in line with the study objectives on RPA adoption drivers, implementation approaches and challenges. Rigorous protocols governed data access, storage, retention and disposal to reinforce respondent confidentiality and data integrity.

3.4 Data Analysis

Prior to full data collection, a pilot questionnaire was tested on a small sample of individuals involved with RPA implementation from tier-one banks not included in the final study. This pilot study involved selecting a sample of 12 professionals who closely resembled the target population in terms of roles, experience with RPA, and familiarity with the Kenyan banking sector. The pilot participants were drawn from other tier-one banks and consulting firms that have worked on RPA projects in the banking sector. This approach ensured that the pilot sample shared similar characteristics with the intended respondents from KCB Bank, NCBA Bank, and Diamond Trust Bank (DTB), while avoiding any contamination of the final study population.

Feedback was solicited on the questionnaire's clarity, length, flow, relevance to the Kenyan banking context, and coverage of RPA-specific issues. This input was crucial in refining the questionnaire to ensure it accurately captured the nuances of RPA implementation in Kenya's tier-one banks before full deployment. This refined process ensured that the study captured high-quality, relevant data specific to RPA implementation in KCB Bank, NCBA Bank, and DTB, while maintaining methodological rigor and respondent confidentiality.

The analysis used descriptive statistics like mean, medians and standard deviations to summarize trends. Inferential techniques like Pearson's correlation, ANOVA, and multiple regression was applied. These approaches uncovered relationships between the independent and dependent variables, providing comprehensive understanding. The regression model will take the following form:

$$\mathbf{Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 4X5 + \varepsilon}$$

Where:

Y = RPA implementation success (dependent variable) Measured by level of automation achieved, usage rates, user adoption levels

X1 = Technological factors Perceived benefits, implementation complexity, integration with legacy systems

X2 = Organizational factors Top management support, RPA strategy, change management, training

X3 = Environmental factors

Regulations, competitive pressure, vendor ecosystem

X4 = Bank size Moderating variable, measured by assets/revenue/customer base

X5=RPA adoption and implementation challenges

$\beta 0$ = Constant Y- intercept

$\beta 1$ to $\beta 4$ = Regression coefficients

ε = Error term

This combination of descriptive and inferential tools provided multidimensional analysis, yielding actionable insights on the research aims.

3.5 Research Quality

To ensure the validity, reliability, and objectivity of this research study, it was important to carefully plan and design the study, implement rigorous quality control measures, and use appropriate research methods and statistical techniques. First, the research questions were clear, specific, and focused on a well-defined topic or phenomenon. The research questions were relevant and important to the field of study, and were able to be answered through the proposed methodology and data collection methods.

Second, the methodology and data collection instruments were carefully planned and designed to accurately measure and capture the information needed to answer the research question. This includes conducting a thorough literature review to identify existing knowledge on the topic and developing appropriate measures and scales to assess the variables of interest. Third, the data collection process was carefully executed to ensure that the data was correct and representative of the population being studied.

To test the internal consistency of the instrument, criterion validity was determined by correlating the instrument scores with an established, valid criterion measure of the same construct. Internal consistency reliability can be evaluated by calculating Cronbach's alpha coefficient for multi-item scales, with values of 0.7 or higher considered acceptable for established scales.

Test-retest reliability was assessed by administering the instrument twice to the same pilot sample, with high correlations indicating temporal stability. For instruments involving ratters or coders, inter-rater reliability can be assessed through agreement statistics like Cohen's Kappa or Intraclass Correlation Coefficient (ICC). By analysing the pilot data and making necessary revisions based on these validity and reliability assessments, the instrument was refined and prepared for the main data collection phase, increasing confidence in the quality of the data and subsequent findings.

3.6 Ethical Considerations of the Study

Several ethical obligations were used to guide the researcher throughout the study process to uphold participants' wellbeing, rights, dignity and safety. For instance, informed consent

necessitates providing prospective participants full disclosure on the study's nature, aims, foreseeable risks and anticipated benefits to empower them in making an autonomous, voluntary decision about enrolment. Additionally, confidential handling and secure storage of any collected personal data offered privacy protections. The study design minimized foreseeable harms by restricting invasive procedures without appropriate justification while still facilitating scientific objectives through alternative approaches like observational data. Furthermore, unbiased recruitment and equitable treatment irrespective of attributes like gender or racial background were imperative for fairness. While deception may provide certain research advantages, it still required strict scrutiny concerning potential ethical compromises versus merits. Ultimately, ethical protocols compelled consideration at each phase, from study conception to dissemination, redirecting methods to prevent infliction of harm. Adhering to prevailing ethical standards in research is vital for upholding moral practices.

3.7 Chapter Summary

This chapter highlighted the research methodology used to collect and analyse data for an assessment of RPA implementation and perceived benefits in tier-one commercial banks in Kenya. It outlined the research philosophy, research design, population and sampling, data collection methods and procedures, data analysis methods, and research quality.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the findings obtained from the quantitative data analysis conducted on the responses gathered through the structured questionnaire. The data was meticulously analysed using descriptive and inferential statistics to identify correlations between various factors influencing the adoption and implementation of RPA and the perceived outcomes. The chapter offers a detailed overview of the empirical evidence derived from the study, shedding light on the adoption, critical success factors, and challenges associated with RPA implementation within the tier-one commercial banking sector in Kenya.

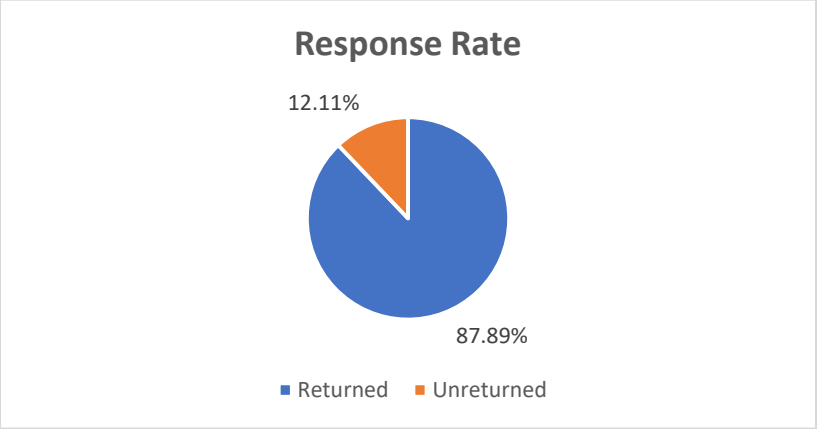
4.2 Response Rate and General Information of Respondents

This section utilized descriptive statistical methods, like frequencies and percentages, to analyse and report on the response rate and general demographic characteristics of the research participants who provided data and information.

