

**ENTERPRISE RESOURCE PLANNING SYSTEM INTEGRATION AND
PERFORMANCE OF COMMERCIAL BANKS IN EMBU COUNTY, KENYA.**

DEBORAH KARIMI NJUE

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DECLARATION

This research is my original work and has not been presented for a degree in any other university.



Signature

Date

Deborah Karimi Njue

D53/OL/21917/2012

This research project has been submitted for review with my approval as the university supervisor.



Signature

Date

Dr. Josphat Kyallo

Department of Management Science

School of Business Economics and Tourism

Kenyatta University

DEDICATION

I dedicate this research project to my family for their endless love alongside encouragement and for seeing me through my education.

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ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
CBK	Central Bank of Kenya
CCK	Communications Commission of Kenya
CD	Certificate of Deposit
CFA	Confirmatory Factor Analysis
CIS	Credit Information Sharing
EDI	Electronic Data Interchange
GSM	Global System for Mobile Communication
ICT	Information Communication Technology
KBA	Kenya Bankers Association
PBC	Perceived Behavior Control
PDA	Personal Digital Assistants
PEOU	Perceived Ease of Use
PR	Perceived Risk
PU	Perceived Usefulness
ROA	Return on Assets
ROE	Return on Equity
SMS	Short Message Service
TAM	Technology Acceptance Model

OPERATONAL DEFNITION OF TERMS

Term	Definition
Enterprise Resource Planning (ERP) system	A software system that helps to run business, supporting automation and processes in finance, human resources, manufacturing, supply chain, services, procurement, and more.
Service delivery	The framework with the mandate of supplying services from the banks to the clients.
Transaction security	Safeguarding private data when many parties interact to conduct a transaction.
Data Communication	Moving data between people or across geographical boundaries using computing and communication technology.
Infrastructure Adoption	Adoption refers to accepting or embracing something. In this study, it explains how bank customers in Embu Municipality take and use ERP system technology to receive financial services—transferring data between individuals or locations using computing and communication equipment.
Information Communication Technology	The seamless fusion of hardware, software offerings, and an array of services designed to empower individuals in organizing, accessing, communicating, and sharing information.
Innovation	Innovation introduces novel methods and ideas. In this context, it involves the incorporation of ERP system technology into the banking sector.

ABSTRACT

Commercial banks serve as fundamental growth engines for the economy. However, they encounter continuous challenges throughout their system infrastructure base, transaction security systems, and delivery of services and data communication networks. The existing system deficiencies create unsatisfied customers while increasing operational expenses alongside reduced financial results. Research shows insufficient evidence about Enterprise Resource Planning (ERP) systems integration's effects on banking efficiency. Researchers studied the effects of ERP system integration on commercial bank performance within Embu County of Kenya. The research design consists of a description, and the study measures ICT employees in ten commercial banks. The study population comprises 240 employees in software engineering, database administration, network administration, and application development departments. The stratified random sampling method chose a representative group of 60 respondents. Qualified data was obtained through established questionnaires, which led to descriptive and inferential statistical assessments. Operational success in the banking sector depends heavily on two factors: data communication performance ($\beta=0.368$, $p<0.05$) and service delivery efficiency ($\beta=0.326$, $p<0.05$). This study establishes that Transaction Security ($\beta=0.224$, $p<0.05$) and System Infrastructure ($\beta=0.148$, $p<0.05$) bring positive impacts on bank performance but with reduced magnitude. The research shows that well-developed ERP systems improve security protection and information dependability, building customer confidence and making organizations more resilient to operational disruptions. The analysis shows that ERP architecture fails to enhance every organizational competency, as first believed. Research indicates that ERP systems become effective in digital banking by requiring strategic deployment and ongoing enhancement despite providing foundational organizational structures. The findings only make assertions that directly correspond to statistical evidence, thus eliminating hypotheses that predict improvement in organization-wide efficiency. To achieve ERP integration success, commercial banks should allocate funds for cybersecurity measures, optimize data communication channels, and continuously update their infrastructure to improve performance. Financial institutions must implement an ERP solution with multi-phase deployment that matches operational requirements. After implementing ERP tactics, future studies must analyze both organizations' prospects for financial stability and customer service standards. The research fills important gaps in ERP system adoption, adding to banking digitalization research while giving policymakers, banking executives, and IT professionals practical advice about operational effectiveness using technology improvements.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The banking industry throughout the world today is characterized by some changes that have taken place over the past decades, distinguished by technology, economy, and global reforms. These changes have pressured the banks to change with the advent of increasing competition and efficiency. In 2022, the global sector briefly recovered from the impacts of COVID-19 to decreased profitability in 2023 because of increased interest rates and economic instability (Boubaker et al., 2023). In the context of the bank performance, return on equity (ROE) varied and was the highest in the period 2000-2005, equal to 18%. However, after the global financial crisis of 2008, it dropped below 4%. As explained by El Khoury et al. (2023), after the financial crisis, banks still faced challenges to achieve operating an ROE above the 10% level in the following one decade.

Banks across African countries have experienced some challenges, such as fluctuations in the macroeconomic environment, new regulations, and consumer behavior. Still, the intensity of African banks' revenue sources declined by 2.6 percent between 2016 and 2022 with Nigeria as the only major banking market that registered an improved figure (Siddique et al., 2023). According to Demirgüç-Kunt et al. (2021), Kenyan banks have experienced problems such as operational costs, cybersecurity risks, and increased competition from new market entrant, which increases the need for digital banking.

These challenges have however been sorted through the use of technology in the operations of the banking sectors. In the modern world, there are drastic changes that has been noted in banking system; this change is attributed to the use of mobile banking, cloud computing and the use of automation in the banking systems. Kenya takes the leading position in many spheres of using digital banking products, primarily, thanks to the M-Pesa system that was launched in 2007 (Rouse et al., 2023). Thus, the adoption of ERP systems has avails the Kenyan banks with the engine to optimise and advance operations, services to the customers as well as security to the financial needs.

ERP systems provide functionalities for real-time data processing, risk evaluation and analysis, and full integration of the transaction handling system, which is vital for

current banking organizations (Adesina et al., 2024). These systems offer a range of banking facilities such as customer interface, account management, finance management, and others. Still, problems like system integration costs, technical know-how, and regulatory concerns hinder the use of sustainable CBR systems (Boubaker et al., 2023). Challenges such as these make it important for Kenyan banks, including those in Embu County, to exploit the benefits of ERP systems fully.

Embu County is home to many commercial banks, as well as both national and international banking institutions. The financial enshrinement in the region has also improved over the recent past, where 54.7% of the population above eighteen years old now has formal banking services (Isabwa, 2021). Due to the various initiatives implemented by banks, there has been an imbalance in the provision of services, security of transactions, and effectiveness in handling data transactions. These barriers, as explained by Getugi et al. (2023), include slow transaction processing, inadequate security measures to protect the customers' data and transactions, and poor customer trust.

The provision of ERP systems in commercial banks plays a key role in eliminating the above gaps since they encourage efficiency and lead to low costs and customer satisfaction. This paper argues that when financial institutions adopt the applications of digital banking, there can be a possibility of efficient resource utilization, better management of risks, and compliance with government regulations (Giovanis et al., 2019). The study sought to establish the effect of ERP system integration on the performance of commercial banks in Embu County using factors such as security of transactions, service delivery, and data transfer.

1.1.1 ERP System Integration

ERP system integration includes the implementation of computing platforms that support banking processes, information processing, and delivery of services (Jha et al., 2025). In the Kenyan banking industry, ERP systems have become a new trend as banks look for solutions to reduce costs, increase efficiency and effectiveness in financial reporting, and meet customers' needs (Daszyńska-Żygadło et al., 2021). These systems help banks automate key business processes in normal banking operations of transforming, processing, and managing data. They provide tools to check compliance

issues, parameters, risk analysis, and improved methods and techniques for reducing manual work and errors. ERP systems also enhance department communication by providing updated information to the relevant banking divisions. The integration of ERP has an organizational benefit in that it enables a business to reduce costs involved in operations, improve the efficiency of the services rendered, and avoid the insecurity of manual banking (Choudhuri, 2024). As more and more banking sector sectors embrace the shift to digital operations, implementing ERP becomes crucial for enhancing the sustainability of the banking business.

ERP system has commonly been conducted via SMS and mobile Internet via conveniently accessible websites and cellphone programs. To achieve this, ERP system entails technology called Electronic Data Interchange (EDI) (Jha et al., 2025). EDI is an exchange of data sent between a computer and another that facilitates automatic transactions. EDI has been effective in reducing automated transfers of funds. Through this technology, it has been possible to pay suppliers and salaries. Society for Worldwide Interbank Financial Telecommunications (SWIFT) has also achieved this internationally.

Numerous initiatives are currently exploring the potential of mobile phones as an avenue for the financial services delivery to persons without access to traditional banking services, commonly referred to as the "unbanked" population. This demographic needs formal bank accounts and primarily conducts financial transactions using cash. This limitation hampers their ability to secure loans, save money, or engage in remote transactions, ultimately restricting their economic opportunities. As elucidated by Kala Kamdjoug in their 2020 study, this financial exclusion underscores the importance of providing innovative solutions.

In contrast to the conventional brick-and-mortar banking structure, which necessitates considerable investments in physical facilities alongside personnel, ERP system, often

abbreviated as ERP system, offers a practical means of getting to millions of households that are still unbanked, particularly those residing in underdeveloped remote areas. Extensive research consistently underscores the pivotal role of financial inclusivity and accessibility in driving economic advancement and poverty alleviation. A broader spectrum of financial services, such as credit, investments, money transfers, savings, and insurance, can bring about transformative change in the lives of individuals with modest incomes, as emphasized by Taddese et al. in their 2023 research. As per the insights shared by Poromatikul et al. (2020), mobile payments, often called M-payments, constitute a vital facet of ERP system technology. Mobile payments represent financial transactions through mobile devices, enabling individuals to conveniently settle bills for various goods and services, including utilities. Customers may now make payments online rather than visiting establishments, saving them time and money. This approach aims to reduce transaction costs while increasing transaction reliability and speed. Taddese Bekele and Abebaw Degu (2023) also argued that using paper-based payment instruments would decrease further with electronic channels in retail payments.

According to Duderstadt et al. (2021), approximately 60% of the global population remains unbanked, and an increasingly substantial portion of this non-banking population relies on mobile phones. This underscores the importance of bank executives and policymakers comprehending how individuals integrate ERP system into their lives. Such understanding is essential for crafting solutions tailored to meet clients' evolving needs, as emphasized by Asongu and Le Roux (2023). Even though several Kenyan banks have implemented ERP system technology, further research is needed to discover the factors that influence bank customers' adoption of this

technology. According to many experts such as Oladimeji (2023), in developed countries, ERP system integration is still in its infancy.

However, to this date, specific challenges are associated with ERP-based banking systems. Fear of cybersecurity risks, doubts about the stability of the transactions, and the nature of the systems also pose a significant challenge in some customers' adoption of digital banking (Duderstadt et al., 2021). In addition, ERP systems are complex and need the client to invest more in upgrading the system, staff, training, system updates, and meeting emerging legal requirements. It became apparent from the literature that improved working methods are essential for improved financial institutions in the face of rapid technological advancements (Boubaker et al., 2023). The adoption of ERP systems is also affected by other factors, including integration problems, high implementation costs, and resistance to change. However, in implementing ERP-based financial services in banks, the bank has to face challenges related to the difference in the level of awareness of customers about these services. Such factors are central to this plan as they help avoid any challenges associated with change management and guarantee that the ERP systems can be effectively implemented and utilized in the banking industry.

ERP system usage has expanded dramatically worldwide, thanks to collaboration with financial institutions. Studies conducted in the early 2000s demonstrated that some European countries, such as France, the UK, Germany, and other Asian countries, like Japan and Singapore, were leading in ERP system (Milly et al., 2021). During that time, scanty studies reference Africa since the continent at large needed to be more technologically developed. In addition, the literacy levels were low; hence, the penetration of mobile use and even formal banking services were inadequate. However, recent studies in the 2010s showed that Africa was advancing significantly regarding the development of ERP system. Kenya is one of the countries that has seen significant progress regarding ERP system in Africa and even competes with most of the developed countries globally (Celliers & Pretorius, 2023). In Kenya, ERP systems facilitated by

the leading mobile operators, Safaricom and Airtel, through their mobile services, M-Pesa and Airtel Money. The growth of ERP system in Kenya has triggered financial institutions, including commercial banks, SACCOS, and other money lending institutions, to provide their services through these mobile operators. According to these organizations, ERP sitemaps are more likely to be used for financial transactions than traditional banking methods (Milly et al., 2021). Globally, there has been a significant increase in the use of mobile banking, which has been made possible through collaborations with financial institutions. Milly (2021) argued that the consumer propensity to use mobile devices in conducting banking functions depends on the device's sophistication as opposed to age. With the increase in the use of smartphones, more people are likely to prefer mobile banking. Considering the people's economic situation in Kenya, it has been thought that many people will avoid mobile banking. However, the growing literacy levels have made Kenya a leading candidate for ERP system worldwide.

1.1.2 Commercial Banks' Performance

A financial institution is classified as a "commercial bank" when it accepts deposits, provides checking account services, extends various loan types, and offers essential financial products to individuals and small businesses, such as certificates of deposit (C.D.s) and savings accounts (Kinuthia, 2021). In an ideal scenario, commercial banks generate revenue through the interest earned on loans, including mortgages, auto, business, and personal loans. Customer deposits serve as the source of capital that banks utilize to fund these loans.

