INFLUENCE OF DIGITAL TRANSFORMATION STRATEGY ON ENHANCING COMPETITIVE ADVANTAGE IN COMMERCIAL BANKS IN KENYA

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DECLARATION

I certify that this project is my own complied work and has never been submitted in any other institution for a similar award.

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DEDICATION

I dedicate this project to my entire family for their love, commitment and support.

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ABSTRACT

The banking sector in Kenya continues to face increased dynamisms most of which have affected most of the banks' competitiveness. With thirty-nine banks licensed to operate in the country, only three banks control more than 70% of the market. This shows a low competitive strength of the majority of the banks, a matter that has threatened their continued operation. On the other hand, digital transformation has been known to play an instrumental role in determining the performance and success of modern organizations. However, this has not been adequately explored in the context of commercial banks in Kenya. It is on this merit that the study sought to examine the influence of digital transformation strategy on competitive advantage of commercial banks in Kenya. Specifically, the study sought to examine the influence of digital channels on competitive advantage, to assess the influence of digital infrastructure on competitive advantage, to examine the influence of digital proficiency on competitive advantage, and to evaluate the influence of data management on competitive advantage of commercial banks in Kenya. The study was anchored on the assimilation theory, the theory of diffusion innovation, technology acceptance model, and the unified theory of technology acceptance. The study employed a descriptive research design where the target population was 2,664 staff who are in the top management cadre of the commercial banks in Kenya. The study focused on headquarters of these banks which are based in Nairobi County. Stratified random sampling technique was adopted for this study.

Yamane's (1967) formula was used to establish a sample size of 347 for the study. The study utilized a questionnaire to collect primary data, which was analyzed using SPSS. Both descriptive and inferential statistics were used for the analysis. The findings were presented using frequency tables and charts. The findings of the study revealed that digital channels significantly influenced competitive advantage of commercial banks in Kenya ($P= 0.000<0.05$). The study further revealed that digital infrastructure significantly influenced competitive advantage of commercial banks in Kenya ($P= 0.007<0.05$). It was also established that digital proficiency had a significant role to played in enhancing competitive advantage of commercial banks in Kenya ($P= 0.006<0.05$). Data management was found to significantly influence competitive advantage of commercial banks in Kenya ($\beta P= 0.001<0.05$). The study concluded that digital transformation strategy had not been effectively integrated in most of the commercial banks, and this limited their competitive advantage. The study recommends that the management of commercial banks should integrate digital transformation strategy through investment in digital channels, digital infrastructure, digital proficiency and data management to steer their continued competitive advantage. The study's findings are expected to be valuable to commercial banks' managers who will gain understanding on the essence of digital transformation strategies on steering the banks' competitive advantage. The study findings may also be significant to strategic management practitioners and the government for policy making.

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ABBREVIATIONS AND ACRONYMS

CAPM: Capital Asset Pricing Model

CBK: Central Bank of Kenya

CMA: Capital Markets Authority

EBIT: Earnings before Interest and Tax

EMH: Efficient Market Hypothesis

FISD: Financial Information Services Division

GDP: Regulatory policies

ICT: Information Communication Technology

TAM: Technology Acceptance Model

UTAUT: Unified Theory of Acceptance and Use of Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The idea of competitive advantage has emerged as a defining characteristic that separates successful organizations from underperforming ones in modern business environments. Specifically, several companies have applied the concept to increase company profitability, boost competitiveness, and most importantly outperform rivals (Lieberman, 2021). Kryscynski et al., (2021) asserts that a company has a competitive edge when it can offer the same merits as its rivals but at a reduced cost. This means cultivating qualities that enable a business to surpass its competitors, mostly through fostering superior value, which results in happy customers. These characteristics, according to Hoffman (2020), include having access to less expensive raw materials, reduced costs of power, and highly skilled workers. Commercial banks globally value their competitive advantage because it enables them to avail high-quality goods and services at competitive prices.

Globally, competitive advantage of commercial banks has been alluded as an essential determinant of the banks' continued operation and expansion (Tsindeliani et al., 2022). In Germany, Diener & Špaček (2021) noted that German commercial banks were increasingly expanding to international markets as a result of being competitive locally. This competitiveness as alluded by Diener & Špaček (2021) was highly driven by continued embrace of digitalization strategies. These strategies have also been attributed to continued expansion of American banks across the globe. In Greece, Kitsios et al., (2021) noted that the banking sector is highly becoming dynamic, and its growth and continued competitiveness is highly driven by digital transformation. The authors noted

that digital transformation creates an opportunity for banks to expand their product lines while capturing wider markets, thus becoming more competitive.

Regionally, the banking sector in Sub-Saharan Africa has been expanding rapidly over the past decade (Chinoda & Kapingura, 2023). While analysing the driving forces of competitiveness in Africa's banking sector, Madichie et al., (2021) noted that with emergence in technology, the regional banking industry was majorly relying on digital technology such as digital transformation strategies to drive their continued success in the market. Osei et al., (2023) focused on Nigerian banks and established that the banking sector was driven by digitalization, a strategy that steadily enabled expansion of banking services. As alluded by Modiba & Kekwaletswe (2020), digitalization in South Africa's banking sector had seen more consumers embrace digital banking, a banking framework which did not only reduce operational costs but also promoted efficiency in service delivery.

In Kenya, digital transformation in the banking sector has been gaining traction over the past decade. Most banks in Kenya have been embracing technology-based banking modes, but the effectiveness of these banking modes remain mixed across most of the banks (Mang'ana, 2022). While embracing digital banking methods is one aspect, integrating the appropriate digital transformation strategies is another (Otieno & Ndede, 2020). Digital transformation strategies goes beyond adopting technology-based service delivery modes, as it encompasses key frameworks and approaches put in place to support the overall digital processes of the organization (Mugambi & Kinyua, 2020). The Kenyan banking sector could be missing the appropriate digital transformation strategies, which explains the reason behind inadequate performance of most of the commercial banks despite embrace of digital modes of banking (Otioma, 2022).