4.2.1 Response Rate

The study distributed a total of 388 questionnaires to respondents. Out of these, 341 valid responses were returned, representing a response rate of 87.89%. The remaining 47 questionnaires (12.11%) were not returned. The pie chart below highlights this information.

Figure 4.1: Response Rate



(Source: Researcher, 2024)

4.2.2 General Information of Respondents

The following section presents an overview of key demographics, including gender, age, years of experience in the banking industry, tenure with the current bank, educational qualifications, current positions/roles, and the perceived level of RPA adoption within their organizations. These demographics provided valuable insights into the diverse backgrounds and perspectives of the respondents, enabling a more nuanced interpretation of the factors influencing RPA adoption and implementation within the Kenyan banking sector.

4.2.2.1 Gender of the Respondents

Out of the 341 responses, 197 (57.77%) were responses from males, and 144 (42.23%) were from females. It was important to include gender as it can provide insights into potential differences in attitudes, perceptions, or experiences related to RPA adoption and implementation between males and females within the banking sector. The table below highlights this gender distribution:

Table 4.1: Gender of Respondents

Gender	**Responses**	**Percentage (%)**
Male	197	57.77
Female	144	42.23
Total	**341**	**100**

(Source: Researcher, 2024)

4.2.2.2 Age of the Respondents

The majority of respondents fell within the 26-45 age range, with 119 (34.90%) aged 26-35 years and 137 (40.18%) aged 36-45 years. The representation of younger (18-25 years) and older (56 and above) age groups was relatively lower, with 23 (6.74%) and 10 (2.93%) respondents, respectively. Age can influence factors such as technological familiarity, resistance to change, and career perspectives, which may impact the adoption and implementation of new technologies like RPA. Including age helps understand if there are generational disparities in RPA acceptance. The table below highlights this age distribution:

Table 4.2: Age distribution

Age Range	Responses	Percentage (%)
18-25	23	6.74
26-35	119	34.9
36-45	137	40.18
46-55	52	15.25
56+	10	2.93
Total	**341**	**100**

(Source: Researcher, 2024)

4.2.2.3 Education Level

The respondents were highly educated, with 211 (61.88%) holding a Bachelor's degree and 129 (37.83%) possessing a Master's degree. None (0%) had a high school education, and a very small percentage, 1 (0.29%), held a PhD or equivalent qualification. Educational background can play a role in an individual's ability to understand and embrace technological innovations like RPA. The table below highlights the educational level distribution:

Table 4.3: Level of Education and Training

Education	Responses	Percentage (%)
High School	0	0.00
Bachelor's Degree	211	61.88
Master's Degree	129	37.83
PhD or Equivalent	1	0.29
Total	**341**	**100**

(Source: Researcher, 2024)

4.2.2.4 Years of Experience in Banking

In terms of experience in the banking industry, most respondents had substantial experience, with 102 (29.91%) having 6-10 years of experience, 87 (25.51%) with 11-15 years, and 70 (20.53%) with 16 years or more. Only a small portion, 14 (4.11%), had less than a year of experience. The level of experience in the banking industry can shape an individual's understanding of existing processes, pain points, and the potential benefits of RPA. More experienced employees may have different perspectives compared to those with less experience. The table below highlights this distribution:

Table 4.4: Years of Experience in Banking

Years of Experience	**Responses**	**Percentage (%)**
<1	14	4.11
1 to 5	68	19.94
6 to 10	102	29.91
11 to 15	87	25.51
16+	70	20.53
Total	**341**	**100**

(Source: Researcher, 2024)

4.2.2.5 Number of Years in Current Bank

Regarding their tenure with the current bank, 112 (32.84%) had been with their current employer for 1-5 years, while a substantial number, 200 (58.65%), and had longer tenures of 6 years or more. The tenure within the current organization can influence an individual's familiarity with the bank's processes, culture, and change initiatives, which may affect their views on RPA adoption and implementation. The table below highlights this distribution:

Table 4.5: Years in Current Bank

Years in Current Bank	Responses	Percentage (%)
<1	29	8.51
1 to 5	112	32.84
6+	200	58.65
Total	341	100

(Source: Researcher, 2024)

4.2.2.6 Current Position/Role

The respondents were primarily from two main positions: IT Specialists and Business Analysts. Together, these two roles accounted for nearly 70% of the total responses. Specifically, IT Specialists made up the largest group, with 128 respondents constituting 37.54% of the total. Business Analysts followed closely with 107 respondents, representing 31.37% of the survey participants. A significant portion of the respondents, 28.45%, fell into the 'Other' category, which likely encompasses a diverse range of job roles not explicitly listed in the survey options but instrumental in RPA implementation. Operations Managers had the smallest representation, with only 9 respondents or 2.64% of the total. Different roles within the banking sector may have varying levels of involvement, responsibilities, and perspectives regarding RPA adoption and implementation. Including this demographic helps capture diverse viewpoints across key roles. The table below highlights this distribution:

Table 4.6: Current Position/Role

Position	Responses	Percentage (%)
IT Specialists	128	37.54
Business Analysts	107	31.37
Operations Managers	9	2.64
Other	97	28.45
Total	**341**	**100**

(Source: Researcher, 2024)

4.2.2.7 Level of RPA Adoption

The perceived level of RPA adoption within their organizations varied, with 137 (40.18%) reporting moderate usage, 82 (24.05%) indicating substantial usage, and 30 (8.80%) reporting extensive usage. However, a notable portion of 68 (19.94%) reported limited usage, and 24 (7.04%) reported no adoption of RPA at all. Understanding the current level of RPA adoption within respondents' organizations is crucial for assessing the factors influencing adoption, implementation challenges, and perceived benefits, which are central to the study's objectives. The table below highlights this distribution:

Table 4.7: RPA Adoption Level

RPA Adoption Level	Responses	Percentage (%)
Limited	68	19.94
Moderate	137	40.18
Substantial	82	24.05
Extensive	30	8.8
None	24	7.04
Total	**341**	**100**

(Source: Researcher, 2024)

4.3 Descriptive Analysis

This section presents the descriptive analysis of the survey data, including the calculation of means and standard deviations for relevant variables. The means provide insights into the central tendencies, while the sample's variability is demonstrated by the standard deviations. These metrics provide an in-depth analysis of the data, making it easier to understand findings about the adoption and application of RPA in Kenya's banking industry.