Customers frequently do their banking through automated teller machines (ATMs) and teller window services at commercial banks. Because of developments in internet technology, most banks now allow their customers to complete the majority of in-person assistance, such as transfers, deposits, and bill payments, online. In recent years, many businesses have moved all their financial processes online (Kinuthia, 2021). Because they need physical infrastructure, these banks can provide their customers with a more excellent range of goods and services at a lesser cost or none.

According to data from the World Bank, the average return on assets (ROA) for commercial banks globally has been approximately 1.5% recently. However, the performance of commercial banks varies significantly across different regions and countries. In Africa, the performance of commercial banks in terms of ROA, according to the African Development Bank, averaged 2.6%, while the return on equity (ROE) was 10.8% in 2022 (Getugi et al., 2023). These numbers differed significantly from one country to another, as some countries have more developed banking sectors and economies.

While Kenya has one of Africa's most advanced banking industries, these seven commercial banks are not exempted from various challenges that affect their operation. Challenges they face include high operating costs, rising non-performing loans, compliance costs, and the constant need to adapt to technological advances (Muthitu, 2020). Moreover, the levels of technology used by banks also differ, resulting in differences in service provision, security threats, and customer satisfaction. As technology advanced significantly in financial technology, some difficulties are observed regarding adsorbing Enterprise Resource Planning systems and their integration with banking institutions, which is exacerbating raw transaction processing and data management (Kinuthia, 2021). These factors warrant a critical examination of ERP system adoption and its impact on improving commercial bank performance in Kenya.

1.1.3 Commercial Banks in Embu County

Embu County has ten banks and over ten microfinance institutions (Njeru, 2024). These include Equity Bank, KCB, National Bank, Cooperative Bank, Family Bank, Barclays Bank, Consolidated Bank, Jamii Bora, Sidian Bank, and Winas Sacco. Banking services are also available in other central counties and county marketplaces, such as Runyenjes, Mayatta, Kianjokoma, Kiritiri, Siakago, and Ishiara. For example, Equity Bank, Winas

Sacco and Cooperative Bank have branches in Runyenjes ,Kiritiri and Siakago towns, respectively. The number of commercial banks in Embu County has increased during the previous ten years. For example, the percentage of unregulated financial institutions fell from 39% to 25% in 2013, indicating that more individuals are becoming financially aware and that fraudulent institutions are decreasing (Munyua, 2022). In addition to credit information sharing systems (CIS), agency banking updated prudential guidelines, and ERP system have emerged as recent advancements in the banking sector that have contributed to improved efficiency in Embu County.

The Study's focus will be on the bank clients of Embu Municipality. Embu Municipality, like Nairobi, Nakuru, and Kisumu, is one of Kenya's largest cities and the seat of the Eastern Province. Embu Town was founded and is located 160 kilometers north of Nairobi. It is situated on the slopes of Mount Kenya, 1350 meters above sea level, amid a stunning and overwhelming scenery (Kanyingi, 2022). It is a popular tourist site with great economic importance to the country. The primary economic sectors in Embu are business, industry, tourism, agriculture, and tertiary services. Embu Municipality is home to ten newly founded commercial banks. Embu is one of the East African towns with the fastest growth rates. Banks are increasing their branch sites in Embu to take advantage of the county government and the area's rapid expansion, which offers significant investment opportunities (Matan et al., 2024). It has a larger capacity for growth as the administrative hub for Embu County.

1.2 Statement of the Problem

Most commercial banks operating in Kenya experience numerous challenges, which, in one way or another, affect their efficiency and profitability. These challenges are macroeconomic instability, geopolitics, and increasing customer demands. Banks face many challenges to achieve profitability; at least half recorded a return on equity less than the cost of equity in 2022 (Boubaker et al., 2023). For low-income earners in Kenya and other developing countries, there are challenges in banking services since

there is limited branch density and high expenses for banking transactions (Getugi et al., 2023; Isabwa, 2021). However, these banks encounter challenges in incorporating an ERP system, including spiking infrastructural inefficiency, security threats, and reluctance to transmute digitally. Meeting these challenges is important in increasing banking efficiency and preparing financial institutions to compete in Kenya's dynamic financial sector.

Moreover, as ERP system gains popularity, the study seeks to understand the implications of meeting the expectations of customers via mobile apps, particularly in line with customer satisfaction along with overall performance of organizations. The existence of insufficient ERP system infrastructure, the inefficiency in service delivery, the insecure transaction security and unsatisfactory data communication are problems that commercial banks in Embu County face, that the research project proposes to solve. This prompts a focus on the integration of technology, which can be multifaceted and comes with its own set of challenges (Getugi et al., 2023). Furthermore, addressing security and data privacy concerns is critical, as they profoundly impact customer data protection and can affect reputation of a bank alongside performance. Ultimately, comprehending the economic impact of ERP systems critical, including its effect on revenue, operational costs along with overall profitability. This study is particularly relevant in the context of Kenya's Vision 2030, where ERP system plays a pivotal role in fostering financial service access, and therefore, investigating the factors that influence its integration alongside performance is imperative to bridge existing knowledge gaps (Adesina et al., 2024).

In light of the multilayered approach along with opportunities outlined in the problem statement, the objectives of this study are clear. The primary objective is to investigate the influence of ERP systems on the performance of banks, specifically along with

overall profitability. Moreover, the study aims to examine the challenges alongside benefits associated with the integration of ERP systems, paying a close attention to technological implementation, data security along with privacy concerns. As we delve into this research, our aim is to offer resourceful insights that will inform strategies for addressing these challenges alongside leveraging the benefits of ERP systems in the banking sector. Eventually, the research contributes to a better comprehension of how ERP systems can be effectively utilized in the financial sector, aligning with the broader goals of initiatives such as Kenya's Vision 2030 in the expansion of financial services access.

In the pursuit of these objectives, the study will systematically assess as well as reflect on the challenges related to ERP infrastructure, scrutinizing issues such as technological readiness as well as resource constraints. Service delivery inefficiencies will be analyzed, delving into how implementation of ERP impacts the efficiency as well as effectiveness of banking services. The study will critically evaluate transaction security measures linked with ERP systems, addressing concerns that are related to data breaches alongside unauthorized access. Moreover, the research will delve into data communications aspects, investigating how ERP integration affects the flow of information within banks as well as between banking institutions alongside its clients. This detailed approach aims to offer a complex comprehension of the multilayered challenges as well as opportunities that are inherent in ERP system integration, contributing to informed decision making and strategic planning in the banking sector.

1.3 Objective of the Study

1.3.1 The General Objective

The prime objective of this study is to investigate the influence of ERP systems on the performance of Commercial Banks in Embu County, Kenya's performance.

1.3.2 Specific Objectives

1. To determine the effect of system infrastructure on performance of Commercial Banks in Embu County, Kenya.
2. To evaluate the influence of service delivery on the performance of Commercial Banks in Embu County, Kenya.
3. To establish the role of transaction security in the performance of Commercial Banks in Embu County, Kenya
4. To assess the relevance of data communication on the performance of Commercial Banks in Embu County, Kenya

1.4 Research Questions

1. How does system infrastructure influence Commercial Banks' performance in Embu County, Kenya?
2. How does service delivery influence the performance of Commercial Banks in Embu County, Kenya?
3. What is the role of transaction security in the operations of Commercial Banks in Embu County, Kenya?
4. How relevant is data communication on the operations of Commercial Banks in Embu County, Kenya?

1.5 Significance of the Study

To begin, the findings of this paper will benefit Kenya's banking industry by providing relevant data that CBK, donors, banking managers, CCK, investors, financial advisors, along with the general public would require to aid with the deployment of ERP system technology. ERP system technology will be feasible once these factors are well understood. The findings will be helpful to funders seeking ways to encourage the expansion of this area. The study will also note the knowledge gaps alongside urging more profound analysis. This will serve as a basis for researchers interested in investigating the topic under Study. Third, because the findings will emphasize important information and the benefits of this technology, they will be helpful to clients who have yet to use mobile banking. This will enable them to. Ultimately, the research will contribute to the body of knowledge as well as improve decision-making.

1.6 Scope of the Study

The research was performed within Embu County, Kenya, with Kenya Commercial Bank serving as the center of focus. The primary objective of the study was to investigate the influence of ERP system integration across financial, human resource management (HRM), procurement along with information technology (IT) domains on the performance of organization within this specific context.

The study engrossed diverse groups of organizational stakeholders, such as the support crew, thereby ensuring a detailed assessment of the impact of integration across these sensitive operational areas. The collection of data was primarily facilitated via the administration of a structured questionnaire, with an aim to gather pertinent information for analysis alongside evaluation. This methodology was employed in order to maintain objectivity in addition to consistency in collection of data, which conforms to established research standards.

1.7 Limitations of the Study

Because of the Study's limited scope and sample representativeness difficulties, applying the study findings to the rest of Kenya may be problematic. However, the limitation will be overcome by using a large sample to enhance the results generalization. Also, the study is limited to four factors: banking infrastructure, service delivery, transaction security, and data communication. Hence, the Study does not consider external factors influencing ERP system integration and performance, such as economic fluctuations, regulatory changes, or technological advancements. Further, the Study is limited due to causality and correlation. The Study might find correlations between the suggested factors affecting ERP system performance, which might violate the assumption of the multiple linear regression model (Maulud & Abdulazeez, 2020).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section includes a literature review that examines and analyzes theoretical and empirical research on ERP system alongside its effects on a bank's financial performance. A literature review refers to a survey of credible sources that overviews the topic under investigation and provides the relevant theories, methods, and literature gaps. A literature review aims to synthesize information into a comprehensive summary of existing knowledge in the field to identify the need for further research. This chapter provides a theoretical foundation for technological innovation and its implications on financial performance. The chapter then presents an empirical review that helps develop the conceptual framework that relates the Study's dependent and independent variables.

2.2 Theoretical Review

This section describes the essential theories that have previously been explored and are necessary to this study and include Theory of Market Power and Efficiency Structure, Theory of Technology-Organization-Environment (TOE) Framework and Theory of Planned Behavior.

2.2.1 Theories of Market Power and Efficiency Structure

The theories apply to financial institutions' pricing tactics. It allows banks to manipulate prices, increasing profits (Chaffai & Coccoresse, 2023). This is related to the efficient structure that demonstrates higher theories that provide higher yields, hence establishing a need for a higher concentration. According to the market power theory, the increased external forces lead to market power, which indicates an institution can raise prices without losing its clients (Ahmad et al, 2020). In the banking industry, which is considerably different from other types of firms, market power often takes the

form of two things: product and service differentiation and searchability. Akbar et al. (2021) contend that the trade-off existing between differentiations alongside legitimacy loss is always ideal at a strategic balance point. In a similar instance, a trade-off between security alongside searchability needs to be considered. A financial institution earns money through market domination. Allen and Barbalau (2024) argue that only firms with a significant market share and a primarily differentiated portfolio can compete with their competitors and earn monopolistic profits.

Further studies into the market structure theories suggest that enhancing the management and scale efficiency provides a higher concentration that, in turn, leads to higher profitability. In the performance of the bank, the portfolio composition of the financial institution is a critical factor in the profit generation along with the return to the shareholders. These achievements are the outcome of management decisions and overarching policy decisions.

Akbar et al. (2021) employed market share as an indicator of efficiency in their efficiency hypothesis. The prominence of the efficiency hypothesis becomes evident at a time when a distinct positive correlation is noted between market shares along profitability. This strategy indirectly assumes that the growing concentration of the market is the primary market power source. Calvano and Polo (2021) criticized this approach, claiming that the domination of participants over a specific need is the immediate source of market power, regardless of the eventual origins of such control. The relative market power hypothesis was, therefore, born.

2.2.2 Technology-Organization-Environment (TOE) Framework

The Technology-Organization-Environment (TOE) Framework by Tornatzky and Fleischer in 1990, is a theoretical framework that helps to understand the process of technology acceptance and utilization within organizations (Ahmed, 2020). The TOE

framework categorizes technological adoption into three aspects: technological factors, organizational factors, and environmental factors. Technical factors concern the characteristics and application of ERP systems, their advantages, and the problems that might arise. Alzahmi et al. (2025) explain that the four primary criteria on which firms decide about the adoption of ERP are security issues, compatibility of these systems with the existing systems in the organization, the capability of the systems to grow in functionality and capability in the future, and finally, the return on investment that these systems offer to the organizations. New technologies like cloud technology, automation, and security concerns play significant roles in implementing ERP in banks. Organizational factors are the organization's characteristics, including the bank's required financial resources, support of leadership, and employees' skills. The impact of capital, IT infrastructure, and a culture of innovation is discussed in the following manner: Training of the workforce and management support are considered important factors for the successful implementation of ERP, but strikes and budgeting are considered opposing forces, as explained by Mugwenhi (2020). External forces include regulatory requirements, customer needs, and competitors' forces. In Kenya, for instance, the adoption of ERP is controlled by regulatory bodies such as the Central Bank of Kenya, which follow policy guidelines on data protection. Moreover, the increased need for customers to provide digital banking services makes banks adopt ERP systems to improve their services and workflow flow.

The TOE framework is applicable in this study as it is versatile for examining the adoption of ERP systems in organizations. Ratliff (2022) revealed that ERP adoption was high in banks with sound IT systems and active ERP leadership. According to Jaradat et al. (2022), the two most influential factors for implementing ERP systems in financial organizations are regulation and competition. This study adopts the TOE framework to examine the relationship between technology factors, organizational factors, and external pressures toward ERP adoption. Its main application includes offering policy recommendations and strategies for enhancing ERP integration in Kenyan commercial banks.