The study was based on management theories that highlight the importance of competitive advantage in businesses. The goal of the innovation diffusion hypothesis is to clarify how, why, and at what pace novel concepts and technological advancements proliferate. As a result, the strategy highlighted important elements including the social structure, the communication channel, and innovation itself (Jamshidi & Hussein, 2016). Conversely, the idea of financial intermediation emphasizes the necessity for financial organizations, like banks, to produce commodities and services using a well-thought-out intermediary system. With this strategy, prices may be established after accounting for all direct and indirect costs related to a certain product. Lastly, the necessity of possessing the upper hand over the competitors serves as the foundation for the theory of competitive advantage. Michael's strategy centers on the feature that gives an organization a longterm competitive advantage (Peranginangin, 2015).

Stated differently, the idea identifies the critical areas on which a firm needs to concentrate in order to obtain a competitive edge. Thus, the goal of the study is to ascertain how digital technology affects Kenyan banks' ability to compete. These banks' management must use a variety of digital technology strategies to be competitive in the banking sector.

1.1.1 Digital Transformation Strategy

One element that has been seen as defining contemporary banking is digital technology. It has made it possible for banks to offer customers high-quality services and goods, which has increased their competitiveness over time. According to Molla (2006), technology is a type of transformation designed to help institutions adjust to changing circumstances. According to other research, it's the process of creating fresh notions and ideas that enhance corporate operations. Digital technology is therefore crucial to

commercial banks' competitiveness and distribution networks. As per Ravi's (2008) findings, a significant proportion of banks employ sophisticated computer algorithms to address various problems like target marketing and market segmentation. According to Busch (2008), the majority of banks use the internet to serve clients who live in different parts of the world. Wide Area Networks (WANs) and other types of networks, for instance, have been used to exchange customer data, which has improved service delivery over time. Furthermore, banks are now able to offer customers a variety of services and products thanks to other internet businesses like e-commerce. For this reason, banks have benefited from technology to increase service quality and gain a competitive edge.

Globally, digital capabilities are seen as a key factor driving the rapid expansion of leading multinational companies, helping them maintain their market positions (Ardolino et al., 2018). In Canada et al., (2020) identify digital capabilities as crucial pillars that institutions use to digitalize their procedures and support ongoing growth. Sousa-Zomer et al., (2020) define digital capabilities as encompassing both the skills of employees in utilizing digital innovations and the technology infrastructure available to support these digital initiatives. In the USA, Warner & Wäger (2019) discussed digital capabilities in terms of an organization's expertise in digitalization and how this expertise is applied to convert organizational information into digital or electronic formats. Low et al., (2020) suggest that many Malaysian organizations that have evolved into multi-billion dollar enterprises have done so by integrating digital technology. This digital growth has been driven by the presence of strong digital capabilities (Yeow et al., 2018).

In the Sub-Saharan Africa region, some companies have been adopting digital technology to enhance their competitive edge and enter international markets (Elia et al.,

2021). Ngatoro (2018) observed that leading Ghanaian companies, particularly in the telecommunications sector, have been actively incorporating digital aspect so as to raise efficiency in their activities for better performance. However, the author notes that these efforts sometimes fell short due to inadequate digital capabilities, such as insufficiently trained staff and the lack of appropriate technology for data management. This is supported by Manresa et al., (2020), who found that many indigenous South African companies struggled to achieve optimal results when implementing information systems because their digital capabilities were lacking. According to Woude (2021), digital capabilities are crucial, especially in technology-driven industries like telecommunications, as they enhance a company's ability to adopt digital processes and streamline operations, ultimately determining their success.

In Kenya, various authors have evaluated digital capabilities and found them to be crucial for enhancing companies' ability to integrate information systems into their operations (Otioma, 2022). Odondi et al., (2022) define digital capabilities as encompassing ICT infrastructure, employee skills, and data management expertise within an organization. These capabilities have enabled key multinational companies to enter the Kenyan market and quickly establish themselves as leading enterprises. Owino & Waema (2020) attribute the success of local businesses over the past decade to Kenya’s advanced internet connectivity and improved digital infrastructure. However, Banga (2022) argues that the advancement of technology and the digital economy among local companies has been hindered by insufficient digital capabilities. According to Knudsen et al. (2021), technological capabilities and digital transformation of commercial banks is paramount in steering banks’ competitiveness especially in the modern digital age. In today's digital age, technological prowess is crucial for maintaining a competitive edge in banking.

Banks that invest in cutting-edge technologies such as artificial intelligence, machine learning, blockchain, and data analytics can streamline operations, enhance security, and deliver personalized services. Advanced technology also enables banks to offer innovative digital solutions, such as mobile banking apps and robo-advisors, which can attract tech-savvy customers.

1.1.2 Competitive Advantage

According to Mishra (2017), there is a competitive edge that allows a business to provide customers with a higher value through price reductions or the provision of superior services that warrant a higher price. Porter (1985), therefore, describes the idea in terms of three factors: difference, cost, and attention to the reasons why competitors try to differentiate them. David (2011) states that a company gains a competitive advantage when it possesses features that allow it to outperform its rivals due to efficiency. Many studies have shown that by providing their customers with lower prices and higher values, competitive advantage has grown to be a crucial aspect in determining the overall performance of different firms. By improving the value of products and services and operating efficiently, a company that gains a competitive edge can increase profits (Kryscynski et al., 2021).