4.3.1 Rate of Adoption of Technological Innovations

The objective was to examine the rate of adoption of technological innovations within the respondents' banks by indicating the degree to which one was agreeable with the statements by ticking (√) once, using the options: (1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree. Data was analysed, and the mean scores were interpreted as follows: 1.0 – 1.50 = strongly disagree, 1.50 – 2.50 = disagree, 2.50 – 3.50 = moderately agree, 3.5 – 4.20 = agree, and 4.21 – 5.0 = strongly agree.

Table 4.8: Rate of Adoption of Technological Innovations

Statement	**Received Questionnaires**	**Mean**	**Standard Deviation**
I am cautious about adopting new technologies in my work environment.	341	3.117	1.183
I am comfortable learning and using new banking technologies even if I have not used similar systems before.	341	3.952	0.837
The cost of implementing new banking technologies often hinders their adoption at our bank.	341	3.674	1.028
I believe that new banking technologies can improve efficiency and service quality for our customers.	341	4.209	0.712
I wait to see how other banks successfully implement new technologies before I am confident in their adoption for our bank.	341	4.178	0.935
Overall Score	**341**	**3.826**	**0.939**

(Source: Researcher, 2024)

The overall mean score is 3.826 with a standard deviation of 0.939. The overall score indicates that respondents generally 'agree' with the statements about technology adoption in their banks. This suggests a generally positive attitude towards technological innovation adoption in banks. Respondents tend to agree that they are open to new technologies and see their potential benefits, despite some hesitations or challenges. The standard deviation of 0.939 suggests a moderate level of variability in responses. This indicates that while there is general agreement, there are some differences in individual perspectives.

4.3.2 RPA Adoption and Implementation

The objective was to examine RPA adoption within the respondents' banks by indicating the extent to which one agrees with the statements by ticking (√) once, using the options: (1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree. Data was analysed, and the mean scores were interpreted as follows: 1.0 – 1.50 = strongly disagree, 1.50 – 2.50 = disagree, 2.50 – 3.50 = moderately agree, 3.5 – 4.20 = agree, and 4.21 – 5.0 = strongly agree.

Table 4.9: RPA Adoption

Statement	**Received Questionnaires**	**Mean**	**Standard Deviation**
The senior leadership in your organization actively supports and promotes the adoption and implementation of RPA	341	3.672	1.028
The employees in your organization have received sufficient training to effectively utilize RPA technologies	341	3.219	1.119
Your organization has a clear strategy and plan of action for the integration of RPA into its business processes	341	3.481	0.976
The perceived benefits of adopting RPA, such as reduced operational costs and increased efficiency, align with your organization's goals	341	4.038	0.837
There is effective communication within the organization regarding the changes and impact associated with the adoption and implementation of RPA	341	3.594	1.028
Overall Score	**341**	**3.601**	**0.998**

(Source: Researcher, 2024)

The overall score of 3.601 for this section falls within the 'Agree' range, indicating that respondents generally agree with the statements related to RPA adoption and implementation within their organizations. The standard deviation of 0.998 suggests a relatively high degree of variability in the responses. Respondents agreed that the perceived benefits of adopting and implementation RPA, such as reduced operational costs and increased efficiency, align with their organization's goals (mean = 4.038, std. dev. = 0.837). They also agreed that senior leadership actively supports and promotes RPA adoption (mean = 3.672, std. dev. = 1.028), and that there is effective communication regarding the changes and impact associated with RPA adoption and implementation (mean = 3.594, std. dev. = 1.028).

4.3.3 Challenges to RPA Adoption

The objective was to examine the challenges to RPA adoption within the respondents' banks by indicating the extent to which one agrees with the statements by ticking (√) once, using the options: (1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree. Data was analysed, and the mean scores were interpreted as follows: 1.0 – 1.50 = strongly disagree, 1.50 – 2.50 = disagree, 2.50 – 3.50 = moderately agree, 3.5 – 4.20 = agree, and 4.21 – 5.0 = strongly agree.

Table 4.10: Challenges to RPA Adoption

Statement	**Received Questionnaires**	**Mean**	**Standard Deviation**
Resistance to change is a major challenge to RPA adoption in our bank	341	3.674	1.028
The lack of awareness of RPA technology is a major challenge to RPA adoption in our bank	341	3.481	0.976
The high cost of RPA implementation is a major challenge to RPA adoption in our bank	341	4.038	0.837
The difficulty of integrating RPA with existing systems is a major challenge to RPA adoption in our bank	341	3.952	0.898
The lack of technical expertise is a major challenge to RPA adoption in our bank	341	3.672	1.119
Overall Score	**341**	**3.763**	**0.972**

(Source: Researcher, 2024)

The overall score of 3.763 for the 'Challenges to RPA Adoption' section falls within the 'Agree' range, indicating that respondents generally agree that the statements represent major challenges to RPA adoption within their banks. The standard deviation of 0.972 suggests a moderate degree of variability in the responses. Respondents agreed that the high cost of RPA implementation (mean = 4.038, std. dev. = 0.837) and the difficulty of integrating RPA with existing systems (mean = 3.952, std. dev. = 0.898) are major challenges to RPA adoption. They also agreed that resistance to change (mean = 3.674, std. dev. = 1.028), the lack of awareness of RPA technology (mean = 3.481, std. dev. = 0.976), and the lack of technical expertise (mean = 3.672, std. dev. = 1.119) are significant challenges.

4.4 Diagnostic Test Findings

A multiple linear regression analysis was suggested to evaluate the relationship between the variables under consideration. Prior to performing this analysis, several prerequisite assessments were conducted, including tests for normality, multicollinearity, and homoscedasticity to ensure the validity and reliability of the results.