2.2.3 Theory of Planned Behaviour

The concept of reasoned action spawned scheduled behavior, which also incorporates the idea of recognized behavior control (PBC). The image accepts that acts can be planned and planned for. As a result, the additional construct aids in accounting for

situations in which a person lacks the control or resources required to engage in the desired behavior freely. The theorists meant three primary constructs: attitude toward specific conduct, subjective norms, as well as seen behavioral control. Perceived behavioral control is the ability to carry out a given behavior, and it influences intention. According to the concept of planned behavior, three sorts of ideas influence human conduct: behavioral defenses, normative beliefs, and control beliefs. Using the theory of planned behavior, Chang et al. (2020) explored how customers' attitudes and subjective norms influenced the integration of Internet banking. While the personal standard had little effect on integration intention, philosophy did.

Furthermore, Aldammagh, Abdeljawad, and Obaid (2021) used the theory of planned behavior to investigate alternative structural models for the acceptance of e-banking in Vietnam. According to the report, e-banking provided banks and non-bank financial institutions with a variety of choices for expanding their existing distribution networks at a low cost in order to better serve their clients by delivering a variety of high-quality services. The Study concluded that e-banking was introduced in rising nations, which were new prospective markets with very high rates of economic growth.

2.3 Empirical Review

The systematic literature review, also known as the empirical literature review, reviews previous empirical studies in order to address the study objectives. This section cites on the variables that include:

2.3.1 ERP System Adoption and Financial Performance of Commercial Banks

ERP system adoption has been considered a critical strategy in the changing face of financial institutions, primarily commercial banks. Implementing ERP systems helps simplify banking processes, enhance the generation and reporting of financial statements, and deliver services to customers, as Bawack and Kala Kamdjoug (2023)

noted. Bochari et al. (2021) stated that increased adoption of ERP software leads to efficiency in reducing transaction time, increasing accuracy and effectiveness in service delivery, and hence increasing the overall gains in any business's financial performance. The aspects of the ERP aid in strategic decisions by giving real-time access to data and increasing control over business operations while reducing the influence of human errors (Kinuthia, 2021). This supports Zakayo and Ondabu (2022), who elaborated that integrating ERP in banking services enhances products and services, improving customer satisfaction and loyalty. In addition, the use of ERP technology aids in compliance with the legal requirements in determining an organization's financial reports and audit procedures (Al-Hanah et al., 2021).

However, there are also disadvantages to using ERP, which have been noted as follows: high implementation cost, integration issues, and employee resistance (Do et al., 2022). This paper establishes that banks need to adequately train their employees before embracing the change and should also employ change management strategies to enhance the implementation of the ERP. On the same note, security risks act as a threat since ERPs are used to capture and handle enormous numbers of customers' data (Gbongli, 2023). Therefore, the ERP system significantly improves commercial banks' financial performance. As a result of ERP implementation, there is enhanced efficiency, enhanced service delivery, and enhancement of financial decisions concerning banks. However, they are faced with challenges such as costs of implementation, integration challenges, and security risks. More future research should be carried out to analyze the effects of ERP systems on financial sustainability and extended patronage of commercial banking institutions.

2.3.2 Transaction Security and Commercial Banks Performance [3]

The relationship between using mobile devices for financial transactions and the growth of a country's economy. Kariuki (2022) investigated uptake, impact, and use to estimate ERP system's contribution to economic growth. According to the Study, providing a mechanism to minimize the costs of financial transactions and increasing user access to formal financial systems might improve the financial performance of traditional African banks, hence promoting economic growth (Kariuki, 2022). In essence, ERP system and m-payment methods have been significant innovations in banking. The microfinance institutions have been among the major financial players in Africa.

Therefore, the relationship between the ERP system services adopted by these institutions is imperative. According to Bochaberi and Job (2021), these institutions form a part of the broader electronic banking, which has enhanced financial performance growth. Mobile money services have significantly developed in financial institutions in recent years. This indicates that most institutions agree that ERP system has a role in economic performance. In their Study, Bawack and Kala Kamdjoug (2023) argued that ERP system services increase the bank's customer outreach, leading to more excellent financial performance by these institutions. The banks achieve growth brought services like Bill Payments, E-fund transfers, and the order for bank statements and checkbooks, which increase the overall performance of the banks.

ERP system services are notably unstated to use in addition to being more secure than traditional financial transactions such as cash payments. In their Study, Kala Kamdjoug (2020) evaluated the safety of ERP system and its role in attracting new clients. According to the survey, ERP system has provided businesses and banks throughout the world with possibilities they did not previously have. Many banks have been effective in coordinating the distribution of financial products and their promotion via the Internet, with mobile devices providing access to these services. Notably, ERP system often relies on providing customers with secure and convenient access to information (Kala Kamdjoug, 2020). A good technology, especially one involving money transfer, must be safe. With the increase in security, financial transactions are more efficient, leading to a rise in the services that banks provide, hence better economic efficiency. According to the findings of the studies, perceived trust, usability, and compatibility are key influencing factors for the behavioral intention of consumers to adopt M-banking. According to Kariuki (2022), the decreased risk of financial transactions has boosted how mobile phones meet personal financial needs, particularly in distant places. As a result, the banks' overall efficiency and performance improve.

There has been increased development of mobile loans facilitated through mobile phones by financial institutions. Generally, transferable credit utilizes mobile phone services to provide credit services to persons who can hardly access these services through traditional banks (Kinuthia, 2021). The benefits are convenient for most users since they are undeserved. This means that mobile services like loans tend to increase the banks' financial assistance, improving their overall performance. It should be noted that digital credit differs from conventional credit since the process of credit application and approval is almost instantaneous (Zakayo & Ondabu, 2022). This means that the loan evaluation processes are automated, as digital credit products tend to leverage historical data to generate credit scores. Since the loans can quickly be processed remotely, most people can access them. Such a process can be done without an individual visiting the physical banks. Hence, the loans can easily and conveniently be accessed without collateral. Accordingly, Kariuki (2022) stated that ERP system improved banks' productivity by providing more people with loans through mobile loans, which are easy to access even remotely where the banks are not developed.

2.3.3 Service Delivery and Commercial Banks Performance

Customers can now access financial services without visiting bank branches, thanks to recent technological advancements. Financial institutions' costs have fallen as a result of this recent technical innovation (Kinuthia, 2021). ERP system is a subcategory of electronic banking (Zakayo & Ondabu, 2022). This technology "assists banks in increasing speed, shortening processing periods, improving the flexibility of business transactions, and reducing costs associated with physically serving customers" (Zakayo & Ondabu, 2022).

The increased utilization of mobile phones has supported the creation of marketplaces, social enterprises, as well as public services indiscriminately in developing alongside

developed nations. Due to the rapid growth of mobile technology, financial services are increasingly dependent on mobile banking. ERP system allows you to save money on money transfers between locations (Kariuki, 2022). It also increases the number of people who use regulated financial services (Kinuthia, 2021). According to Ivanović and Marić (2021) classification of ERP system into two categories, transformative ERP systems the provision of banking services via a mobile phone in order to reach the unbanked. Second, there is additive M-banking, which allows customers who have already opened an account to access more channels to obtain financial services. Finland has provided payment and account management services via SMS on mobile GSM phones since 1992. The majority of Finnish customers conduct their daily banking on the Internet. As a result, the number of bank branches has decreased dramatically (Zakayo & Ondabu, 2022).

Customers are lured to ERP system because of the convenience it provides for making payments, withdrawals, and deposits. According to (Kinuthia, 2021), M-Pesa offers a high level of convenience and trustworthiness because agents may be found in even small market locations. Customers act from the comfort of their own homes. As a result, formal financial institutions have a huge chance to connect with low-income rural populations through this system (FSD annual report, 2009; Kinuthia, 2021).

ERP system has the potential to reduce costs across the financial sector. According to the findings of an FSD survey conducted in 2008, respondents could travel less than 12 minutes to the nearest agent for roughly 15 shillings. According to Fin Access figures, accessing the nearest bank branch would take more than 30 minutes and cost more than 50 shillings for around 60% of the population. This emphasizes the importance of proximity to overall transaction costs (FSD Annual Report 2009, FSD Annual Report 2010). ERP system lowers delivery costs, such as bank fees for establishing and

maintaining a delivery channel, as well as customer access fees for traveling to and standing in lines at banks (Zakayo & Ondabu, 2022).

ERP system provides faster and more effective financial transfers, increasing trade volume and offering access to credit to a significant section of the unbanked in developing countries (Zakayo & Ondabu, 2022). Customers utilizing ERP system can complete transactions wherever there is cell coverage; only cash deposits and withdrawals require a visit to a retail agent (Kinuthia, 2021). ERP system may reduce the need for developing countries to invest in more expensive financial infrastructure, such as specialist point of sale (POS) devices.

2.3.4 Data Communication and Commercial Banks Performance

Chen, You, and Chang (2021) defined data communication as the transmission of data between devices or systems using different mediums and technologies. In commercial banks' context, data communication enables efficient operations, customer service, and overall performance. A significant way data communications impact commercial banks' performance is through the efficiency of operations. According to Chen, You, and Chang (2021), commercial banks deal with a vast amount of data daily, including customer information, transaction records, financial statements, etc. Effective data communication systems allow different branches and departments within banks to share information with ease. As a result, banks experience smooth internal processes, faster decision-making, and improved customer service.

Another way data communications impact commercial banks' performance is through real-time transactions. As observed by Khanh et al. (2022), in the modern banking landscape, customers expect real-time updates and quick processing of their transactions. Data communications technologies such as online banking platforms,

mobile apps, and ETMs facilitate instant access to account information and the ability to conduct transactions anytime and at different locations.

Also, data communications can impact the performance of commercial banks through improved customer service. According to Khanh et al. (2022), timely and accurate communication is critical to excellent customer service. Banks use data communication to personalize customer interactions, offer targeted product recommendations, and promptly address customer queries or concerns.

Another study by Wang, Xiuping, and Zhang (2021) observed that data communications could impact the performance of commercial banks through multi-channel engagements. The authors noted that banks utilize multiple communication channels to engage with customers, including emails, text messages, social media, and mobile apps. Data communication helps ensure consistent and synchronized messaging across different channels, enhancing customer engagement and brand perception. Above all, data communications allow for global operations, breaking the limits of regions. Chen, You, and Chang (2021) observed that commercial banks operate internationally, necessitating communications across various areas and time zones. Banks can effectively communicate with their branches and offices through advanced data communication systems, ensuring operations and customer experience consistency.

2.4 Summary of Research Gaps

The integration of Enterprise Resource Planning (ERP) systems within the banking sector is a sensitive area of focus in this chapter. This integration has remarkable implications for fostering operational efficiency, customer service along with competitiveness within the financial industry. Nonetheless, it is imperative to address the existing research gap in order to put up the need for the study. The current section

of the literature offers resourceful insights into the effects of ERP system infrastructure, transaction security, service delivery in addition to data communications on the efficiency of commercial bank. Yet, a remarkable research gap exists pertaining to the impact of these variables on the performance of commercial banks, such as the direction, significance along with magnitude of these effects. Moreover, there is limited exploration of the cooperative development of these four independent variables—banking infrastructure, transaction security, and service delivery, in addition to data communication — on the dependent variable—commercial bank performance. Therefore, this study aims to adeptly analyze the individual alongside joint effect of these variables in order to offer a more holistic comprehension of their impact on the banking sector.

Table 2.1: Summary of Research Gaps

Author/Year	Focus of the Study	Research Findings	Research Gaps Addressed by This Study
Boubaker et al. (2023)	Impact of COVID-19 on the performance and efficiency of Islamic banks	COVID-19 impacted efficiency, with 31 out of 49 banks experiencing reduced outputs. InvDEA model identifies banks needing cost adjustments.	This study explores ERP system integration's role in enhancing operational efficiency in Kenyan commercial banks, addressing resilience challenges post-pandemic.
Chen et al. (2021)	Influence of FinTech products (FTPs) on commercial bank performance in China	Perceived usefulness of FTPs positively influences customer satisfaction and work efficiency, while perceived difficulty negatively affects satisfaction.	This study extends research on ERP adoption in Kenyan banks, exploring barriers to integration and user acceptance.
Do et al. (2022)	Role of infrastructure in determining bank performance	Study confirmed IT infrastructure affects commercial banks' performance.	This study provides empirical evidence on how ERP infrastructure enhances financial

			service delivery in commercial banks.
Zakayo & Ondabu (2022)	ERP systems' impact on transaction speed and efficiency	ERP enhances processing efficiency in banks.	This study measures the extent and direction of ERP-driven service improvements in commercial banks.
Wang, Xiuping, & Zhang (2021)	Role of data communication in bank performance	Data communications influence banking efficiency but lack evidence on combined ERP impacts.	This study assesses the combined effect of ERP system infrastructure, transaction security, service delivery, and data communication on bank performance.

2.5 Conceptual Framework

A conceptual framework illustrates the intended connection among the variables of the Study. Figure 2.1 outlines the conceptual framework that elucidates how the dependent variable, commercial bank performance, relates to the four independent variables: transaction security, service delivery, and banking infrastructure.