According to Rahmayati (2021), competitive advantage is more of organization's ability to outdo its competitors through differentiated products and services. It is the position that an organization holds in a given market based on the products and services it offers and how such products are accepted and embraced by the targeted customers. In the banking sector, competitive advantage is defined as the unique strengths and capabilities that allow a bank to surpass its competitors and attain superior financial results (Knudsen

et al., 2021). It's about the ability of a bank to create more value for its customers and stakeholders than its rivals in the banking industry. This can be achieved through enhanced customer experience and service quality where banks offer exceptional customer service and a seamless banking experience (Ali & Anwar, 2021). This includes efficient transaction processing, personalized services, quick issue resolution, and userfriendly digital banking platforms. Banks that excel in customer satisfaction often keep current customers and attract new ones through favorable word-of-mouth recommendations.

According to Tu & Wu (2021), competitive advantage is more of the extent to which a bank steers its products innovation and differentiation by developing innovative banking products and services tailored to specific customer needs can give a bank a significant competitive advantage. This might include unique loan products, investment options, digital banking features, or specialized financial services. Differentiation through product innovation allows a bank to attract customers seeking specific benefits or features not offered by competitors (Abdulwase et al., 2020). Competitive advantage in banking institutions encompasses a combination of factors including customer experience, product innovation, technological capabilities, risk management, brand reputation, cost efficiency, and strategic partnerships (M'mbwanga & Anyieni, 2022). By excelling in these areas and continuously adapting to changing market conditions, banks can differentiate themselves from competitors, attract and retain customers, and achieve sustainable long-term success.

According to Azeem et al., (2021), another essential measure of competitive advantage in commercial banks is market share which measures the percentage of total market sales

(or deposits, in the case of banking) that a bank holds. A higher market share can indicate that a bank has a competitive advantage in attracting and retaining customers. Farida & Setiawan (2022) uphold Return on Assets (ROA) and Return on Equity (ROE) as key measures of competitive advantage in commercial banks. ROA is a financial metric which reflects how efficiently a bank utilizes its assets to generate profit. A higher ROA implies that the bank is more successful at turning its assets into earnings, signaling a possible competitive advantage. On the other hand, ROE measures a bank's profitability is demonstrated by how much profit a bank generates from shareholders' equity. A higher ROE reflects greater profitability and may indicate a competitive advantage.

1.1.3 Commercial Banks in Kenya

Kenyan banks play a significant role in the country's economy by allowing the movement of money between depositors and borrowers and guaranteeing that companies can obtain credit. The Kenyan government, along with other institutions, has given the CBK the authority to oversee the activities of the banks. Kenya now has forty-three banks that were established in accordance with the Banking Act and Company Law. Unexpected growth has been greatly aided by the small and medium-sized business sector's rapid growth. However, the financial sector's growth and profitability have decreased as a result of the global recession and interest rate caps. According to a recent study from the CBK, the capping caused the capital of the smaller banks to fall. Furthermore, the banks became extremely profitable, with the return on equity reaching its lowest point in February 2017 at 19.8% (CBK, 2018). The CBK also pointed out that demand deposits became more prevalent in the overall deposit structure, which has long-term implications. Additionally, this weakened the implementation of monetary policy, which

is essential for boosting the economy and controlling inflation. Technology has helped the banking industry by increasing customer effectiveness and service delivery.

1.2 Statement of the Problem

Despite the immense role played by commercial banks in Kenya's economy, the banks have been facing tremendous challenges most of which have threatened their continued growth, performance and sustainability (Omware et al., 2020). The dynamism in Kenyan banking sector is evidenced by acquisition of 7 commercial banks between 2014 and 2022 including Habib Bank (2017), Fidelity Bank (2017), Equatorial Bank (2014), KRep Bank (2014), Giro Bank (2017), National Bank (2019), Jamii Bora (2020) (CBK, 2022). Moreover, there has been declined growth of the banks from a growth rate of 19% in the year 2018 to 12% in the year 2019 and 11.5% in 2023 (CBK, 2022); and banks held in statutory management (Charterhouse Bank Limited) and banks put under receivership (Imperial Bank Ltd) (CBK, 2022). Moreover, as reported by the Kenyan Bankers Association – KBA (2022), there has been a decline in the employee retention rate in the Kenyan banking sector by 24% between the year 2017 and 2021 with layoffs in voluntary retirement contributing to 40% of the staff turnover and over 60% being as a result of compulsory layoffs.

As companies including commercial banks strive to sustain their operations in today's competitive environment. Adoption of digital technology remain to be and essential enabler to organizational success (Gupta et al., 2021) Empirical evidence shows that digital transformation strategy such as employee ICT skills, digital infrastructure and data storage and management play an essential role in promoting firm performance. A study by Favoretto et a., (2022) on the role of digital transformation strategy on

performance of companies in Spain revealed that embracing digital technology through key competencies such as available infrastructure, information security and storage had a significant influence on firm performance. Wang et al., (2020) on the other hand assessed how digital competencies through ICT literacy contributed to organizational performance. The findings revealed that the technical knowhow of the staff had a significant influence on performance.

In Kenya, Onyango & Ondiek (2021) assessed the effect of digital technology on sustainable development and revealed that companies gain more sustainable competitiveness when they possess the appropriate capabilities to sustain digitalization. Otiomal (2022) assessed the role of digital capabilities on firm growth and expansion in Kenya. The findings revealed that organizational growth was significantly driven by adoption of digital transformation strategy such as data management, employee digital skills and available digital infrastructure. These studies, however, have focused on varied contexts with some having been carried out in developed countries. Moreover, other studies have focused on varied concepts addressing digital capabilities in different approaches. The local studies also have focused on different sectors which cannot be generalized to the banking sector. This informed the motivation of this study to assess the influence of digital transformation strategy on the competitive advantage of commercial banks in Kenya.