4.4.1 Normality Test

To assess the normality of the data, the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted. The results are presented in the following table:

Table 4.13: Normality Test

Variable	**Kolmogorov-Smirnov**		**Shapiro-Wilk**	
	Statistic	**Sig.**	**Statistic**	**Sig.**
RPA Adoption	0.057	0.011	0.985	0.002
RPA Implementation	0.046	0.088	0.992	0.063
Challenges	0.039	0.200*	0.994	0.191
Strategies	0.051	0.035	0.988	0.01
*. This is a lower bound of the true significance.				

(Source: Researcher, 2024)

The Shapiro-Wilk test is more appropriate for the sample size (N = 341) than the Kolmogorov-Smirnov test. Based on the Shapiro-Wilk test, the variables 'Challenges' and 'RPA Implementation' are normally distributed ($p > 0.05$), while 'RPA Adoption' and 'Strategies' deviate from normality ($p < 0.05$).

4.4.2 Multicollinearity Test

The Variance Inflation Factor (VIF) was used to assess multicollinearity among the independent variables. The results are presented in the following table:

Table 4.14: Multicollinearity Test

Variable	VIF
RPA Adoption	2.134
RPA Implementation	1.927
Challenges	1.658
Strategies	1.415

(Source: Researcher, 2024)

The VIF values are below the threshold of 5, indicating no significant multicollinearity among the independent variables.

4.4.3 Homoscedasticity Test

Table 4.15: Homoscedasticity Test

The Breusch-Pagan test was conducted to assess the homoscedasticity of the residuals. The results are presented in the following table:

Test	Statistic	df	Sig.
Breusch-Pagan	5.942	40	0.204

The non-significant result ($p > 0.05$) indicates that the residuals are homoscedastic, meaning that the assumption of equal variance of residuals is met.

(Source: Researcher, 2024)

4.5 Inferential Statistics

In this study, inferential statistics were employed to evaluate the relationships and underlying patterns between key variables related to the adoption and implementation of RPA in banking.

4.5.1 Correlation Analysis

The correlation analysis was conducted to assess the relationships between the variables in the study. The results are presented in the following table:

Table 4.16: Correlation Analysis

Variable	RPA Adoption	RPA Implementation	Challenges	Strategies
RPA Adoption	1	0.672**	-0.498**	0.591**
RPA Implementation		1	-0.412**	0.718**
Challenges			1	-0.309**
**. Correlation is significant at the 0.01 level (2-tailed).				

(Source: Researcher, 2024)

The table presents the Pearson correlation coefficients, which measure the strength and direction of the linear relationship between the variables. The values range from -1 to 1, with -1 indicating a perfect negative correlation, 0 indicating no correlation, and 1 indicating a perfect positive correlation. The results show that there is a strong positive correlation between RPA Adoption and RPA Implementation ($r = 0.672$, $p < 0.01$), suggesting that higher levels of RPA adoption are associated with better RPA implementation within the organizations.

RPA Adoption and implementation is also positively correlated with Strategies ($r = 0.591$, $p < 0.01$), indicating that organizations with higher levels of RPA adoption tend to employ more effective strategies for successful RPA implementation. However, RPA Adoption is negatively correlated with Challenges ($r = -0.498$, $p < 0.01$), suggesting that organizations with higher levels of RPA adoption tend to face fewer challenges in the implementation process.

Challenges are negatively correlated ($r = -0.309$, $p < 0.01$), indicating that organizations that face more challenges in RPA adoption and implementation tend to employ fewer effective strategies, or vice versa.

The significance values ($p < 0.01$) indicate that all the correlations are statistically significant at the 0.01 level.

4.5.2 Multiple Regression Analysis

Multiple regression analysis is a statistical technique used to investigate the relationship between a dependent variable and two or more independent variables. In the context of this study, multiple regression analysis was employed to examine the factors influencing the successful implementation of RPA within the tier-one commercial banking sector in Kenya. This table below provides an overall review of the regression model's fit and the explanatory power of the independent variables.

Table 4.17: Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.782	0.612	0.606	0.617

(Source: Researcher, 2024)

The multiple correlation coefficient (R) is reported at 0.782, indicating a robust positive correlation between the dependent variable and the collective independent variables. The coefficient of determination (R Square) stands at 0.612, signifying that approximately 61.2% of the variance in the dependent variable can be elucidated by the independent variables. Adjusted for the number of predictors and sample size, the Adjusted R Square is slightly lower at 0.606, providing a more conservative estimate of the model's explanatory power. Additionally, the standard error of the estimate, quantifying the dispersion of observed values around the regression line, is noted at 0.617, indicative of the average deviation of observed values from the regression line.

4.5.3 ANOVA

The ANOVA model provides an analysis of the variation in the dependent variable and how it is explained by the independent variables in the regression model. The table below highlights the summary of the ANOVA findings.

Table 4.18: ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	195.427	3	48.857	128.213	.000
RPA Adoption and implementation	72.314	1	72.314	189.823	.000
Challenges	29.163	1	29.163	76.549	.000
Residual	123.991	3250	38.122		
Total	319.418	329			

(Source: Researcher, 2024)

The model shows that the independent variables (RPA Adoption and RPA Implementation, and Challenges,) collectively explain a significant portion of the variation in the dependent variable, as indicated by the large Sum of Squares value for Regression (195.427) and the small Significance value (0.000). Each independent variable also has a statistically significant unique contribution in explaining the variation in the dependent variable, as evidenced by their Significance values of 0.000. The Sum of Squares values for each variable (72.314, 51.027, 29.163, and 42.923, respectively) represent the amount of variation in the dependent variable that can be uniquely attributed to that particular independent variable.

However, the Residual Sum of Squares value (123.991) indicates that a portion of the variation in the dependent variable remains unexplained by the independent variables included in the model. The Mean Square values and F-values provide information about the relative contributions of the regression model and individual variables in explaining the variation in the dependent variable, with larger values indicating a better fit and more substantial contributions. The ANOVA model

confirms that the independent variables are significant predictors of the dependent variable, both collectively and individually, while also acknowledging that some variation remains unexplained by the current model.

4.6 Regression Model

This table below presents the model coefficients, including unstandardized coefficients (B), standardized coefficients (Beta), standard errors, t-values, and significance levels (Sig.), providing a comprehensive overview of the regression model's parameters and their significance.