Independent Variables

ERP System Integration

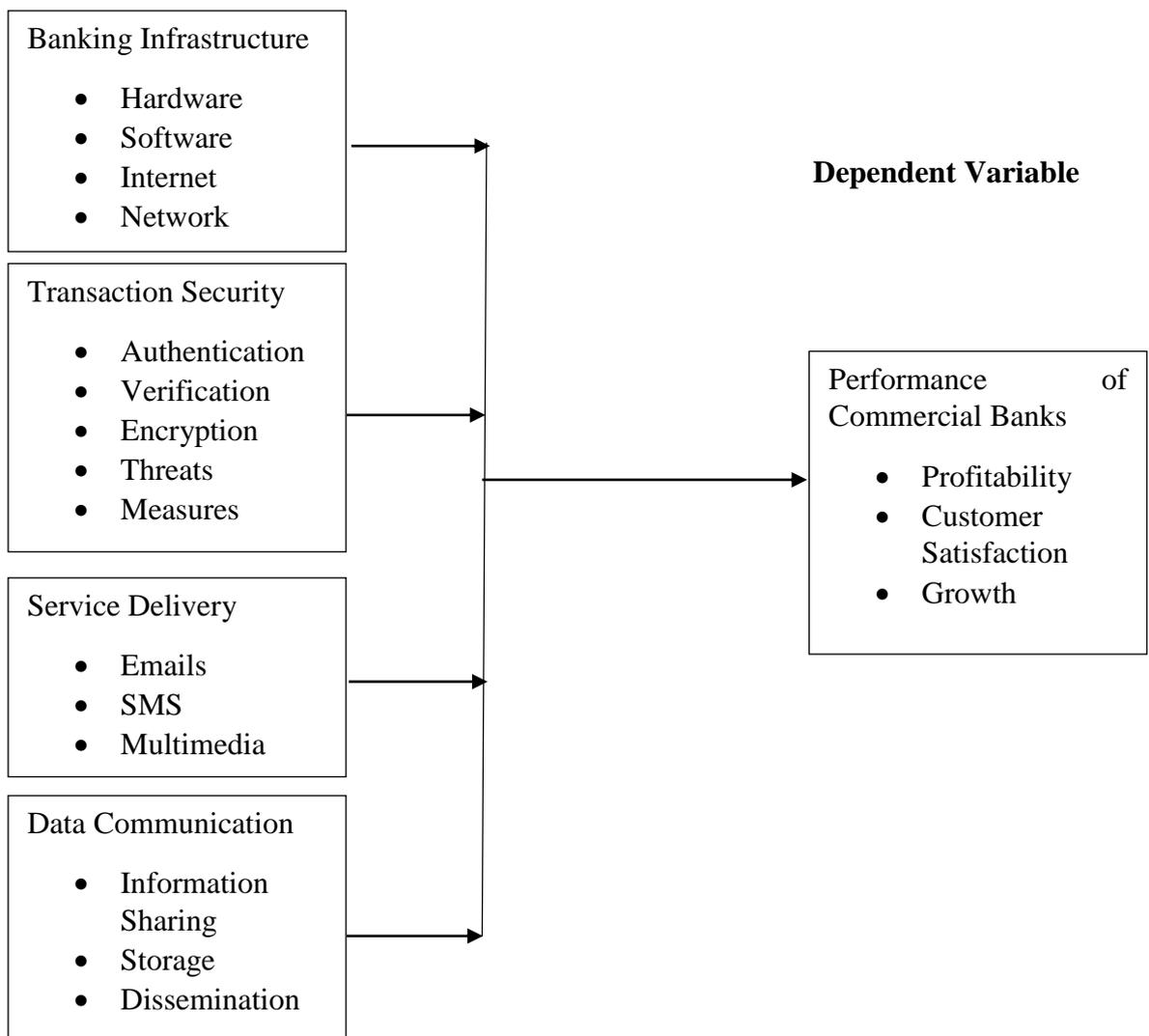


Figure 2.1: Conceptual Framework

Source: Author (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study investigated factors affecting ERP system integration adoption and commercial banks' performance in Embu County. The research methodology section will describe the researcher's steps and approaches to achieve the aim. In this chapter, we delve into the research design, target population, size of the sample, sampling methodology, instruments of data collection, the validity of the device alongside reliability, as well as the analytical techniques employed.

3.2 Research Design

A descriptive research design was used in this study; this design is widely used in explaining actual events without creating interventions with the belief that varying independent factors cause changes in dependent factors (Newman & Gough, 2020). Thus, there is an opportunity to gather empirical data for further analysis without being subjective. Descriptive research is most appropriate in this study as it involves measuring variables as they exist in their natural environment, and that is precisely where the effects of ERP system integration on the performance of commercial banks are of interest. While experimental research deals with manipulating independent variables, descriptive research does not interfere with the variables. One of the primary benefits of such a design is that it gives an inclusive view of the patterns and the vertical and horizontal interactions and characteristics in the banking sector (Mishra & Alok, 2022). This makes it possible to have accurate conclusions without affecting real-life conditions.

3.3 Target Population

The analysis of the Bank Supervision and Annual Report (2020) reveals that there are 10 commercial banks with 240 staff in Embu County. These employees may be involved in clientele services such as offering loans, acting as agents where they accept deposits, and other services involving account collection and management, including saving and checking accounts services. This study was conducted with employees of

these banks in the Information Communication Technology (ICT) division because ICT employees are key implementors and maintainers of ERP systems. The target population was the staff of software engineers, network administrators, database administrators, and application developers to get a broader perspective of how the proposed system would affect banking performance.

3.4 Sampling Size and Technique

The sample of 60 respondents was estimated based on the sample size determination equation presented by Krejcie and Morgan (1970) concerning the number of respondents in a finite population. To incorporate probability sampling, stratified random sampling was used to increase the chances of the researcher getting a proportional sample set of respondents from the various subject categories under study, which in this case is Commercial Banks. Consequently, out of the 60 participants of the study, 14 were software engineers, 16 were network administrators, 15 were database administrators, and 15 were application developers. This approach helped ensure that the sample covered all the improvement aspects by targeting those directly involved with integrating the ERP system.

The choice of the 60 respondents for the pilot study was based on convenience. One key reason why the researcher conducted a pilot study was to obtain the necessary preliminary data to calculate the sample size for the primary outcome. Second, the researcher used the pilot study results to evaluate the credibility along with the reliability of the study instrument.

Table 3.1: Sample Size

ICT Specialists	Sample Size	Percent
software Engineers	14	23%
Network Administrators	16	27%
Database administrators	15	25%
Application Developers	15	25%
Total	60	100%

3.5 Data Collection Instruments

This study adopted semi-structured questionnaires as the primary data collection tool. While on the one hand, closed-ended questionnaires deny the respondents the chance

to express themselves in several ways, semi-structured questionnaires help to allow the respondents to give detailed responses to the questions that are asked to them while at the same time keeping a tab on the flow of questions. This approach was adopted because it allows the investigator to collect both quantitative and qualitative data that increases the understanding of the ERP system adoption and its effects on the performance of commercial banks (Säfsten & Gustavsson, 2020). The questionnaires were distributed electronically through emails, enabling the respondents to complete them within one week. The returned questionnaires were sent through the web and saved in an authorized location to ensure confidentiality. Creditor anonymity was also maintained in this respect without obtaining any person's personal information. Consequently, the flexibility of electronic administration also helped cut the data collection cost and boosted an efficient and secured response rate.

3.5.1 Pilot Test

A pilot test was carried out in two commercial banks in Nairobi, Kenya, to determine the sound of the designed research instruments in terms of feasibility and reliability. The pilot study included ten participants, five IT officers, and five other financial managers whose organizations had implemented an ERP system. It was to ensure there was no possible confusion in the questions posed or disturbances in processing information that would be collected after creating a more massive questionnaire. Due to the results of the pilot study, some superficial changes were made regarding the phrasing of questions to maximize their comprehensibility and applicability. Carrying out the pilot study helped establish that the final research instrument was valid, reliable, and well-developed to capture the required data.

3.5.2 Validity of the Instrument

The extent to which a research tool assesses the variables that it claims to measure (Sürücü & Maslakci, 2020) is a measure of its validity. The validity test consists of three procedures: content validity, construct validity, and criterion-related validity. The instruments will have content and construct validity. The content validity was assessed using the scale. The criterion for determining content validity shall be a scale with at least five levels. The study also has well-defined constructs and dimensions, as

described in the conceptual framework and the data variables. Therefore, the researcher can decide on accurate methods for assessing the specific constructs and avoid biases and mistakes like omitted variables or information bias

3.5.3 Reliability of the Instrument

Reliability of the results was used to describe how dependably or consistently the various tests will measure the studied variables (Mishra & Alok, 2022). The test was conducted using two approaches: consistency and stability. The Study assessed the internal feeling using Cronbach's alpha. This is because the research instrument has multiple questions that use the Likert scale. The method investigated if the scales to be used are reliable.

Stability dependability describes the consistency of measurement tools over time. The researcher will be able to determine stability by repeating the testing techniques on the same persons later on. The results were analyzed and correlated with the preliminary tests to determine the stability measure. The Study specifically assessed the association using Pearson's correlation. A high correlation score indicates trustworthy consistency. The significance of the correlation coefficient was determined using probability-level criteria; findings with a p-value of less than 0.6 are considered significant.

3.6 Data Analysis and Presentation

The researcher use M.S. Excel to screen and clean the data before analysis. Data screening sought identify missing values, outliers, and wrongly coded values. Upon identification of the wrong data values, the researcher corrected them through the cleaning process, where outliers were be dropped, missing values replaced, and wrongly coded values corrected. The researcher analyzed the data using the Statistical Package for Social Science (SPSS) Version 17.0 and Stata software. The findings were presented using tables ad figures.

The data will undergo a comprehensive analysis encompassing both descriptive and inferential statistics. Descriptive analysis will be instrumental in gaining insights into the sample's characteristics through measures of central tendency and dispersion. Additionally, they will help in illustrating the distribution of various variables within the model. Descriptive analysis, such as frequency distribution tables and histograms, mean, mode, percentages, standard deviations, variances, and range values, will be used extensively.

A t-test, on the other hand, will be used to examine the coefficients and assess the importance of the individual influence. Using the regression's R-squared value, the Study will also be able to determine the percentage of changes in commercial bank performance that may be attributable to banking infrastructure, transaction security, service delivery, and data transmission.

Drawing from Newman and Gough's insights (2020), we embark on a confidential exploration using regression analysis to discern whether an independent variable holds the key to predicting a particular dependent variable. Our exclusive model unfolds as follows:

$$y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where:

y = Performance of Commercial Banks

X1 = System Infrastructure

X2 = Service Delivery

X3 = Transaction Security

X4 = Data Communication

$\beta_0 - \beta_4$ = Coefficients

ε = Error term

3.7 Ethical Consideration

Kenyatta University provided a letter of identity, which was utilized to apply for study permission from the National Commission for Science Technology and Innovation (NACOSTI). Data collection begun after the necessary permissions have been obtained from the appropriate authorities. Important ethical issues outlined by NACOSTI, as well as course material, shall be followed. The researcher assured the respondents that the information they provide will be kept confidential so they will not hesitate to provide the information the study requires. To this effect, the participants' consent will be sought before collecting data from the participants. The researcher followed ethical criteria when conducting this study to guarantee that the participants are not subjected to any bodily or emotional harm. Plagiarism was avoided by properly referencing and citing the work of other experts. Finally, data integrity was a top focus, as was honesty in data collection, analysis, and interpretation.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

The process of reviewing, purifying, converting, and analyzing data in order to extract meaningful information and make inferences is known as data analysis. Finding the most conclusive, objective insights is the main goal of data analysis and research. In this section, descriptive and correlational analyses were used. To begin with, participants' response rate was analyzed. In addition, demographic data and later analysis of the variables were computed.

4.1.1 Response Rate

Response rates are calculated by dividing the number of usable responses returned by the total number eligible in the sample chosen. In support of their claim, Mitchell and Carson (2013) provide evidence from other sources, stating that the number of returned surveys should be divided by the total sample size that received the survey in the first place to determine the response rate. Table 4.1 provides an analysis and presentation of the survey response rate data.

Table 4.1: Response Rate

Original Sample Size	Overall Response rate
60	95

Source: Research Data (2024)

The response rate analysis showed that the response rate is 95%, which is very high. In order to achieve this high response rate, follow-up questions were sent to the participants through email and phone calls to remind them to complete the survey within the set deadline. Furthermore, the survey was conducted online, making it easy for the respondents to complete the survey. The high response rate means the sample group was highly distributed within the total population, making this study relevant,

valid, and generalizable. According to Morgan et al. (2021), 50% to 80% response rates are usually recommended for the validity and generalizability of outcomes.

4.1.2 Reliability Analysis

Reliability analysis can be used to ascertain how closely related the questions on the survey are to one another. Internal reliability was calculated using Cronbach’s alpha. The findings are presented in Table 4.2.

Table 4.2: Reliability Analysis

Variable	No of Items	Cronbach’s alpha	Decision
System Infrastructure	7	0.888	Reliable
Service Delivery	7	0.884	Reliable
Transaction Security	6	0.892	Reliable
Data Communication	6	0.922	Reliable
Performance of Commercial Banks	6	0.825	Reliable

Source: Research Data (2024)

The study findings show that all these variables passed the internal consistency test since Cronbach’s alpha coefficients were more significant than 0.7. Out of all the variables, the highest Cronbach alpha value was obtained in the data communication variable with 0.922, which shows high internal consistency. Transaction security (alpha = 0.892), system infrastructure (alpha = 0.888), and service delivery (alpha = 0.884) also had high reliability, which indicated that the survey items covered the defined constructs well. As for the commercial banks, the index was rated 0.825, which was considered reliable.

These findings corroborate earlier studies by Izah et al., (2023) regarding whether any value of Cronbach’s alpha greater than 0.7 is acceptable in the social sciences. A high-reliability index shows that the survey instrument employed in the study was valid. Thus, the research could control common measurement errors and make its results more

credible. The results suggest potential internal reliability on the study variables, thus increasing the reliability of the data and its analysis.

4.2 Demographic Data

The study analyzed respondents' age, gender, job position and work experience. The following sections illustrate this finding.

4.2.1 Cross tabulation between Gender and Age of Respondents

The study sought to establish the distribution of age by gender. A cross-tabulation method was applied in this computation.