1.3 Purpose of the Study

The purpose of this study was to assess the influence of digital transformation strategy on competitive advantage of commercial banks in Kenya.

1.4 Specific Objectives

i. To establish the influence of digital channels on competitive advantage of commercial banks in Kenya.

ii. To evaluate the influence of Digital Infrastructure on competitive advantage of commercial banks in Kenya. iii. To examine the influence of Digital Proficiency on competitive advantage of commercial banks in Kenya. iv. To determine the influence of Data Management on competitive advantage of commercial banks in Kenya.

1.5 Research Questions

i. To what extent does digital channels influence competitive advantage of commercial banks in Kenya? ii. How does digital infrastructure influence the competitive advantage of commercial banks in Kenya? iii. What is the influence of digital proficiency on competitive advantage of commercial banks in Kenya?

iv. How does data management influence competitive advantage of commercial banks in Kenya?

1.6 Significance of the Study

The findings from the study could be significant to businesses who have implemented, are implementing, or are growing their ICT strategy framework. By knowing and comprehending the elements linked to ICT adoption for strategic competitive advantage, these organizations will be better equipped to formulate strategies for using ICT to achieve a competitive edge. Additionally, it will demonstrate the degree of ICT integration within Kenyan commercial banks' organizational structures. The research

data can be used by policy makers to determine the optimal policies to implement in order to improve the use of ICT by businesses. The government would also benefit from the findings since they may use the information to determine how much ICT is used and adopted by Kenyan commercial banks and how to close the gap. In order to fill up any gaps, the scholars will also receive the fundamental data for additional research in the same field. It will give academics feedback on creating a suitable curriculum for students studying strategic management and entrepreneurs in the digital economy.

1.7 Scope of the Study

The study sought to examine the role of digital transformation strategy on competitive advantage of commercial banks in Kenya. The content scope of the study encompassed on key aspects of digital transformation strategy which include digital channels, digital infrastructure, digital proficiency and data management. These are key components that have been found by previous studies to strongly define the success of digital transformation strategy. The study also focused on competitive advantage of commercial banks in Kenya. The geographical scope of the study was Nairobi City County. This being Kenya's capital city, houses all the 39 commercial banks where head offices are located. In methodology, the study employed descriptive research approach and senior management employees drawn from the 39 commercial banks surveyed. On the time scope, the study was carried out in 2024. The study was conducted within a period of two months to allow sufficient time to collect data.

1.8 Limitations of the Study

The study faced several limitations which were mitigated in order to achieve the set objectives. One of the limitations was that the sampled respondents in some occasions

were hesitant to adequately respond to the questions set of the research questions due to the worry of exposing internal information to outsiders. To counter this the researcher informed the respondents of the intended purpose of the study while assuring them that their responses would not be exposed to any third party.

The other limitation is that some respondents took long time than expected to fill the questions, since most of them have other job-related commitments thus inadequate time for filling the questionnaire. This delayed the study and imply that much time was used to collect the data than expected. To mitigate this, prior arrangements were made to ensure that the respondents include and spare some of their time to give responses to the questions. Additionally, the study was flexible such that the questionnaire was shared using available means such as online mechanisms so that the respondents can fill the questionnaire from wherever they were.

1.9 Delimitations of the Study

Delimitations in a social science research are the choices that a researcher makes to describe the boundaries of a study. One of the delimitations in this study was that the study focused on commercial banks licensed by the CBK as at December 2023. Other banks that may have been licensed after this period were not included in the study. Similarly, other banking institutions not licensed as commercial banks were not included in the study.

The study was delimited to the head offices of the 39 commercial banks in Kenya. The head offices represent the senior management of the banks where most of the strategic decisions are made. Therefore, the study did not focus on branches but only on the head offices.

The other delimitation of the study is that senior managers who are in charge of major decisions in the bank were the units of observation. These managers are the main drivers of strategy including digital transformation strategy thus they are more knowledgeable on the strategies adopted by their banks.

1.10 Assumptions of the Study

One of the assumptions that was made in this study is that the digital transformation strategy had a role to play in enhancing the competitive advantage of the commercial banks. This is to imply that, the key aspects of digital transformation strategy (digital channels, digital infrastructure, digital proficiency and data management) can significantly influence the competitive advantage of commercial banks.

The second assumption of the study was that the commercial banks in Kenya had embraced to some extent, the digital transformation strategy, as one of the key ways of enhancing their success. It was also assumed that the sampled managers were aware of the digital transformation and its role in promoting the competitive advantage of the commercial banks.

The study also assumed that the sampled respondents effectively represented the entire banking industry in Kenya. This is because commercial banks dominate the industry and the views of the senior managers in regard to digital transformation strategy would reflect the general outlook in the entire industry. Lastly, the study assumed that participants would give accurate and true information in regard to the embrace of digital transformation strategy in their respective banks and how it has contributed to the banks' competitive advantage.

1.11 Operational Definition of Key Terms

Digital Transformation Strategy: These are the frameworks and approaches that an organization puts in place to enhance its utilization and integration of modern technology in its operations and processes.

Data Management **:** This is the ability of an organization to oversee, control and secure its information in regard to its processes, operations and strategies.

Digital Proficiency

: This is the available knowledge, skills and competencies in regard to embrace and use of technology in an organization.

Digital Infrastructure

: These are the technical inputs required in an organization to enable embrace of technology. They include the software and hardware through which technology adoption in an organization is supported.

Digital Channels

: These are the methods and approaches that an organization utilizes to deliver its products and services through the technology.