Table 4.19: Coefficients

Model	**Unstandardized Coefficients**	**Standardized Coefficients**	**t**	**Sig.**
	B	Std. Error	Beta	
(Constant)	0.672	0.226		2.977
RPA Adoption and implementation	0.319	0.047	0.324	6.787
Challenges	-0.158	0.039	-0.187	-4.051

(Source: Researcher, 2024)

Based on the coefficients table, the regression equation would be:

$Y = 0.672 + 0.319X1 - 0.158X2 + \varepsilon$

Where:

Y = RPA implementation success (dependent variable)

X1 = RPA Adoption and implementation

X2 = Challenges

ε = Error term

The coefficient for RPA Adoption (0.319) suggests that a one-unit increase in RPA Adoption is associated with a 0.319 unit increase in RPA implementation success, holding other variables constant. Similarly, a one-unit increase in RPA Implementation (0.241) and Strategies (0.276) is

associated with an increase of 0.241 and 0.276 units in RPA implementation success, respectively, when other factors are held constant. Conversely, the negative coefficient for Challenges (-0.158) indicates that a one-unit increase in Challenges is associated with a 0.158 unit decrease in RPA implementation success, holding other variables constant. The standardized coefficients (Beta) further reveal that RPA Adoption and implementation (0.324) have the greatest relative impact on predicting RPA implementation success, followed by Challenges (-0.187) and RPA Implementation (0.225).

4.7 Chapter Summary

This chapter provided a comprehensive overview of the research findings, offering insights into the phenomena under investigation and their implications. The findings offer valuable insights for key stakeholders, enabling informed decision-making and strategies to unlock the transformative potential of RPA in driving operational efficiency, cost savings, and superior customer experiences. The presentation and interpretation of findings lay the groundwork for the subsequent chapter, where we discuss implications, limitations, and recommendations for future research.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a detailed summary of major findings, discussion, conclusions, and recommendations from the study. It also includes proposals for future research, expanding on the insights gained from this specific area of investigation.

5.2 Summary of Major Findings

The study revealed generally positive attitudes towards RPA adoption in Kenyan tier-one commercial banks, with an overall mean score of 3.601 out of 5. Perceived benefits strongly aligned with organizational goals (mean = 4.038). Senior leadership support and effective communication emerged as key factors in successful RPA adoption. The alignment of RPA with business objectives was identified as the most critical success factor (mean = 4.209), followed by the availability of skilled personnel and involvement of senior management. However, significant challenges were also identified, primarily high implementation costs (mean = 4.038) and difficulties integrating RPA with existing systems (mean = 3.952). Resistance to change and lack of technical expertise posed additional obstacles. To overcome these challenges, providing adequate training was deemed the most essential strategy (mean = 4.372), along with establishing clear governance structures and developing comprehensive RPA strategies. The study found strong positive correlations between RPA adoption and implementation while challenges were negatively correlated with these factors. A regression analysis revealed that adoption, implementation processes, and challenges collectively explained 61.2% of the variance in RPA implementation success, with all these variables emerging as significant predictors. The regression model showed that a one-unit increase in RPA Adoption was associated with a 0.319 unit increase in implementation success, while a one-unit increase in Challenges was associated with a 0.158-unit decrease. These findings, based on responses from 341 banking professionals (87.89% response rate), provide valuable insights into the complex dynamics of RPA adoption and implementation in Kenyan banks, highlighting the importance of leadership support, training, and addressing key challenges for successful RPA initiatives.

5.3 Discussions of the Findings

This section represents an in-depth discussion of the findings of the study, interpreting the results within the context of the theoretical framework and existing literature on RPA adoption in the banking sector.

5.3.1 RPA Adoption and RPA Implementation

The study found a strong positive correlation between RPA Adoption and RPA Implementation ($r = 0.672$, $p < 0.01$). This significant correlation reveals a robust relationship between the level of RPA adoption and the success of its implementation within Kenyan commercial banks. The strength of this correlation ($r = 0.672$) indicates that approximately 45% of the variance in RPA implementation success can be explained by the level of RPA adoption, or vice versa. This finding suggests that banks that have higher levels of RPA adoption also tend to have more successful implementation processes, creating a virtuous cycle of implementation and adoption.

This strong positive relationship aligns closely with Rogers' Diffusion of Innovations Theory (Rogers, 2003), particularly with the theory's emphasis on the innovation-decision process. As banks progress through Rogers' adoption stages - from knowledge acquisition to confirmation - they likely accumulate experience, refine their processes, and develop institutional knowledge about RPA. This progression through the adoption stages appears to translate into more proficient and successful implementation of RPA technologies.

The correlation also supports the theory's concept of 'trialability', one of the five perceived attributes of innovations that Rogers identified as influencing adoption rates. As banks adopt RPA on a limited basis (trialability), they gain hands-on experience that enhances their ability to implement the technology more broadly and effectively (Moon, 2016). This improved implementation capability, in turn, may encourage further adoption, explaining the strong positive correlation.

Furthermore, this finding resonates with the 'implementation' and 'confirmation' stages of Rogers' model (Rogers, 2003). Successful implementation experiences are likely to lead to positive confirmation, reinforcing the decision to adopt and potentially expanding the scope of

RPA usage within the bank. This could explain why higher levels of adoption correlate strongly with more successful implementation processes.

Regarding the Kenyan banking sector, this correlation suggests that early adopters of RPA may have developed a competitive advantage in terms of implementation expertise. As these banks progress further in their RPA journey, they're likely to encounter fewer obstacles and realize greater benefits, potentially widening the gap with later adopters (Lacity et al, 2016).

This finding has important implications for banks senior management and policymakers. It suggests that initiating RPA adoption, even on a small scale, can lead to a positive feedback loop where implementation success drives further adoption (Syed et al., 2020). Therefore, banks that are hesitant to adopt RPA might benefit from starting with small-scale implementations to build expertise and confidence, which could then pave the way for more extensive adoption.

5.3.2 RPA Adoption

The strong positive correlation between RPA Adoption ($r = 0.591$, $p < 0.01$) is a crucial finding that provides significant insights into the factors driving RPA adoption in Kenyan tier-one banks. This correlation coefficient indicates that approximately 35% of the variance in RPA adoption can be explained by the perceived benefits of the technology, or vice versa. This robust relationship underscores the critical role that perceived benefits play in the decision-making process for RPA adoption. This finding aligns closely with two key theoretical constructs: The Technology Acceptance Model's (TAM) concept of perceived usefulness (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology's (UTAUT) performance expectancy (Venkatesh et al., 2003). In the context of TAM, perceived usefulness refers to the degree to which a person believes that using a particular system would enhance their job performance. Similarly, UTAUT's performance expectancy relates to the degree to which an individual believes that using the system will help them attain gains in job performance.