Table 4.3: A Cross Tabulation between Gender and Age of Respondents

		Age of Respondents					Total
		20-25 Years	25-30 years	30-35 years	40-45 years	45-60 years	
Male	Count	1	6	7	8	2	24
	% of Total	1.8%	10.5%	12.3%	14.0%	3.5%	42.1%
Female	Count	3	6	14	6	4	33
	% of Total	5.3%	10.5%	24.6%	10.5%	7.0%	57.9%
Count		4	12	21	14	6	57
% of Total		7.0%	21.1%	36.8%	24.6%	10.5%	100.0%

Source: Research Data (2024)

The research data shows that 36.8% of the participants belonged to the age group of 30-35, while 24.6% fell into the category of 40-45. Only 7.0% of respondents belonged to the age range between 20 and 25. Results show that commercial banks employing ERP-related roles primarily utilize middle-aged professionals, as validated by Abobakr et al. (2024) and other similar studies.

Women in the workforce exceeded male numbers in the 30-35 age bracket according to distribution statistics (24.6%). The data from this research differs from the results presented by Tokbaeva and Achtenhagen (2024), where men held most IT positions in every age range. The research data shows an increasing tendency of women to join ERP positions, especially during their middle career. The analysis becomes more robust by verifying the mean age at 35, which shows that ERP professionals are mainly

established in their careers. Organizations need this information to develop suitable training and recruitment methods that sustain workforce development for ERP system adoption.

4.2.2 Cross Tabulation between Gender and Job position

Participants' gender and their Job position was cross tabulated. The findings are presented in Table 4.4.

Table 4.4: Cross Tabulation between Gender and Job position

		Job position				Total
		Application developers	Database administrators	software Engineers	Network Administrators	
Male	Count	5	6	5	8	24
	% of Total	8.8%	10.5%	8.8%	14.0%	42.1%
female	Count	8	9	9	7	33
	% of Total	14.0%	15.8%	15.8%	12.3%	57.9%
Total	Count	13	15	14	15	57
	% of Total	22.8%	26.3%	24.6%	26.3%	100.0%

Source: Research Data (2024)

Few concerns were raised about work relations; the gender distribution results showed that female respondents were 57.9% while male respondents were 42.1%, as in Table 3, meaning there was an almost equal gender distribution but slightly leaning towards female employees. Among these, 26.3% of the participants were database administrators, while 26.3% were network administrators, similar to software engineers at 24.6% and application developers at 22.8%. This distribution indicates how gender is inherent in determining the roles of ERP system implementation. This study has found that female employees are well placed within these positions but are most associated with database administration. These results align with the concepts proposed by Hartman and Barber. (2020), which state that females are engaged more in IT careers. However, some disparities may be present at the technical level.

Compared to the empirical studies identified in this research, this study recorded a higher ratio of females in ERP-related positions than estimated. On the other hand, according to Trauth and Connolly (2021), men comprise a large proportion of technical positions like software engineering. Therefore, it is clear that gender diversity in IT is slowly changing. Regarding this implication, these studies emphasize gender representation in adopting ERP systems and even the IT industry in general.

4.2.3 A Cross Tabulation between Gender and Work Experience

Work experience was cross tabulated with the gender of the participants. The findings were presented in Table 4.5.

Table 4.5: Gender Work Experience Cross Tabulation

		Work Experience					Total
		Less than one year	2-3 years	3-4 years	4-5 years	More than five years	
Male	Count	1	5	6	6	6	24
	% of Total	1.8%	8.8%	10.5%	10.5%	10.5%	42.1%
Female	Count	3	6	10	6	8	33
	% of Total	5.3%	10.5%	17.5%	10.5%	14.0%	57.9%
	Count	4	11	16	12	14	57
% of Total		7.0%	19.3%	28.1%	21.1%	24.6%	100.0%

Source: Research Data (2024)

The results revealed that majority (28.1%) were participants with work experience between three and four years. Furthermore, 24.6% and 21.1% were those with work experience more than five years as well as those within four and five years respectively. The study also established that 19.3% and 7.0% were participants with up to 3 years of work experience in banking industry. In general, the work experience of the respondents revealed information pertaining to their comprehension of the issue being investigated into.

4.3 Descriptive Analysis

In statistical data analysis, one of the most important stages is descriptive analysis. In order to address research issues, descriptive analysis typically finds patterns in the data. Data summarization is the aim of a descriptive statistic. This kind of analysis makes it possible for data to be presented in a way that is clear and comprehensible, which makes it easier to interpret the relevant data set. Standard deviations and percentages were determined in this investigation.

4.3.1 System Infrastructure and Performance of Commercial Banks

The first objective of the study was to determine the effect of system infrastructure on performance of Commercial Banks in Embu County, Kenya. The statistics used include percentages, means and standard deviations.

Table 4.6: System Infrastructure and Performance of Commercial Banks

Statement	SD	D	N	A	SA	Mean	SD
The firm has provided the appropriate software needed to support digital technology.	12%	11%	18%	39%	21%	3.45	1.28
Offices are connected to high-speed Internet for use in organizational digital processes	14%	7%	25%	32%	23%	3.42	1.30
Location of the servers and databases in the organization is secure and only accessible to the right people	5%	14%	30%	33%	18%	3.43	1.10
Employees have convenient access to mobile devices for work-related tasks.	7%	12%	19%	44%	18%	3.52	1.13
The organization conducts regular training to ensure employees are informed about data protection regulations and privacy laws	14%	11%	21%	35%	19%	3.35	1.30
Regular audits are conducted to assess compliance with data protection regulations and privacy laws	11%	7%	21%	37%	25%	3.57	1.23
The organization conducts regular training to ensure employees are informed about data protection regulations and privacy laws.	11%	12%	23%	32%	23%	3.43	1.26

Source: Research Data (2024)

An organization's effectively deployed IT infrastructure facilitates business operations and gives staff members the tools necessary to do their duties well. According to 60% of the participants indicated that the firm has provided the appropriate software needed

to support digital technology. Similar observations were propounded by 55% of those who agreed that offices are connected to high-speed Internet for use in organizational digital processes. This suggests that the bedrock for other organizational abilities is frequently laid by a company's infrastructure. This result is consistent with that of Al-Hanah et al. (2021), who state that technological innovation was the means by which one-way infrastructure increased commercial bank efficiency. The writers stressed how crucial it is for contemporary commercial entities to have a strong technological base. In their Study, they emphasized the importance of networks, data storage systems, hardware, and software in technological infrastructure.

The purpose of database security is to safeguard data from risks including unintentional or deliberate loss, destruction, or exploitation. The study established that 51% of the participants affirmed that location of the servers and databases in the organization is secure and only accessible to the right people. Similar findings were propounded by 62% of those who maintained that employees have convenient access to mobile devices for work-related tasks. This suggests that a secure server will drastically lower the possibility of system outages, guaranteeing that the business's website is constantly operational and available to clients. The present findings are consistent with the findings of Kinuthia (2021), who stated that mobile devices provide a great chance to give unbanked individuals access to financial services in this domain. The results of the study showed that technical advancement, innovation in policy and regulation, and innovation in policy all significantly affect the caliber of financial services that banks provide.

Employees that receive cyber security awareness training are better able to comprehend the dangers and hazards related to cybercrimes. In this study, 54% of participants affirmed that the organization conducts regular training to ensure employees are

informed about data protection regulations and privacy laws. Furthermore, 55% of the participants affirmed that the organization conducts regular training to ensure employees are informed about data protection regulations and privacy laws. This observation aligns with the findings of Tolossa (2023), who highlights the importance of a comprehensive security approach that incorporates both technological and policy measures. Businesses are able to safeguard their assets and stay safe in the digital era by making investments in thorough and continuous cybersecurity awareness training. A compliance inspection is a crucial first step in guaranteeing a business's private information security and confidentiality. In this study, 62% of respondents affirmed that regular audits are conducted to assess compliance with data protection regulations and privacy laws. This implies that to maintain effectiveness and credibility, internal audit professionals must have a clear grasp of the larger issues and interdependencies involved. These findings are in accordance with those of Mishra (2022), who highlight that businesses are redefining the borders between the three lines of defense due to cyber security concerns, and that static connections will not be able to handle the new threats. As a result, internal audit's interactions with other important stakeholders, including IT divisions and information security specialists, must keep developing.

4.3.2 Service Delivery on the Performance of Commercial Banks

The second objective was to evaluate the influence of service delivery on the performance of Commercial Banks in Embu County, Kenya. Data was analyzed using percentages, means and standard deviations.

Table 4.7: Service Delivery on the Performance of Commercial Banks

Statement	SD	D	N	A	SA	Mean	SD
Current ERP system adequately meets the organization's operational needs and requirements.	5%	14%	26%	33%	21%	3.50	1.13
Employees receive sufficient training and support for effectively utilizing the ERP system in their respective roles	11%	12%	26%	32%	19%	3.36	1.23
ERP system integrates seamlessly with other software applications used within the organization	9%	11%	26%	37%	18%	3.43	1.16
Organization actively seeks employee feedback on the usability and functionality of the ERP system	9%	16%	25%	37%	14%	3.31	1.16
ERP system is customized to align with the specific industry requirements and workflows of the organization.	5%	19%	26%	28%	21%	3.40	1.17
Organization periodically evaluates and explores new ERP solutions to ensure it remains aligned with industry best practices	12%	14%	14%	26%	33%	3.54	1.40
The ERP system contributes to enhanced collaboration and communication among different departments within the organization.	11%	12%	19%	46%	12%	3.36	1.17

Source: Research Data (2024)

Modern advances in technology have made it possible for customers to obtain financial services without having to visit bank premises. The study established that 54% of the participants affirmed that current ERP system adequately meets the organization's operational needs and requirements. Similarly, 51% affirmed that employees receive sufficient training and support for effectively utilizing the ERP system in their respective roles. This implies that when in banking, technology improves consumer satisfaction generally while boosting operational effectiveness and cybersecurity. This finding concurs with that of Jameaba (2023) who emphasizes that digitalization has made it possible for online banks to become flexible and agile, supporting financial business models that encourage cooperation with other financial service providers, as well as back-end and front-end technologies, a diverse customer base, enhanced customer experience leverage capabilities, and the creation and application of financial innovations to boost competitiveness.

ERP integration is essential to the effective functioning of modern businesses because it permits efficient communication between various business systems. The study found that 55% of the participants affirmed that ERP system integrates seamlessly with other software applications used within the organization. This observation aligns with 49% of those who averred that ERP system is customized to align with the specific industry requirements and workflows of the organization. This finding agrees with those of Dozie, Andrew and Justine (2023) who assert that ERP integration has several advantages, including increased data visibility and consistency as well as streamlined business processes that can result in more productive and better decisions. ERP systems' primary goal is to greatly increase operational efficiency by streamlining and automating a variety of intricate company operations. Because they combine data from several business tasks into a single, centralized system, they provide an overview of how businesses operate.

ERP systems' primary goal is to automate and simplify a variety of intricate company procedures in order to greatly increase operational efficiency. It was noted that 59% of the participants affirmed that organization periodically evaluates and explores new ERP solutions to ensure it remains aligned with industry best practices. Similar findings were put forward by 58% of the participants who indicated that the ERP system contributes to enhanced collaboration and communication among different departments within the organization. This implies that businesses could make better-informed, data-driven decisions by utilizing this connectedness to anticipate future events, assess trends, and spot patterns. This perspective is consistent with that of Zakayo and Ondabu (2022), who stress that ERP systems facilitate quicker and more efficient financial transfers, boosting trade volume and giving credit access to a sizable portion of the unbanked in developing nations. Simply visiting a retail agent is necessary for cash deposits and

withdrawals; customers using the ERP system can conduct transactions from any location with cell service.

ERP can enhance an organization's ability to plan and schedule resources more effectively and maximize productivity. This study established that 51% of the respondents believed that organization actively seeks employee feedback on the usability and functionality of the ERP system. This suggests that all firms gain from ERPs since they offer a single source of truth and data integrity. When given accurate and current facts, employees are able to make independent decisions. These results are consistent with those of Langenwalter (2020), who emphasized that the implementation of an ERP system by the business gives it a regular report on raw material availability, which ultimately allows the supplier to meet the needs of the business. In order to help the marketing, production, and transportation departments deliver goods on time, the supplier can also provide daily schedule progress reports. Additionally, the supplier can provide information about the goods and raw materials received in the warehouse, which will help the purchasing, warehouse, and planning departments forecast their needs for raw materials.

4.3.3 Transaction Security and Performance of Commercial Banks

The third objectives was to establish the role of transaction security in the performance of Commercial Banks in Embu County, Kenya. Percentages, means and standard deviations were computed.

Table 4.8: Transaction Security and Performance of Commercial Banks

Statement	SD	D	N	A	SA	Mean	SD
The organization effectively uses emails for official communication.	9%	7%	21%	51%	12%	3.50	1.08
The content of emails enhances clarity and understanding	4%	16%	18%	37%	26%	3.66	1.13
The organization maintains guidelines for appropriate SMS usage.	11%	9%	26%	28%	26%	3.50	1.26
SMS is effectively integrated into the overall communication strategy.	7%	12%	21%	37%	23%	3.56	1.18
The organization leverages multimedia for engaging alongside informative content	12%	7%	5%	47%	28%	3.71	1.29
Multimedia tools are accessible and user-friendly for employees	5%	14%	23%	32%	26%	3.59	1.17

Source: Research Data (2024)

Developing consumer trust begins with a secure transaction. It is indisputable that a strong security system that can foster customer trust is necessary, given the abrupt rise in transaction-related security breaches. In this study, 54 % of the participants affirmed that the organization maintains guidelines for appropriate SMS usage. Furthermore, 63% avowed that the organization effectively uses emails for official communication. The results are in line with those of Kala Kamdjoug et al. (2020), who assessed the ERP system's security and usefulness in attracting in new customers. Their assessment indicates that ERP systems have given banks and businesses throughout the globe opportunities they did not have before. Mobile devices facilitate the distribution and advertising of financial products, which several institutions have successfully coordinated through the use of the internet.