Competitive advantage **:** It is the ability of an organization to attract more customers than its peers and close competitors in the same market by offering more differentiated products or services that best suits the needs of the target customers.

Commercial Banks **:** These are financial institutions that are licensed to offer financial services to the public. Their services include receipt of customer deposits, offering credits/loans to the customers, processing payments, facilitating money transfers among other related financial services.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the review of literature related to the study variables. The aim of this chapter is to examine literature on digital technology influencing competitive advantage of Kenyan banks. More importantly, this chapter focused on specific components of digital technology namely: digital channels, digital value, digital access and regulatory policies. It also consisted of the theoretical framework, conceptual framework, knowledge gap and summary of literature review.

2.2 Empirical Review

The subsection covers the review of previous literature in relation to the role played by digital transformation strategies on firms' competitive advantage. The studies were systematically examined according to the specific objectives, and it was from this review that the research gaps were identified.

2.2.1 Digital Channels and Organizational Competitive Advantage

Previous studies have been done in relation to the role played by digital channels in digital transformation on organizational competitive advantage. A study by Tsou and Chen (2023) on the influence of digital transformation approach on firm performance analyzed the association between digital channels as one of the aspects of digital evolution and firm performance. Using a descriptive survey approach, the authors surveyed 182 participants drawn from manufacturing sector in China. The results revealed that digital channels had a significant role to play in steering organizational performance. According to Tsou and Chen (2023), through digital channels, organizations were able to deliver their goods and services in a more convenient

approach, thus strengthening their ability to be competitive and make superior sales than their competitors. In a similar study, Setzke et al., (2023) assessed the role played by digital channels in steering organizational competitive advantage. Their findings revealed that digital channels embraced in the digital transformation strategy formed an integral part that supported the efficiency and effectiveness of service delivery, thus steering organizational competitive advantage.

A study by Hanelt et al., (2021) on the influence of digital evolution on firm competitiveness sought to evaluate the role played by digital channels adopted during digital transformation in strengthening organizational competitiveness. The study applied a cross-sectional survey approach and sampled 215 employees sourced from service sector in Malaysia. The findings stated that digital channels used in service delivery played an essential role in enhancing organizational competitiveness. According to Hanelt et al. (2021), competitiveness is the subject of how well an organization utilizes its materials to meet its goals and stand tall from other competitors. The authors noted that through digital channels, the organizations were able to differentiate their operations and create more value to the consumers thus being more competitive. Their findings are supported by those of Nousopoulou et al., (2022) who while evaluating the influence of digital approaches and channels on institutional competitiveness revealed that the channels adopted by organizations to dispense their goods and services have a defining function determining the competitiveness of an institution.

Similar findings in Sub-Saharan Africa, Troise et al. (2022) evaluated the association between digital transformation strategy and competitiveness of small and medium enterprises in Nigeria. The authors sought to assess how key aspects of digital transformation such as channels influenced organizational competitiveness. The study

employed a descriptive approach which targeted 378 participants from small and medium enterprises. From their findings, it was observed that digital channels had a significant impact in determining the competitiveness of the small and medium enterprises. The authors noted that the SMEs that had embraced digital channels such as online marketing, electronic payments among other digital technologies stood a better chance to enhances their competitiveness. In a similar study, Kinyanjui (2020) sought to evaluate the effect of digital channels in enhancing organizational effectiveness. Their findings revealed that through modern technology, digital channels of service delivery were becoming more integral in promoting organizational effectiveness. The authors noted that modern firms regardless of their sizes had a better chance of survival and continuity through embracing digital transformation and digital channels of delivering their products or services.

Mukuni (2019) while addressing the essence of digital channels in the banking industry established that through digital channels, commercial banks strengthen their activities in the market thus being more competitive. Additionally, Maingi & Wachira (2022) revealed that the digital banking channels are not only convenient to the customers, but also create more value to the customers thus enhancing their satisfaction. In Kenya, Kingori and Mwemba (2022) concluded that digital channels had a defining influence on the competitiveness of commercial banks.

2.2.2 Digital Infrastructure and Competitive Advantage

Digital infrastructure represents a crucial aspect of digital transformation strategy that fundamentally determines organization's ability to utilize technology in bolstering its competitive advantage. Numerous studies have delved into the significance of digital infrastructure in augmenting firm performance. For instance, Chaudhuri et al., (2022)

explored the impact of digital framework on technology uptake and performance of companies in Canada. The study surveyed SMEs within the Canadian service sector. Their findings revealed that digital infrastructure, including ICT hardware and software, played a pivotal role in facilitating companies' adoption of key technologies, thus influencing their overall performance. This assertion is corroborated by Saputra et al., (2022), who laid an emphasis on the purpose of foundational digital infrastructure such as internet connectivity and computer systems in providing a sturdy foundation for companies to effectively implement performance-enhancing technologies.

Heredia et al., (2022) conducted an examination into the impact of digital abilities along the performance of firms. Their study sought to evaluate how the existing digital capacity, which stands out as a digital ability contributes to enhancing firm performance. Employing an enterprise survey, they gathered responses from 999 participants across 27 countries, including Bulgaria, Republic, Poland, and Zimbabwe among others. The results highlighted that digital capacity played a crucial role in determining organizations' capacity to incorporate digital technology into their operational strategies, thereby sustaining outcomes. Heredia et al. (2022), postulated that digital capabilities are most effectively understood in regards of the organization's ability to integrate essential elements that support successful digital uptake in institutional processes, with digital fabric being one such element. This perspective finds support in the work of Zhen et al., (2021), who asserted that the incorporation of digital technology into institutional processes for improved performance is fundamentally dependent on the presence of adequate digital framework, which serves as the foundational aid for digital technology.