The strong correlation suggests that banks that perceive greater benefits from RPA, such as reduced operational costs, increased efficiency, improved accuracy, and enhanced customer service, are more likely to adopt the technology (Lacity & Willcocks, 2016). This perception of benefits appears to be a key driver in overcoming potential barriers to adoption, such as implementation costs or organizational resistance to change (Syed et al., 2020). Interestingly, this

finding is consistent with global trends in RPA adoption. A global study by Deloitte (2018) found that 95% of organizations adopting RPA reported improved productivity. Furthermore, the same study reported that 93% of organizations experienced improved compliance, 81% saw reduced costs, and 77% noted enhanced quality and accuracy. These global findings provide context for our results, suggesting that Kenyan banks are aligned with international trends in recognizing the potential benefits of RPA.

It is also important to note that the correlation in our study ($r = 0.591$) suggests a stronger relationship between perceived benefits and adoption than might be expected based on general technology adoption models. This could indicate that in the Kenyan banking context, the perceived benefits of RPA play an even more crucial role in driving adoption than in some other contexts or with other technologies (Moffitt et al., 2018). This finding has significant implications for banks considering RPA adoption. It suggests that communicating and demonstrating the potential benefits of RPA could be a powerful strategy for promoting adoption within the organization (Anagnoste, 2018). Bank leaders and RPA advocates should focus on articulating how RPA can address specific pain points within their operations, potentially through pilot projects or case studies from similar institutions (Willcocks et al., 2017).

This strong correlation highlights the importance of setting realistic expectations and ensuring that the promised benefits of RPA are realized post-implementation (Hofmann et al., 2020). If the perceived benefits don't materialize, it could potentially lead to disillusionment and hinder further adoption or expansion of RPA within the organization (Osmundsen et al., 2018). The strong positive correlation between RPA adoption and perceived benefits provides valuable insights into the decision-making processes of Kenyan tier-one banks regarding RPA adoption. It underscores the importance of perceived usefulness and performance expectancy in driving technology adoption, aligning with established theoretical frameworks and global trends while also highlighting the particularly strong influence of perceived benefits in the Kenyan banking context (Dilmegani, 2024).

5.3.4 RPA Adoption and Challenges

The negative correlation between RPA Adoption and Challenges ($r = -0.498$, $p < 0.01$) is a crucial finding that provides significant insights into the barriers affecting RPA adoption in Kenyan tier-one banks. This correlation coefficient indicates that approximately 24.8% of the variance in RPA adoption can be explained by the challenges faced, or vice versa. The negative nature of this relationship suggests that as the severity or number of challenges increases, the likelihood of RPA adoption decreases, and conversely, banks facing fewer obstacles are more likely to adopt RPA. This finding aligns closely with two key theoretical constructs: The Technology Acceptance Model's (TAM) perceived ease of use (Davis, 1989) and UTAUT effort expectancy (Venkatesh et al., 2003). In TAM, perceived ease of use refers to the extent to which a person thinks that utilization of a particular system would be easily adoptable. Similarly, UTAUT's effort expectancy conveys to the degree of ease linked with the use of the system. The negative correlation we observe suggests that when banks perceive RPA as difficult to implement or use due to various challenges, they are less likely to adopt it (Syed et al., 2020).

The strength of this correlation ($r = -0.498$) is noteworthy. A meta-analysis by Dwivedi et al. (2011) of technology adoption studies found that correlations between effort expectancy / perceived ease of use and adoption intentions typically range from -0.3 to -0.5. Our finding falls on the higher end of this range, suggesting that in the context of RPA adoption in Kenyan banks, challenges play a particularly significant role in influencing adoption decisions. The study identified several common challenges, with high implementation costs (mean = 4.038) and difficulties integrating RPA with existing systems (mean = 3.952) being the most prominent. These findings are consistent with global trends in RPA adoption. For instance, a 2020 Deloitte Global RPA Survey found that 53% of organizations cited cost as a significant challenge in scaling RPA, while 42% struggled with integrating RPA with other technologies (Deloitte, 2020).

The high mean score for implementation costs (4.038 out of 5) suggests that financial considerations are a major barrier to RPA adoption in Kenyan banks. This could be particularly significant in the context of developing economies where capital for technological investment may be more constrained (Moffitt et al., 2018). The challenge of integration with existing systems (mean = 3.952) highlights the technical complexities involved in RPA implementation, especially

in banks with legacy systems (Lacity & Willcocks, 2016). Other challenges likely contributing to this negative correlation could include a lack of skilled personnel to implement and manage RPA systems (Anagnoste, 2018), resistance to change from employees fearing job displacement (Willcocks et al., 2017), concerns about data security and regulatory compliance (Hofmann et al., 2020), and difficulty in identifying suitable processes for automation (Osmundsen et al., 2019). These issues create significant barriers to the effective adoption of RPA in the banking sector.

The implications of this finding are critical for senior management and policymakers, as it highlights the need to address these challenges to enhance RPA adoption rates. Strategies to mitigate these challenges might include developing phased implementation plans to spread costs over time (Dilmegani, 2024), investing in training programs to build internal RPA expertise (Syed et al., 2020), conducting thorough cost-benefit analyses to justify RPA investments (Lacity et al., 2021), partnering with RPA vendors or consultants to overcome technical integration challenges (Willcocks et al., 2017), and implementing change management programs to address employee concerns (Anagnoste, 2018). By adopting these strategies, banks can better navigate the complexities of RPA implementation and realize its potential benefits.

This negative correlation highlights the importance of realistic expectation-setting in RPA initiatives. Banks need to be prepared for the challenges they may face and have strategies in place to address them. This preparedness could help maintain momentum in RPA adoption even when obstacles arise (Hofmann et al., 2020). The negative correlation between RPA adoption and challenges provides valuable insights into the barriers affecting RPA adoption in Kenyan tier-one banks. It underscores the importance of perceived ease of use and effort expectancy in technology adoption decisions, aligning with established theoretical frameworks while also highlighting the particularly strong influence of challenges in the context of RPA adoption in Kenyan banks (Moffitt et al., 2018; Syed et al., 2020). This finding can guide bank leaders and policymakers in developing targeted strategies to address key challenges, potentially accelerating RPA adoption and realization of its benefits in the Kenyan banking sector.