Encrypting data is one of the primary obstacles to ERP communication security. This is due to the fact that ERP systems' capacity to connect and optimize corporate operations will be jeopardized in the absence of adequate data protection. In the current study, 60% of the participants reported that SMS is effectively integrated into the overall communication strategy. Similarly, 63% of the participants affirmed that the content of emails enhances clarity and understanding. This suggests that safe and

efficient corporate communication fosters a safer workplace and higher levels of client satisfaction. This result is consistent with that of Nuwayo (2020), who highlights the need for safe technology, particularly when it comes to money transfers. As a result of increased security, financial transactions are more effective, which boosts bank service offerings and improves overall economic efficiency. Perceived trust, usability, and compatibility are important determinants of consumers' behavioral intention to use mobile banking.

An ERP system's dependability and usability are determined by its level of performance. According to the findings, 58% of the participants affirmed that multimedia tools are accessible and user-friendly for employees. Similar views were portrayed by 75% of the participants who specified that the organization leverages multimedia for engaging alongside informative content. This suggests that the level of satisfaction among users of ERP systems can be significantly impacted by the caliber of services offered to them, including training as well as technical support. These results are consistent with those of Jo and Park (2023), who highlight the importance of perceived usefulness and simplicity of use in relation to user satisfaction with ERP systems. Perceived ease of use of a system lowers cognitive strain on the user, leading to higher levels of satisfaction. On the other hand, a system that users feel is hard to use can make them unhappy. Users are more likely to be satisfied with the system if they think it is helpful and can help them perform better at work.

4.3.4 Data Communication and Performance of Commercial Banks

The fourth objective was to assess the relevance of data communication on the performance of Commercial Banks in Embu County, Kenya. This study utilized percentages, means and standard deviations.

Table 4.9: Data Communication and Performance of Commercial Banks

Statement	SD	D	N	A	SA	Mean	SD
The organization actively promotes information sharing among employees.	5%	18%	21%	32%	25%	3.52	1.190
The organization recognizes and rewards effective information sharing.	12%	9%	23%	33%	23%	3.45	1.28
Regular backups alongside data protection measures are in place for storage.	14%	7%	25%	33%	21%	3.40	1.29
Information dissemination methods align with employees' preferences.	7%	14%	19%	35%	25%	3.56	1.21
The organization ensures that disseminated information is relevant and valuable	9%	14%	19%	42%	16%	3.42	1.17
Employees actively engage with disseminated information for better understanding	16%	7%	26%	35%	16%	3.28	1.27

Source: Research Data (2024)

Information sharing among employees is critical to organization performance. According to the findings 57% of the participants indicated that the organization actively promotes information sharing among employees. Furthermore, 56% of the participants indicated that the organization recognizes and rewards effective information sharing. Chen, You, and Chang (2021) argue that commercial banks handle enormous volumes of data on a regular basis, such as financial statements, transaction records, and client data. Bank branches and divisions can easily share information with one another thanks to efficient data communication networks. Consequently, banks enjoy streamlined internal procedures, expedited decision-making, and enhanced client support.

In order to ensure good data communication and performance in any company, periodic backup procedures are essential requirements. In this study, 54% of the participants affirmed that Regular backups alongside data protection measures are in place for storage. Furthermore, 60% of the participants affirmed that information dissemination methods align with employees' preferences. This suggests that business transactions in real time are the means by which data communications affect the performance of commercial banks. According to Khanh et al. (2022), clients in the current banking

environment anticipate speedy transaction processing and real-time updates. Instant access to account information and the flexibility to execute transactions at any time and from any location are made possible by data communications technologies like mobile apps, online banking platforms, and ETMs.

A company must make sure the information it sends to its clients is correct and trustworthy by verifying it. According to 58% of the participants, the organization ensures that disseminated information is relevant and valuable. Similar views were advocated by 51 % of those who emphasized that employees actively engage with disseminated information for better understanding. This suggests that through better customer service, data communications might affect how well businesses succeed. This data supports that prompt and correct communication is essential to providing exceptional customer service, as reported by Khanh et al. (2022). Banks employ data communication to provide targeted product suggestions, tailor client encounters, and quickly respond to questions or concerns from customers.

4.3.5 Performance of Commercial Banks

Performance of Commercial Banks was the Dependent variable which was analyzed in terms of profitability, customer satisfaction and growth. The descriptive statistics used include percentages, means and standard deviation.

Table 4.10: Performance of Commercial Banks

Statement	SD	D	N	A	SA	Mean	SD
The organization consistently tracks financial performance indicators to assess profitability.	9%	9%	19%	32%	32%	3.68	1.25
Strategies and initiatives are implemented to enhance and maintain financial profitability	4%	16%	30%	33%	18%	3.45	1.07
Regular customer feedback mechanisms are in place to gauge satisfaction levels	5%	4%	32%	32%	28%	3.73	1.07
The organization has a strategic plan outlining objectives for growth and expansion.	9%	12%	26%	39%	14%	3.36	1.14
Investment in research and development is prioritized to explore new growth opportunities.	5%	16%	25%	32%	23%	3.50	1.16
Expansion initiatives are aligned with market trends and customer demands	12%	5%	26%	37%	19%	3.45	1.22

Source: Research Data (2024)

ERP systems streamline the distribution of resources inside banks, allowing for more effective use of both human and financial resources. According to the findings, 64% of the participants affirmed that the organization consistently tracks financial performance indicators to assess profitability. In a similar view, 51% of these participants affirmed that strategies and initiatives are implemented to enhance and maintain financial profitability. These results are in line with those of Kala Kamdjoug et al. (2020), who pointed out that the ERP system is a dynamic aspect of electronic banking that gives users access to a variety of financial products, including credit options and savings. Discover the ease at your fingertips. Owing to its nature, the ERP system has also been compared to a wirelessly conducted financial transaction. Financial organizations require a wide range of services and products, which are included in ERP systems.

It is often acknowledged that ERP enables a business to forge close bonds with both current and potential clients. According to 60% of the participants, regular customer feedback mechanisms are in place to gauge satisfaction levels. In addition, 53% of the participants indicated that the organization has a strategic plan outlining objectives for growth and expansion. This suggests that ERP software, by offering a comprehensive picture of customer information and automating sales and marketing operations to

improve customer service, plays a critical role in promoting effective management of customers. These results line up with those of Andreas and Natariasari (2019), who found that ERP helps a company to develop strong relationships with both present and potential customers. The findings of this study serve as a reminder to ERP system designers to enhance the quality of their information systems and the availability of user-friendly services, as these factors have a partial impact on end users' happiness with their systems.

It was observed that 55% of the respondents affirmed that investment in research and development is prioritized to explore new growth opportunities. This perspective was upheld by 56% of those who reiterated that expansion initiatives are aligned with market trends and customer demands. This suggests that ERP has advantages including improving corporate operations, implementing best practices, and integrating and combining enterprises. This data is corresponding to that of Mathrani (2022), who found that implementing an ERP system helped businesses significantly enhance their performance in a variety of areas, including their ability to provide customers with real-time information and accelerate their production cycle. This provides enough proof that ERP expenditures have a very positive effect on the outcomes of business processes.

4.3 Correlation Analysis

In research, correlation analysis is a statistical technique used to calculate the association and quantify the strength of the linear relationship between two variables. Correlational research yields useful results for forecasting occurrences based on available data and expertise, as well as for determining prevalence and correlations among variables. A statistical tool frequently used in research to examine agreement between two approaches or demonstrate a relationship between variables is the

correlation coefficient. In this research, Pearson correlation and Multiple linear regression analyses were utilized.

4.4.1 Pearson Correlation Analysis

The degree of a linear relationship between two variables can be determined using Pearson's correlation coefficient. The results were then reported after the analysis was completed at the 0.05 alpha criterion in Table 4.11.

Table 4.11: Correlations Matrix

		Performance of Commercial				
		Banks	X1	X2	X3	X4
System Infrastructure	Pearson Correlation	.786**	1			
	Sig. (2-tailed)	.000				
	N	57	57			
Service Delivery	Pearson Correlation	.849**	.631**	1		
	Sig. (2-tailed)	.000	.000			
	N	57	57	57		
Transaction Security	Pearson Correlation	.831**	.698**	.714**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	57	57	57	57	
Data Communication	Pearson Correlation	.883**	.751**	.732**	.736*	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	57	57	57	57	57

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

XI=1= System Infrastructure; X2= Service Delivery; X3= Transaction Security; X4= Data Communication

Source: Research Data (2024)

The results of Pearson correlation indicates that there is strong evidence of a statistically significant relationship between System Infrastructure and Performance of Commercial Banks ($r=0.786^{**}$; $p=0.000$). This suggests that when paired with other advantages, enterprise resource planning, or ERP, enhances commercial activity control and gives a company a competitive advantage. In particular, having a solid technological foundation is essential for modern businesses as it will facilitate the effective implementation of ERP solutions.

Secondly, the results established that there were statistically significant relationship between Service Delivery and Performance of Commercial Banks ($r=0.849^{**}$; $p=0.000$). This indicates that customer satisfaction has increased as a result of ERP deployment. In particular, clients don't need to visit bank locations because they may get financial services in real time. ERP software is essential to managing customer experience effectively.

Furthermore, it was observed that there is a statistically significant relationship between Transaction Security and Performance of Commercial Banks ($r=0.831^{**}$; $p=0.000$). This infers that maintaining the security of ERP systems is essential to guaranteeing the company's future prosperity and safety. This is because the ability of ERP systems to link and enhance business activities will be compromised in the event that sufficient data protection is not provided.

Finally, it was revealed that there exist a statistically and significant relationship between Data Communication and Performance of Commercial Banks ($r=0.883^{**}$; $p=0.000$). This suggests that when consumers' transactions are processed more quickly and with better real-time updates, commercial banks' performance will be enhanced as well.

4.5 Regression Analysis

Regression analysis is a statistical technique utilized to determine the relationships between a number of independent variables and a dependent variable. Regression analysis can provide particular information on a relationship between two or more variables in addition to indicating if such a relationship is significant. It is particularly capable of estimating the degree to which certain variables will influence a dependent variable. Multiple linear regression analysis was performed in this research.

4.5.1 Model Summary

The degree of correlation between the dependent variable and the model is reported in the model summary table. It also shows the type of model, as well as the coefficient of determination. Table 4.12 shows the results of this analysis.

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.951 ^a	.904	.897	.27109

a. Predictors: (Constant), Data Communication , Service Delivery, System Infrastructure, Transaction Security

Source: Research Data (2024)

The model specifies that 89.7% in Performance of Commercial Banks can be explained by Data Communication, Service Delivery, System Infrastructure and Transaction Security. In this research, 10.3% was the unexplained variation.

4.5.2 ANOVA

To produce more data that is consistent with the suggested regression models, the f-test that is produced by the ANOVA test is utilized. To ascertain whether a relationship exists between two groups, the ANOVA test enables the comparison of more than two groups simultaneously.

Table 4.13: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.943	4	8.986	122.269	.000 ^b
	Residual	3.822	52	.073		
	Total	39.764	56			

a. Dependent Variable: Performance of Commercial Banks

b. Predictors: (Constant), Data Communication , Service Delivery, System Infrastructure, Transaction Security

Source: Research Data (2024)

Computation used in Analysis of Variance (ANOVA) reveal insights into the degrees of variability in a regression model and serve as the foundation for significance tests.

In this research, the findings indicates that the model was significant at 0.05 alpha,

Adjust. R-square =0.897,F(4,52)= 122.269, p<0.05.

4.5.3 Coefficients

A parameter estimate that depicts the link between a dependent variable and one of the independent variables in the model is called a regression coefficient. In particular, coefficients characterize the connection between a predictor variable and the response and are projections of the unknown population characteristics. The results are presented in Table 4.14.

Table 4.14: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.255	.155		1.648	.105		
System Infrastructure	.130	.061	.148	2.143	.037	.389	2.573
Service Delivery	.296	.062	.326	4.774	.000	.396	2.527
Transaction Security	.197	.063	.224	3.134	.003	.361	2.766
Data Communication	.294	.063	.368	4.706	.000	.302	3.306

a. Dependent Variable: Performance of Commercial Banks

Source: Research Data (2024)

According to the findings, Data Communication ($\beta=0.368$; $p<0.05$) and Service Delivery ($\beta=0.326$; $p<0.05$) influence significantly Performance of Commercial Banks. This suggests that a unit increase in Data Communication and Service Delivery impacts positively on Performance of Commercial Banks by 0.368 and 0.326 units respectively. Correspondingly, transaction security ($\beta=0.224$; $p<0.05$) and System Infrastructure ($\beta=0.148$; $p<0.05$) significantly contribute to Performance of Commercial Banks. This indicates that a unit increase in transaction security and System Infrastructure influences positively on Performance of Commercial Banks by 0.224 and 0.148 units respectively.

The optimal model Equation

The following represents the model of the study:

$$y = 0.255 + 0.148X_1 + 0.326X_2 + 0.224X_3 + 0.368X_4$$

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The findings will be succinctly summarized and laid out in this chapter. The main objective of this study was to investigate the impact of ERP systems on the commercial banks' performance in Embu County. The major summary was produced with the study variables considered.