Ogiri (2020) conducted a study into the impact of digital framework on the output of telecommunication agencies operating in Nigeria. The study investigated how critical

elements of digital inputs, such as connectivity, software and hardware, influence the efficiency of digitalization efforts aimed at improving firm performance. Employing a cross-sectional research approach, the study surveyed 216 respondents. The results unveiled that a focus on digital framework enhances the efficiency of information systems within organizations. Ogiri (2020) posited that digital infrastructure, including ICT software and hardware, plays a determinant role in facilitating the execution of key digitalization initiatives designed to enhance organizational efficiency, thereby driving competitiveness and performance. Furthermore, the author highlighted the significance of BTS (Base Transceiver Station) location as a crucial component of digital infrastructure for telecommunication companies, contributing significantly to industry performance by enabling widespread network access. This perspective resonates with the findings of Cenamor et al., (2019), who emphasized that digital framework marks the initial step in the journey of incorporating ICT into institutional processes, ultimately sustaining performance.

Ndubuisi et al., (2021) investigated the impact of digital fabric, including internet access and software, on the enhancement of firm performance within the context of Kenya. Their study aimed to evaluate how these fundamental digital frameworks contribute to institutional success by improving the efficiency of operational processes. The study surveyed 182 participants selected from insurance firms in Kenya. The results underscored the crucial role of internet connectivity in facilitating information sharing and communication within modern organizations, thereby fostering a suitable environment for digitalization. Additionally, Ndubuisi et al. (2021) emphasized the significance of digital software, inclusive of operating systems, in evaluating the types of information that can either be stored or shared, thereby aiding companies' integration

of digital innovations into their activities. This perspective aligns with the findings of Scantlebury et al., (2019), who assert that digital software serves as a vital enabler of digital technology within organizations, as it forms the foundational support for the integration of ICT.

2.2.3 Digital Proficiency and Firm Competitive Advantage

Technology's effectiveness hinges greatly on the proficiency and skills of its intended users, primarily the employees, in leveraging it (Karakose et al., 2021). Jared et al., (2017) affirm that the efficacy of any digital technology introduced within an organization relies heavily on employees' knowledge and competence in its utilization. This sentiment is further supported by the Unified Theory of Acceptance and Use of Technology by Venkatesh et al., (2003), which emphasizes the necessity of employee capability in technology utilization for optimal integration into organizational processes. Thus, digital proficiency emerges as a pivotal digital ability in evaluating the efficacy of digitalization efforts on organizational success. Soluk et al., (2021) define digital expertise as the amalgamation of skills and experiences gained by employees regarding the usage and implementation of key technologies introduced within the organization.

Magistretti, Pham, and Dell'Era (2021) did a study aiming to assess the influence of digital skills on the outcomes of communication-based companies in Australia. Their empirical approach involved reviewing over 200 research conducted in Australia. The findings postulated a growing reliance on digital technology as a primary driver of organizational success, contingent upon the proficiency of employees. Magistretti et al. (2021) assert that while most organizations prioritize enhancing their performance through ICT integration, tangible results are only achievable when employees are adept

at utilizing the technology. This assertion is echoed by Snow et al., (2017), who found that human ability and expertise in digital technology usage determine the effectiveness of ICT system implementation within organizations.

Mittal (2020) examined the impact of ICT abilities on digital technology implementation within state enterprises in South Africa. The survey aimed to evaluate how employees' skills and competencies influence government enterprises' performance by facilitating digitalization integration. Through a structured questionnaire, 197 participants from senior as well as the middle-level management in state agencies were surveyed. The findings laid and emphasis on the pivotal role of employees' ICT knowledge and skills in enhancing the efficiency of digital innovation within organizations. Li et al., (2018) assert that employees are crucial in implementing any technology within a company, and without the requisite digital expertise and skills may fail to serve its intended role effectively.

Maingi & Wachira (2022) analyzed the impact of digital expertise on the recovery of SMEs in Kenya from the effects of the COVID-19. Their study aimed to assess how digital technology enables SMEs to swiftly recover from the pandemic's aftermath. Through a correlational approach, the study surveyed SMEs in the tourism sector. The findings highlighted the essential role of digital proficiency among entrepreneurs in expediting SMEs' recovery from the pandemic's effects. Maingi & Wachira (2022) posit that entrepreneurs' ability to harness digital technology, particularly in the current digital landscape shaped by the COVID-19 impact, enables effective recovery and survival from the pandemic's repercussions.

Kainduku and Ngelei (2021) carried out a survey on the influence of digital proficiency as a key aspect of digital advancement on competitiveness of lending institutions in

Kenya. A total of 117 respondents were drawn from Micro-lending institutions in Nairobi County. The findings stated that through digital skills by the employees in the lending institutions, the institutions stood a better chance to be competitive and streamline their operations towards enhancing effectiveness and efficiency. The authors further established that digital skills were critical in putting the organization ahead of its competitors by ensuring that its workforce is dedicated and committed towards embracing technology. According to Ndubuisi, Otioma, and Tetteh (2021), digital transformation strategy can be effective towards contributing to organizational competitiveness only if the organization has the right digital skills.

2.2.4 Data Management and Firm Competitive Advantage

Digital technology encompasses of data management through sharing, storing and securing the data for appropriate use (Pearson, Shawcross & Dickson, 2021). Data integrity is the ability of the digital technology to store, secure and enhance retrieval of data when needed. For the digital technology to be effective, there is need for the organization to invest in data integrity, since this is the main component of the technology (Tsou & Chen, 2023). Tariq et al., (2022) while assessing the effect of digital capabilities on the effectiveness of digital technology in modern organizations revealed that data storage was an essential capability that determined the extent to which digital technology contributed to firm performance. Further, Tariq et al. (2022) established that effective digital technology was driven by how secure the data was, and the ability to retrieve the stored data when needed.