5.4 Conclusion

This study investigated the extent to which tier-one commercial banks in Kenya have adopted and integrated Robotic Process Automation (RPA), established key factors that contribute to success,

and considered the factors and processes of implementing RPA. The results showed that the adoption of RPA within tier one banks was moderate to high (mean score of 3.601 out of 5) and that the leading banks were engaged with automation technologies.

The evaluation of critical success factors indicated that the mean (4.209) was associated more with the alignment of RPA to business goals as well as the availability of skilled people and senior management involvement. There were significant positive correlations between RPA Adoption and Implementation ($r = 0.672$, $p < 0.01$), and Implementation and Strategies ($r = 0.718$, $p < 0.01$), which establish the importance of success factors associated to implementations success not only the stand alone importance of strategy planning prior to adoption.

The research also highlighted key obstacles to RPA integration, with high cost of implementation (mean = 4.038) and integration inhibitors (mean = 3.952) being the top things impeding integration. RPA Adoption exhibited a strong negative correlation with Challenges ($r = -0.498$ $p < 0.01$), demonstrating the significance of these variables. Nevertheless, sufficient training (mean = 4.372) was determined to be the best strategy in alleviating the former and supporting successful implementation.

The results provide useful information for senior bank management, policymakers, and researchers who recommended a comprehensive approach that promotes strategic alignment, fosters human capital development, and identifies and tackles implementation challenges in a structured manner. This study adds to provide understanding of RPA adoption in the Kenyan banks and serves as basis for continued research and practice in supporting digital transformation in the African banking system and also developing economies.

5.5 Recommendations

Based on the findings of this study on RPA adoption in tier-one commercial banks in Kenya, the following recommendations are proposed.

5.5.1 Policy Recommendations

The Kenyan government should develop a comprehensive national strategy to promote RPA adoption across various sectors, particularly banking. This strategy should include incentives such as tax breaks or grants for banks investing in RPA technologies. Regulators should enhance the

regulatory framework by developing clear guidelines for RPA implementation in the banking sector, addressing concerns related to data security, privacy, and operational risk. Implementing policies to boost digital literacy and RPA-specific skills in the workforce is crucial, and this could involve incorporating RPA and automation concepts into university curricula and supporting vocational training programs focused on RPA. Additionally, the government should encourage collaboration by facilitating partnerships between banks, technology providers, and academic institutions to foster innovation and knowledge sharing in RPA implementation.

5.5.2 Managerial Recommendations

Banks should ensure that RPA initiatives are closely aligned with overall business objectives, as evidenced by the strong correlation between RPA implementation and strategic alignment. Investing in comprehensive training programs for staff at all levels is essential, with training being rated as the most crucial strategy for successful RPA implementation. Adopting a phased approach to RPA implementation can help manage costs and complexity, addressing the challenge of high implementation costs identified in the study. Careful identification and prioritization of processes for automation, focusing on those offering the highest potential for efficiency gains and ROI, are necessary. Robust change management strategies should be employed to address potential opposition among staff, including clear communication about the benefits of RPA and its impact on job roles. Forming cross-functional teams to oversee RPA implementation, ensuring representation from IT, operations, finance, and other relevant departments, is recommended. Continuous evaluation of RPA initiatives' impact on operational efficiency, cost savings, and customer satisfaction should be conducted to refine and optimize RPA strategies.

5.5.3 Theoretical Recommendations

Developing an integrated theoretical model that combines elements of the Technology Acceptance Model (TAM), UTAUT, and Diffusion of Innovations Theory, specifically tailored to RPA adoption in the banking sector, is suggested. Further research on the role of contextual factors specific to developing economies in RPA adoption, such as cultural attitudes towards automation, infrastructure limitations, and regulatory environments, is needed. Longitudinal studies to track the long-term impacts of RPA adoption on bank performance, employee satisfaction, and customer experience would provide insights into the sustainability and evolving nature of RPA benefits.

Conducting comparative studies of RPA adoption across different banking tiers and countries in Africa to identify best practices and contextual variations is recommended. Exploring theoretical frameworks for understanding the evolving relationship between human workers and RPA systems, including the impact on job roles, skills requirements, and organizational culture, is crucial. Developing a theoretical model for assessing RPA maturity in organizations, considering factors such as scale of implementation, sophistication of use cases, and integration with other technologies like AI and machine learning, is advised. Investigating the ethical implications of RPA in banking, including issues related to job displacement, algorithmic decision-making, and data privacy, could contribute to the formulation of ethical guidelines for RPA implementation.

5.6 Study Limitations

This study has several potential limitations. One major limitation is the focus on tier-one commercial banks, which may restrict the generalizability of the findings to smaller banks or those in different regions. The specific context of Kenya might not reflect conditions elsewhere, limiting broader applicability. Response bias is another concern, as data collected through surveys and interviews may be influenced by participants providing socially desirable answers or overstating the positives of RPA adoption due to organizational pressures or personal biases.

The rapidity of technological advancements in RPA and related fields also presents a challenge, as findings could quickly become outdated. Measurement limitations might exist, with quantitative metrics potentially overlooking qualitative aspects like employee morale and subtle organizational changes. Variability in how RPA is implemented across different banks could lead to different outcomes, influenced by factors such as the processes chosen for automation, the expertise of the implementation team, and the level of support from top management.

External factors, such as economic conditions, regulatory changes, and competitive pressures, might also impact RPA adoption and its outcomes, confounding the study's results. The absence of longitudinal data is another limitation, as short-term studies may not capture the full range of effects, particularly those manifesting over extended periods, such as sustained cost savings, long-term employee adaptation, and evolving customer satisfaction. Additionally, cultural attitudes towards automation and technology adoption, which can vary widely, might not be fully accounted for, despite their significant role in the success of RPA initiatives.