5.2 Summary

This research aimed to establish the effects of ERP system integration on the performance of the Commercial banks within Embu County. ERP systems, therefore, have an extended impact on banking performance measures like service effectiveness, transaction security, information flow, and firm infrastructure. The study responded to several gaps highlighted in Table 2.1 by establishing the following: Particularly, it provided an answer to the question concerning the direction and amplitude of the effect of ERP on banking, as earlier works had provided no objective measures to estimate this connection. Moreover, it also justified theoretical propositions, thus establishing that though ERP systems have benefits in enhancing banking efficiency, problems, including the costs of implementation and other vulnerabilities associated with cybersecurity, are accurate.

5.2.1 System Infrastructure and Performance of Commercial Banks

A well-deployed IT infrastructure within an organization helps with business operations and provides employees with the tools they need to perform their jobs efficiently. Most participants stated that the company has given the right software required to support digital technologies. More than half of the respondents made similar findings regarding the use of high-speed Internet connections in offices for digital organizational procedures. This shows that an organization's infrastructure usually lays the foundation for other organizational skills.

Businesses must protect their systems in order for their organizations to function effectively. Protecting data against hazards such as accidental or intentional loss, destruction, or exploitation is the goal of database security. According to the study, the majority of participants confirmed that the organization's servers and databases are located in a secure area and are only accessible by authorized personnel. A significant portion of individuals who said that workers had easy access to mobile devices for work-related tasks made similar conclusions. This implies that having a secure server will significantly reduce the likelihood of system failures, ensuring that the company's website is always up and accessible to customers.

An essential initial step in ensuring the security and confidentiality of a company's private information is a compliance examination. The majority of participants in this study confirmed that routine audits are carried out to evaluate adherence to privacy and data protection legislation. This suggests that internal audit experts need to have a firm understanding of the bigger picture and interdependencies in order to continue being effective and credible.

Training in cyber security helps employees understand the risks and hazards associated with cybercrimes. According to the study, more than half of the participants confirmed that the company regularly provides training to staff members so they are aware of privacy and data protection requirements. To ensure that staff members are aware of privacy laws and data protection rules, the majority of participants also confirmed that the company regularly conducts training.

5.2.2 Service Delivery on the Performance of Commercial Banks

It is now feasible for clients to receive financial services without physically visiting bank locations thanks to recent technological advancements. Numerous respondents to the study stated that the organization's operational demands and requirements are sufficiently met by the current ERP system. Conversely, fifty percent of the participants confirmed that staff members obtain adequate training and assistance to efficiently use the ERP system in their jobs. This suggests that in the banking industry, technology raises cybersecurity and operational effectiveness while typically improving customer happiness. Because of digitalization, online banks are now more adaptable and agile, supporting financial business models that promote collaboration with other financial service providers, as well as front-end and back-end technology and a varied customer base to increase competitiveness.

ERP integration makes it possible for different company systems to communicate effectively, which is crucial for the successful operation of modern enterprises. According to the study, a number of participants confirmed that the ERP system easily interfaces with other internal software programs. This observation is consistent with certain claims made by others that the ERP system is tailored to the particular needs of the industry and the organization's processes. ERP integration offers a number of benefits, such as improved data consistency and visibility and optimized business processes that can lead to more effective and wiser decisions.

The main objective of ERP systems is to automate and streamline a range of complex business processes in order to significantly improve operational efficiency. It was observed that a significant number of participants confirmed that their organization regularly assesses and investigates new ERP solutions to make sure it stays compliant with industry best practices. A significant number of participants presented comparable

findings, indicating that the ERP system facilitates improved departmental collaboration and communication.

ERP is thought to improve an organization's capacity for more efficient resource scheduling and planning, as well as productivity maximization. More than half of the respondents to this poll said that their firm actively solicits employee input on the functioning and usability of the ERP system. Given that ERPs provide a single source of truth and data integrity, this argues that all businesses benefit from using them. Employees can make decisions on their own when provided with correct and up-to-date information.

5.2.3 Transaction Security and Performance of Commercial Banks

One of the main challenges to ERP communication security is data encryption. This is because, in the absence of sufficient data protection, the ability of ERP systems to link and optimize business activities will be compromised. The majority of participants in the current study stated that SMS is successfully included into the overall communication plan. In a similar vein, a sizable portion of participants confirmed that email content improves comprehension and clarity. This shows that improved client satisfaction and a safer work environment are fostered by effective and safe corporate communication. Financial transactions are more efficient as a result of enhanced security, which expands bank service offerings and enhances overall economic efficiency.

A safe transaction is the first step in earning the trust of customers. With the sudden increase in security breaches related to transactions, it is clear that a robust security system that can build customer trust is required. The majority of participants in this study confirmed that the organization upholds policies on appropriate SMS usage.

Additionally, a sizable portion claimed that emails are an efficient means of formal communication within the firm. The security of ERP systems and its ability to draw in new clients cannot be overstated. In particular, mobile devices make it easier for financial products to be distributed and advertised. This is something that some institutions have successfully managed by using the internet.

An ERP system's performance level dictates how reliable and easy it is to use. Employees can easily access and use multimedia resources, as shown by the findings section of the participants. Many of the participants expressed similar opinions, stating that the organization uses multimedia in addition to educational content to provide compelling content. This implies that the quality of services, including training and technical support, provided to ERP system users can have a major impact on their degree of satisfaction.

5.2.4 Data Communication and Performance of Commercial Banks

Periodic backup processes are vital criteria for any firm to ensure good data connectivity and performance. More than half of the participants in this study confirmed that regular backups and data security procedures are in place for storage. Moreover, the vast majority of respondents confirmed that employee preferences are met by the techniques used for disseminating information. This implies that data communications impact commercial banks' performance through real-time business transactions. Online banking platforms, smartphone apps, and ETMs are examples of data communications technologies that enable instant access to account information and the freedom to complete transactions from any location at any time.

Employee information exchange is essential to the operation of the company. The majority of participants reported that the firm actively encourages information

exchange among its personnel, according to the data. Moreover, more than 50% of the respondents said the company rewards and acknowledges efficient information exchange.

A business must check the information it sends to clients to ensure it is accurate and reliable. As a result, the bulk of participants, the organization makes sure that information that is shared is useful and pertinent. Nearly half of those who stressed that workers actively participate in knowledge dissemination for greater comprehension espoused similar opinions. This implies that data communications may have an impact on how well firms perform through improved customer service. This research demonstrates that excellent customer service requires accurate and timely communication. Financial institutions utilize data communication techniques to offer customized product recommendations, personalize customer interactions, and promptly address queries or issues raised by clients.

5.3 Conclusion

The ERP architecture of a corporation often lays the foundation for other organizational skills. Maximum security is necessary for this system to operate at its best. By significantly reducing the likelihood of system failures, a secure server will ensure that the company's website is always up and accessible to customers. Thus, companies that invest in comprehensive and ongoing cybersecurity awareness training are able to protect their assets and remain safe in the digital age.

Digitalization has enabled online banks to become more adaptable and quicker, enabling financial business models that serve a varied clientele in order to increase competitiveness. Thus, in order to significantly improve operational efficiency, the main objective of ERP systems is to automate and streamline a range of complex

corporate processes. ERP integration enables smooth communication between several business systems, which is crucial for modern firms to operate effectively. The ERP system easily interfaces with the different programs that the company uses.

A safe transaction is the first step in earning the trust of customers. With the sudden increase in security breaches related to transactions, it is clear that a robust security system that can build customer trust is required. Thus, more client satisfaction and a safer work environment are fostered by effective and safe corporate communication. The quality of services provided to ERP system users can have a big influence on their degree of satisfaction.

The performance of an organization depends on employees exchanging information. Periodic backup procedures are essential needs to guarantee optimal data connectivity and performance in every organization. Prompt and accurate communication is therefore crucial to deliver great customer service.

5.4 Recommendations

Bank management should place the appropriate implementation of the newest ERP technology at the top of their list of priorities. Transparent, well-organized project management IS necessary for the effective deployment of ERP.

ERP integration makes it possible for different company systems to communicate effectively, which is crucial for the successful operation of modern enterprises. Thus, in order to increase efficiency, managers must make sure ERP integration is completed in every department.

Safeguarding ERP is critical in performance of commercial banks so that financial transactions are more effective. It is suggested that firms need to invest more on cyber security in order to secure its data and relative transactions.

Developing consumer trust begins with a secure transaction. It is indisputable that a strong security system that can foster customer trust is necessary. It is suggested that financial institutions needs to deploy more of mobile communications technologies. This will increase customer base and enhance security and efficiency in their performance.

5.5 Suggestion for further Research

A company can increase its production, financial performance, and client satisfaction while reducing transaction costs by implementing ERP systems. Research on the impact of regulatory policies on ERP uptake among small-medium sized enterprises in Kenya is recommended in this area.

REFERENCES

- Abobakr, M. A., Abdel-Kader, M., & F. Elbayoumi, A. F. (2024). An experimental investigation of the impact of sustainable ERP systems implementation on sustainability performance. *Journal of Financial Reporting and Accounting*.
- Adesina, M. T., Babayemi, T. D., & Adesina, J. M. (2024). Enhancing financial efficiency: ERP applications in the banking sector. *International Journal of Science and Research Archive*, 12(2).
- Ahmed, I. (2020). Technology organization environment framework in cloud computing. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, 18(2), 716-725.
- Akbar, M., Akbar, A., & Draz, M. U. (2021). Global financial crisis, working capital management, and firm performance: evidence from an Islamic market index. *Sage Open*, 11(2), 21582440211015705.
- Aldammagh, Z., Abdeljawad, R., & Obaid, T. (2021). Predicting mobile banking adoption: Integrating TAM and TBP with trust and perceived risk. *Financial Internet Quarterly*, 17(3), 35-46.
- Ahmad, N., Naveed, A., Ahmad, S., & Butt, I. (2020). Banking sector performance, profitability, and efficiency: a citation-based systematic literature review. *Journal of Economic Surveys*, 34(1), 185-218.
- Al-Hanahi, B., Ahmad, I., Habibi, D., & Masoum, M. A. (2021). Charging infrastructure for commercial electric vehicles: Challenges and future works. *IEEE Access*, 9, 121476-121492.
- Allen, F., & Barbalau, A. (2024). Security design: A review. *Journal of Financial Intermediation*, 101113.
- Alzahmi, W., Al-Assaf, K., Alshaikh, R., & Bahroun, Z. (2025). Towards Sustainable ERP Systems: Emerging Trends, Challenges, and Future Pathways. *Management Systems in Production Engineering*, 33(1).
- Asongu, S. A., & Le Roux, S. (2023). The role of mobile money innovations in transforming unemployed women to self-employed women in sub-Saharan Africa. *Technological Forecasting and Social Change*, 191, 122548.
- Bawack, R. E., & Kala Kamdjoug, J. R. (2023). Managing client–consultant relationships to derive benefits from ERP projects. *Information Technology & People*, 36(4), 1669-1702.
- Bochaberi, O. E. S., & Job, O. (2021). ERP system and financial performance of selected commercial banks in Kenya. *International Research Journal of Business and Strategic Management*, 2(1).
- Boubaker, S., Le, T. D., & Ngo, T. (2023). Managing bank performance under COVID-19: A novel inverse DEA efficiency approach. *International Transactions in Operational Research*, 30(5), 2436-2452.
- Calvano, E., & Polo, M. (2021). Market power, competition and innovation in digital markets: A survey. *Information Economics and Policy*, 54, 100853.

- Celliers, L. P., & Pretorius, H. W. (2023). Systemic risk enacted by emotionally driven client behaviour on South African mobile banking systems: a structured literature review through the theoretical lens of interpersonal behaviour.
- Chaffai, M., & Coccorese, P. (2023). Banking market power and its determinants: new insights from MENA countries. *Emerging Markets Review*, 55, 101004.
- Chang, Y. C., Enkhjargal, U., Huang, C. I., Lin, W. L., & Ho, C. M. (2020). Factors affecting Internet banking adoption. *Jurnal Ekonomi Malaysia*, 54(3), 117-131.
- Chen, X., You, X., & Chang, V. (2021). FinTech and commercial banks' performance in China: A leap forward or survival of the fittest? *Technological Forecasting and Social Change*, 166, 120645.
- Choudhuri, S. S. (2024). *AI in ERP and supply chain management*. Academic Guru Publishing House.
- Daszyńska-Żygadło, K., Słoński, T., & Dziadkowiec, A. (2021). Corporate social performance and financial performance relationship in banks: Sub-industry and cross-cultural perspective. *Journal of Business Economics and Management*, 22(2).
- Demirgüç-Kunt, A., Pedraza, A., & Ruiz-Ortega, C. (2021). Banking sector performance during the COVID-19 crisis. *Journal of Banking & Finance*, 133, 106305.
- Do, T. D., Pham, H. A. T., Thalassinou, E. I., & Le, H. A. (2022). The impact of digital transformation on performance: Evidence from Vietnamese commercial banks. *Journal of risk and financial management*, 15(1), 21.
- Duderstadt, K. A., Huang, C. L., Spence, H. E., Smith, S., Blake, J. B., Crew, A. B., & Vitt, F. M. (2021). Estimating the impacts of radiation belt electrons on atmospheric chemistry using FIREBIRD II and Van Allen Probes observations. *Journal of Geophysical Research: Atmospheres*, 126(7), e2020JD033098.
- El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. *Journal of Sustainable Finance & Investment*, 13(1), 406-430.
- Gbongli, K. (2023). *AI Strategies for Financial Inclusion: A Multi-Analytical Approach to Mobile Financial Services Acceptance* (Doctoral dissertation, University of Miskolc).
- Getugi, J. C., Osoro, C., & Kihara, A. (2023). Mobile banking and Technical Efficiency of Commercial Banks in Kenya. *Journal of Accounting*, 6(1), 1-20.
- Hartman, R. L., & Barber, E. G. (2020). Women in the workforce: The effect of gender on occupational self-efficacy, work engagement and career aspirations. *Gender in Management: An International Journal*, 35(1), 92-118.
- Isabwa, H. K. (2021). Effect of mobile banking on financial inclusion among commercial banks in Kenya. *International Journal of Business, Management, and Economics*, 2(3), 184-197.