Wang et al.,(2023) did a study on the role of data integrity and security on the

performance of telecommunication companies in Pakistan. The study sought to evaluate how the appropriateness of digital systems to store and secure data determined firm performance. The authors utilized an exploratory research approach and surveyed 219 respondents drawn from service industry in Pakistan. The findings revealed that data storage and security were essential determinants of the reliability and usefulness of digital technology towards enhancing firm performance. According to Wang et al.,(2023) to achieve the full benefit of digital technology, firms ought to ensure they invest in security of the data, and ensure that data is stored in the original state and free from unauthorized alteration. Hagiu & Wright (2020) support this by arguing that the extent to which digital technology becomes efficient in contributing to firm performance highly relies on the amount of data that can be stored, the security of the data and the retrieval of the data when needed.

Makoza (2023 analysed the effect of data integrity on organizational effectiveness in Malawian firms. The study sought to assess the role played by the effect of the amount of data that can be stored, the security and integrity of such data on organizational performance. Using a correlational research design, the authors surveyed 106 respondents. The findings revealed that data storage was an essential enabler of organizational effectiveness by promoting efficient communication through storage and retrieval of information. According to Makoza (2023), data is an essential aspect of digital technology thus its security, integrity and storage can significantly contribute to its effectiveness in enhancing firm performance. This is echoed by Wang et al., (2023) who argued that in the modern era, adopting technology and utilizing it to streamline organizational success is determined by among other factors, the storage

of data and its security. Hanelt et al., (2021) indicate that companies easily lose the credibility of their information technology when data breaches occur, and this could risk the organization losing its value and have detrimental effects on its competitiveness.

Mirdasse(2024) assessed the effect of digital transformation strategy on the performance of manufacturing enterprises in Ethiopia. The study aimed at evaluating the role played by data management and data integrity as one of the digital capabilities on the performance of manufacturing entities. The authors utilized a cross-sectional research approach and sampled 308 respondents. The findings revealed that digital technologies through data integrity play an integral role on the performance of manufacturing firms. According to Mirdasse(2024), through enhanced integrity, security and storage, the companies are able to efficiently utilize digital technologies towards enhancing performance. This concurs with the findings by Luo (2022) who indicated that data integrity is the beginning and key determinant of a successful digital technology that ensures the company is able to protect its information and sustain competitiveness.

2.3 Theoretical Review

A theory is a body of definitions, concepts, and propositions that are logically connected and put forth to explain and forecast facts or phenomena. In this way, we constantly employ a variety of ideas to explain or forecast events in our environment. Theory can be utilized to forecast additional information that has to be discovered (Kar & Dwivedi, 2020). A thorough explanation of the pertinent theories is provided for this investigation. Among the theories are Assimilation Theory, capital asset pricing model and

Competitive Advantage theory.

2.3.1 Assimilation Theory

Festinger (1962) proposed the assimilation concept, according to which customers draw a mental link between their views of a product and its actual performance. This comprehension of the customer's valuation was incorporated into the fulfilling literature through the use of assimilation theory. According to Singh (2022), customers are inclined to strive to make a commodity more uniform by changing their ideas in order to minimize dissonance. Customers tend to lessen the uncertainty brought about by a discrepancy between expectations and product performance can be enhanced by either boosting customer satisfaction or decreasing relative dissatisfaction, importance or altering their prospects to match product performance. As Kelly et al., (2021) predicted, the problem with this theory is that it makes a connection but doesn't explain how satisfaction or discontent is caused when an expectation isn't fulfilled.

The bank's ability to package its products to draw clients based on age and gender is covered by this idea. The bank's adoption of digitalization tactics has enabled clients to make intelligent decisions about the items they need without assistance from bank employees. Kang'e (2020) claims that the capacity to employ digitalization to satisfy clients based on their gender or age has also made tailored customer satisfaction approaches conceivable. Consumers are more aware of the security risks associated with digitization, which presents financial institutions with additional obstacles in addressing this issue. According to Muhammad et al., (2024), clients may now recognize the value of the security measures banks take to protect their data and personal information. The identity verifications needed to gain access to the technology infrastructure needed to use banking services decide this.

This hypothesis holds significance for the study as it implies that consumers are adequately encouraged to change their perceptions or expectations about a product's performance. There is a positive correlation between consumer satisfaction and expectations when real product results are taken into consideration, as multiple studies have demonstrated. Therefore, it is difficult to experience disappointment unless one uses evaluation techniques that start with unfavorable client prospects.

2.3.2 The Theory of Diffusion Innovation

The diffusion invention theory was first forth by Rogers (1962). The theory seeks to comprehend and provide instances of the successful implementation and use of contemporary technology, such as digital wallets, automated teller machines, online banking, and point of sale devices. The hypothesis goes on to state that not every invention finds widespread use. Furthermore, he declared that rather than stopping the diffusion of innovation, change aversion may act as a roadblock. Five essential characteristics that significantly impact adoption rates were identified by Rogers.

Relative benefit, interoperability, complexity, and information quality are a few of them. According to Rogers, the adoption rate of new technologies by a corporation will be determined by its perceptions of their relative benefits, complexity, triability, observability, and compatibility. This hypothesis pertains to the subject matter. If a bank in Kenya, more especially in Nairobi County, recognizes the benefits of digital banking, they will use it provided that other conditions are met, such as service accessibility. These banks would do whatever it took to become well-known in the market and close a gap that technology filled.