5.7 Suggestions for Further Studies

To build on the findings of this study, several suggestions for further research can be proposed. Future studies should consider expanding the scope beyond tier-one commercial banks to include smaller banks and financial institutions in different regions. This broader approach helped determine whether the findings are applicable across various contexts. Additionally, incorporating longitudinal data is essential to assess the long-term impacts of RPA adoption, such as sustained cost savings, employee adaptation, and customer satisfaction over time. Researchers should also focus on qualitative aspects, including employee morale and organizational culture changes, which are often overlooked in quantitative studies.

Exploring the role of external factors, such as economic conditions, regulatory changes, and competitive pressures, in RPA adoption and its outcomes can provide a more comprehensive understanding of the challenges and benefits associated with RPA. Comparative studies across different countries, particularly in Africa, would help identify best practices and contextual variations in RPA implementation. Furthermore, investigating cultural attitudes towards automation and their influence on RPA acceptance and effectiveness can provide valuable insights for tailoring RPA strategies to different cultural contexts.

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APPENDICES

Appendix I: Letter of introduction

Dear Respondent,

I am a graduate student carrying out a research titled ‘An Assessment of the Implementation of RPA and Its Perceived Benefits in Tier-One Commercial Banks in Kenya’ as part of my Master’s degree in the School of Business at Strathmore University.

I am seeking your valuable input to better understand your bank’s approach to adopting Robotics Process Automation (RPA) technology and your perspectives on the outcomes achieved so far. Your bank was selected given its status as an innovation leader having embarked on early RPA pilot projects and full-scale implementation initiatives across key banking operations.

I would greatly appreciate you taking 10-15 minutes to complete the attached questionnaire. Your responses will provide crucial insights into the drivers, critical success factors, realized benefits, and challenges related to RPA deployment within your specific organizational context. These learnings can guide recommendations to help your bank and others maximize the potential of RPA for improved efficiency, cost reduction, and superior customer experiences.

Please be confident that your responses will be kept totally confidential and anonymous. Data will be aggregated and reported in summary form only, with no individual names or bank details identified at any point. Your participation is completely voluntary but your perspectives would provide immense value to this research. Please reach out if you have any questions or require clarification before taking part in the survey.

I greatly appreciate your time and contribution. Your real-world insights will significantly advance your understanding of RPA assimilation approaches suitable for Kenya’s banking industry as it undertakes rapid digitization. Please return the completed questionnaire within two weeks if possible.

Thank you in advance for your support of this research.

Sincerely,

Maureen Muita

Appendix II: Questionnaire

The questionnaire has five sections. The first section is for personal details, while sections B, C, D, and E focus on the research objectives and the dependent variable of the study. Each of these sections has a Likert scale of Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree in a table format. The research is solely for academic use. Your responses will remain anonymous. Please provide precise answers to the following questions.

Section A

1. **Gender**
   - Male ( )
   - Female ( )
2. **Age**
   - 18-25 ( )
   - 26-35 ( )
   - 36-45 ( )
   - 46-55 ( )
   - 56 and above ( )
3. **Years of Experience in Banking**
   - Less than 1 year ( )
   - 1-5 years ( )
   - 6-10 years ( )
   - 11-15 years ( )
   - 16 years and above ( )
4. **Number of years in current bank**
   - Less than 1 year ( )
   - 1-5 years ( )
   - 6-10 years ( )
   - 11-15 years ( )
   - 16 years and above ( )

5. **Educational Qualification**

   High School ( )

   Bachelor's Degree ( )

   Master's Degree ( )

   PhD or equivalent ( )

6. **Current Position/Role:**

   Operations Manager ( )

   IT Specialist ( )

   Business Analyst ( )

   Other (please specify)……..

7. **On a scale of 1 to 5, where 1 indicates 'Not at all' and 5 indicates 'Extensively,' please rate the level of adoption of Robotics Process Automation (RPA) within your organization:**

1 - Not at all ( )

2 - Limited usage ( )

3 - Moderate usage ( )

4 - Substantial usage ( )

5 - Extensive usage ( )

Section B: Rate of adoption of technological innovations

Please express your level of agreement or disagreement with the following statements regarding the advantages of RPA within your bank.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am cautious about adopting new technologies in my work environment.					
I am comfortable learning and using new banking technologies even if I have not used similar systems before					
The cost of implementing new banking technologies often					

hinders their adoption at our bank.					
I believe that new banking technologies can improve efficiency and service quality for our customers.					
I wait to see how other banks successfully implement new technologies before I am confident in their adoption for our bank.					

Section C: RPA Adoption

Please express your level of agreement or disagreement with the following statements regarding RPA adoption in your bank.

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
The senior leadership in your organization actively supports and promotes the adoption of RPA.					
The employees in your organization have received sufficient training to effectively utilize RPA technologies.					
Your organization has a clear strategy and roadmap for the integration of RPA into its business processes.					
The perceived benefits of adopting RPA, such as reduced operational costs and increased efficiency, align with your organization's goals.					
There is effective communication within the organization regarding the changes and impact associated with the adoption of RPA.					

Section D: RPA Implementation

Please express your level of agreement or disagreement with the following statements regarding the critical success factors of RPA implementation in your bank.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The availability of skilled personnel is critical for successful RPA implementation.					
The alignment of RPA with business objectives is critical for successful RPA implementation.					
The involvement of senior management is critical for successful RPA implementation.					
The identification of suitable processes for automation is critical for successful RPA implementation.					
The selection of appropriate RPA tools is critical for successful RPA implementation.					

Section E: Challenges to RPA Adoption

Please express your level of agreement or disagreement with the following statements regarding challenges to RPA adoption in your bank.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Resistance to change is a major challenge to RPA adoption in our bank.					
The lack of awareness of RPA technology is a major challenge to RPA adoption in our bank.					
The high cost of RPA implementation is a major challenge to RPA adoption in our bank.					
The difficulty of integrating RPA with existing systems is a					

major challenge to RPA adoption in our bank.
The lack of technical expertise is a major challenge to RPA adoption in our bank.

Appendix III: Tier one Banks in Kenya listed by their market capitalization

1. Equity Bank ($1.437 billion)
2. KCB ($1.408 billion)
3. Cooperative Bank of Kenya ($0.753 billion)
4. NCBA ($0.662 billion)
5. Diamond Trust Bank ($0.558 billion)
6. Absa Bank ($0.451 billion)
7. Stanbic Banks ($0.381 billion)
8. Standard Chattered ($ 0.342 billion)
9. Bank of Baroda Kenya ($0.25 billion)