- Ivanović, T., & Marić, M. (2021). Application of modern Enterprise Resource Planning (ERP) systems in the era of digital transformation. *Strategic Management-International Journal of Strategic Management and Decision Support Systems in Strategic Management*, 26(4).
- Izah, S. C., Sylva, L., & Hait, M. (2023). Cronbach's alpha: A cornerstone in ensuring reliability and validity in environmental health assessment. *ES Energy & Environment*, 23, 1057.
- Jaradat, Z., Shbail, M. A., & Baker, M. B. (2022). Environmental and organisational factors affecting the adoption of enterprise resource planning systems in the Jordanian banking sector. *International Journal of Business Information Systems*, 41(1), 82-107.
- Jha, K. M., Velaga, V., Routhu, K., Sadaram, G., Boppana, S. B., & Katnapally, N. (2025). Transforming Supply Chain Performance Based on Electronic Data Interchange (EDI) Integration: A Detailed Analysis. *European Journal of Applied Science, Engineering and Technology*, 3(2), 25-40.
- Kala Kamdjoug, J. R., Bawack, R. E., & Tayou, A. E. T. (2020). An ERP success model based on agency theory and IS success model: The case of a banking institution in Africa. *Business Process Management Journal*, 26(6), 1577-1597.
- Kanyingi, B. W. (2022). At the periphery in Mau Mau discourse: A case of the Mbeere of Embu County, Kenya, 1952-2014 (Doctoral dissertation, Karatina University).
- Kariuki, E. C. (2022). *Enterprise Resource Planning Systems Considerations on the Performance of Commercial Banks in Meru County, Kenya* (Doctoral dissertation, Kenyatta University).
- Kinuthia, E. W. (2021). *Factors Of Mobile Banking Affecting Performance Of Tier One Banks In Kenya* (Doctoral dissertation, KCA University).
- Khanh, C. N. T., Phong, L. T., & Cao, K. D. (2022). The impact of organizational factors on E-CRM success implementation. *VINE Journal of Information and Knowledge Management Systems*, 52(4), 612-629.
- Langenwalter, G. A. (2020). *Enterprise resources planning and beyond: integrating your entire organization*. CRC Press.
- Mathrani, S. (2022). Enhancing production agility using enterprise systems. *Knowledge Management Research & Practice*, 20(1), 91-103.
- Maulud, D., & Abdulazeez, A. M. (2020). A review on linear regression comprehensive in machine learning. *Journal of Applied Science and Technology Trends*, 1(4), 140-147.
- Matan, M. H., Aluoch, M. O., & Suva, M. (2024). Agency banking and profitability of commercial banks listed at Nairobi Securities Exchange, Kenya. *International Academic Journal of Economics and Finance*, 4(3), 229-247.
- Milly, N., Xun, S., Meena, M. E., & Cobbinah, B. B. (2021). Measuring mobile banking adoption in Uganda using the Technology Acceptance Model (TAM2) and perceived risk. *Open Journal of Business and Management*, 9(01), 397.

- Mishra, A. (2022). *Modern Cybersecurity Strategies for Enterprises: Protect and Secure Your Enterprise Networks, Digital Business Assets, and Endpoint Security with Tested and Proven Methods (English Edition)*. BPB Publications.
- Mishra, S. B., & Alok, S. (2022). Handbook of research methodology.
- Morgan, D. J., Pineles, L., Owczarzak, J., Magder, L., Scherer, L., Brown, J. P., ... & Korenstein, D. (2021). Accuracy of practitioner estimates of probability of diagnosis before and after testing. *JAMA internal medicine*, 181(6), 747-755.
- Mugwenhi, S. (2020). *Supply chain management practices, supplier performance and supply chain resilience in the South African public sector* (Doctoral dissertation, Vaal University of Technology (South Africa)).
- Munyua, L. N. (2022). *Effect of Firm-level Factors and Regulatory Requirements on the Financial Performance of Microfinance Banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Muthitu, D. N. (2020). *Relationship between the level of non-performing loans and financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Njeru, C. W. (2024). *Microfinance Services and Household's Income among Saving and Internal Lending Community Groups in Embu County, Kenya* (Doctoral dissertation, Kenyatta University).
- Nuwayo, D. (2020). *Challenges of transformation process from microfinance to microfinance bank and its effects on the bank's activities: Case of Unguka Bank LTD. East African Journal of Science and Technology*, 10(10).
- Oladimeji, A. (2023). Developing an ERP adoption framework for the retail industry of a developing country: case study of a Nigerian company.
- Poromatikul, C., De Maeyer, P., Leelapanyalert, K., & Zaby, S. (2020). Drivers of continuance intention with mobile banking apps. *International Journal of Bank Marketing*, 38(1), 242-262.
- Ratliff, T. (2022). *Effective internal control strategies for an enterprise resource planning system* (Doctoral dissertation, Walden University).
- Rouse, M., Batiz-Lazo, B., & Carbo-Valverde, S. (2023). M-Pesa and the role of the entrepreneurial state in a cashless technology to deliver an inclusive financial sector. *Essays in Economic & Business History*, 41(1), 109-133.
- Säfsten, K., & Gustavsson, M. (2020). Research methodology: for engineers and other problem-solvers.
- Siddique, M. N. E. A., Nor, S. M., Senik, Z. C., & Omar, N. A. (2023). Corporate Social Responsibility as the Pathway to Sustainable Banking: A Systematic Literature Review. *Sustainability*, 15(3), 1807.
- Sürücü, L., & Maslakci, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, 8(3), 2694-2726.

- Taddese Bekele, D., & Abebaw Degu, A. (2023). The effect of financial sector development on the economic growth of selected sub-Saharan African countries. *International Journal of Finance & Economics*, 28(3), 2834-2842.
- Tokbaeva, D., & Achtenhagen, L. (2023). Career resilience of female professionals in the male-dominated IT industry in Sweden: Toward a process perspective. *Gender, Work & Organization*, 30(1), 223-262.
- Trauth, E., & Connolly, R. (2021). Investigating the nature of change in factors affecting gender equity in the IT sector: a longitudinal study of women in Ireland. *MIS quarterly*, 45(4).
- Wang, Y., Xiuping, S., & Zhang, Q. (2021). Can fintech improve the efficiency of commercial banks?—An analysis based on big data—*research in international business and finance*, 55, 101338.
- Zakayo, A., & Ondabu, I. T. (2022). Effect of Lending on the Financial Performance of Commercial Banks Listed at the Nairobi Securities Exchange. *International Journal of Finance*, 7(6), 1-36.

APPENDICES

Appendix I: Introduction Letter

Deborah Karimi Njue,

PHONE: +254714057585

EMAIL:njuedeborah3@gmail.com

EMBU

To whom it may concern;

RE: DATA COLLECTION DEBORAH KARIMI NJUE

I'm Deborah Njue, a master's student at Kenyatta University pursuing an MBA in Business Administration (Management Information Systems). I'm now researching on ERP Systems Integration and Performance of Commercial Banks in Embu County. I request your assistance by providing me with the information I require to complete this Study. Please be aware that any information you supply will be kept strictly confidential and used solely for academic purposes. Furthermore, we will not need to know who you are for this Study.

I am grateful for your cooperation.

Kind Regards

Deborah Karimi Njue

Appendix II: Questionnaire

Part A: Demographic Information

1. Kindly indicate your age bracket: (20-25); (25-30) (30-35) (35-40) (40-45) (45-60)(In years)
2. Kindly indicate your gender.

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>
Have no gender	

3. What is your Job position?

Software Engineers	<input type="checkbox"/>
Database administrators	<input type="checkbox"/>
software Engineers	<input type="checkbox"/>
Network Administrators	<input type="checkbox"/>
Any other (Specify)	

4. For how long have you worked in a Commercial Bank?

Less than one year	<input type="checkbox"/>
2-3 years	<input type="checkbox"/>
3-4 years	<input type="checkbox"/>
4-5 years	<input type="checkbox"/>
More than five years	<input type="checkbox"/>

Part B: System Infrastructure

5. Please indicate your level of agreement or disagreement with the following statements regarding the role of system infrastructure on organizational performance. Use a Likert's Scale of 1-5 where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree.

System Infrastructure					
Statement	1	2	3	4	5
i. The firm has provided the appropriate software needed to support digital technology.					
ii. Offices are connected to high-speed Internet for use in organizational digital processes.					
iii. Location of the servers and databases in the organization is secure and only accessible to the right people.					
iv. Employees have convenient access to mobile devices for work-related tasks.					
v. The organization conducts regular training to ensure employees are informed about data protection regulations and privacy laws.					
vi. Regular audits are conducted to assess compliance with data protection regulations and privacy laws.					
vii. The organization conducts regular training to ensure employees are informed about data protection regulations and privacy laws.					

6. What is your opinion concerning the status of systems infrastructure?.....

Part C: Service Delivery

7. Please indicate your level of agreement or disagreement with the following statements regarding the role of service delivery on organizational performance

Scale of 1-5 where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree.

Statements	1	2	3	4	5
i. Current ERP system adequately meets the organization's operational needs and requirements.					
ii. Employees receive sufficient training and support for effectively utilizing the ERP system in their respective roles.					
iii. ERP system integrates seamlessly with other software applications used within the organization.					
iv. Organization actively seeks employee feedback on the usability and functionality of the ERP system.					
v. ERP system is customized to align with the specific industry requirements and workflows of the organization.					
vi. Organization periodically evaluates and explores new ERP solutions to ensure it remains aligned with industry best practices.					
vii. The ERP system contributes to enhanced collaboration and communication among different departments within the organization.					

Part C: Transaction Security

8. Please rate the commitment by your bank to service delivery options on a scale of 1-5, where 1 represents a meager investment and 5 is a very high investment.

Statements	1	2	3	4	5
i. The organization effectively uses emails for official communication.					
ii. The content of emails enhances clarity and understanding.					
iii. The organization maintains guidelines for appropriate SMS usage.					
iv. SMS is effectively integrated into the overall communication strategy.					
v. The organization leverages multimedia for engaging alongside informative content.					
vi. Multimedia tools are accessible and user-friendly for employees.					

Part D: Data Communication

9. Can you rate the success of your bank on the following methods of data communication on a scale of 1-5?

Statements	1	2	3	4	5
i. The organization actively promotes information sharing among employees.					
ii. The organization recognizes and rewards effective information sharing.					
iii. Regular backups alongside data protection measures are in place for storage.					
iv. Information dissemination methods align with employees' preferences.					
v. The organization ensures that disseminated information is relevant and valuable.					
vi. Employees actively engage with disseminated information for better understanding.					

Part E: Performance of Commercial Banks

10. Can you rate the success of your bank in terms of the following, on a scale of 1-5, where 1 represents a meager investment and 5, a very high investment

Statements	1	2	3	4	5
i. The organization consistently tracks financial performance indicators to assess profitability.					
ii. Strategies and initiatives are implemented to enhance and maintain financial profitability.					
iii. Regular customer feedback mechanisms are in place to gauge satisfaction levels.					
iv. The organization has a strategic plan outlining objectives for growth and expansion.					
v. Investment in research and development is prioritized to explore new growth opportunities.					
vi. Expansion initiatives are aligned with market trends and customer demands.					

Part F: Appreciation

Your participation is highly appreciated. We hope that you have been transparent. The information you have provided will be handled with a high level of privacy and confidentiality. Thank you for your responses.

Appendix III: Research Approval Letter



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 4150

Website: www.ku.ac.ke

Internal Memo

FROM: Dean, Graduate School

DATE: 12th April, 2024

TO: Deborah Karimi Njue
C/o Management Science Dept.

REF: D53/OL/21917/2012

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 11th April, 2024 approved your Research Project Proposal for the M.B.A Degree Entitled, "Enterprise Resource Planning System Integration and Performance of Commercial Banks in Embu County, Kenya".

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

A handwritten signature in blue ink, appearing to read 'Annbell Mwaniki'.

ANNBELL MWANIKI
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Management Science Department.

Supervisors:

1. Dr. Josphat Kyalo
C/o Department of Management Science
Kenyatta University

Appendix IV: Research Authorization Letter



KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: D53/OL/21917/2012

DATE: 12th April, 2024

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR –DEBORAH KARIMI NJUE – REG. NO. D53/OL/21917/2012

I write to introduce Ms. Deborah Karimi Njue who is a Postgraduate Student of this University. She is registered for M.B.A degree programme in the Department of Management Science.

Ms. Njue intends to conduct research for a M.B.A Project Proposal entitled, “Enterprise Resource Planning System Integration and Performance of Commercial Banks in Embu County, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,


PROF. ELISHIBA KIMANI
DEAN, GRADUATE SCHOOL

JL/nn

Appendix V: NACOSTI Research License

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
RefNo: 606690	Date of Issue: 13/May/2024
RESEARCH LICENSE	
	
This is to Certify that Ms. DEBORAH KARIMI NJUE of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Embu on the topic: ENTERPRISE RESOURCE PLANNING SYSTEM INTEGRATION AND PERFORMANCE OF COMMERCIAL BANKS IN EMBU COUNTY, KENYA for the period ending : 13/May/2025.	
License No: NACOSTI/P/24/35150	
Applicant Identification Number	Director General
606690	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
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