This idea is crucial because it encourages the use of technology, which would happen more quickly in businesses with IT departments and internet access than in financial

institutions without either. Conversely, diffusion innovation theory is biased in favor of innovation since it promotes fresh concepts. This idea is significant because it clarifies why banks with IT departments and internet access would adopt technology more quickly than those without. Furthermore, because education fosters lifelong learning, it fosters ongoing innovation aimed at enhancing the performance of the banking sector. Alenezi (2023) asserts that learning is an ongoing process that puts cutting-edge methods and techniques developed by educational research to use. According to this theory, people influence how those around them respond to and embrace innovation depending on their educational attainment.

This theory also establishes how financial organizations should approach the costeffectiveness of their service delivery procedures. In his paper on industrialization and development, Halton (2022) suggested that innovations are developed to bring about cost savings in order to encourage wider adoption. Innovation has led to the development of more affordable and effective methods of satisfying consumer needs, such as online banking services, structured customer assistance, and internet marketing. The contemporary Kenyan populace has demonstrated a significant interest in technology advancements aimed at enhancing accessibility to services, hence mitigating dependence on physical banking halls. The creation of Alternative Banking Channels (ABCs), which allow clients to access banking services at their convenience and after hours, is largely due to innovations.

2.3.3 Technology Acceptance Model

The Technology Acceptance Model has been one of the most instrumental theories in the 21st century, owing to the role technology has played in the socio-economic transformation across the globe. Zaineldeen et al., (2020) proposed the Technology Acceptance Model theory. The main objective is to show the need for technology in

modern organizations and organizational processes for efficiency and effectiveness. According to Marikyan & Papagiannidis (2023) the Technology Acceptance Model theory is built on the need for organizations to have modern technology systems and the role people (employees) play in enhancing the usefulness of technology in the organization. Zaineldeen et al., (2020) addresses technology acceptance theory using two main dimensions: the Perceived ease of use and the perceived effectiveness of the technology. According to a recent work by Scherer, Siddiq, and Tondeur (2019), while the organization will seek to have the best technology integrated into their normal day-to-date operations, this can only succeed once the employees accept and understand the technology's role in the organization.

Digitalization in every organization would best be driven by technology. Moreover, the success of digital technology would require a stronger and engaged workforce that is ready to embrace the changes and support the new technology. According to Marikyan & Papagiannidis (2023), acceptance is one of the major drivers of successful information systems, where the stakeholders in an organization and particularly the employees are ready to embrace the technology. Orchestrated by advancement in technology, digitalization is stringent to the success of modern organizations. One of the key aspects that enable the employees to accept changes is the perceived usefulness. The other aspect is the perceived ease of use. These two aspects lead to behavioral intentions which are attitude toward using or embracing the

change (Kamal et al., 2020). This will then lead to the actual use of the technology.

Two main features derive from the acceptance of the technology by the employees. These features are perceived usefulness and ease-of-use and are provided in the Technology Acceptance Model theory (Granić, 2023). The perceived use implies that an employee will support and accept a given technology based on how well they feel it will better perform their duties. The Technology Acceptance Model theory is therefore used in this study to help in expounding on the incorporating digital capabilities in the organization and how they can be effectively integrated by enhancing employee acceptance to successfully enhance firm performance.

2.3.4 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) was formulated by Tamilmani *et al.* (2021) and it combined other extant technology acceptance models which include the Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model, the Motivational Model, Social Cognitive Theory and Innovation Diffusion Theory. Through these models and theories, Unified Theory of Acceptance and Use of Technology model came with four major aspects that define the ability of an organization to effectively embrace technology and use this to technology to enhance the performance of its workforce. These aspects include Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions (Tamilmani *et al.* (2021).

Performance expectancy is the extent to which an individual (employee) believes that the adopted technology is going to help them perform their duties as expected. When a new technology is introduced, employees need to understand whether this technology will enable them deliver their employer's expectations. According to Khechine et al., (2020), the performance expectancy in the Unified Theory of Acceptance and Use of Technology model is a strong determinant of behavioural intention which tells whether one is going to uphold the introduced technology or not. Zaineldeen et al., (2020) describes performance expectancy as a perceived usefulness where employees are more likely to uphold a technology when they are fully convinced that the technology will enable them perform their duties better and more satisfactorily.

Effort Expectancy is another aspect that has been upheld by (Tamilmani et al., (2021) in the Unified Theory of Acceptance and Use of Technology model. This is the extent or degree to which the employees associate with the new technology. This is in other words referred to as the perceived ease of use of the technology. The employees ought to be assured that the technology introduced is easy to use so that they can fully embrace it. According to Batu et al., (2022) in many cases, technologies fail to achieve the expected results due to lack of effort expectancy aspect. The extent to which the employees perceive the technology to be easy to use determines their level of actual use and embrace of the technology. According to Marikyan & Papagiannidis (2023), ensuring that the employees accept the technology by assuring

them that minimal effort will be required its use is critical to enhancing uphold of technology. The users (employees) need to be sure that the technology will require minimal efforts, thus enabling them to accept the technology for enhanced performance.

Social influence is another component of the technology acceptance as put across by Marikyan & Papagiannidis (2023), in the Unified Theory of Acceptance and Use of Technology model. The authors describe social influence as the extent to which an individual (employee) perceive that other senior individuals believe they should use the new technology. This is social influence because it is driven by the people around. While citing the theory of reasoned action (TRA), Marikyan & Papagiannidis (2023), indicate that the social influence is how people feel that those they socially relate them believe in their capability to utilize the technology. When employees feel that their peers and seniors are confident with them that they can use the technology, they will push themselves to embrace and use the new technology.

The fourth aspect of Unified Theory of Acceptance and Use of Technology model is facilitating conditions. This according to Marikyan & Papagiannidis (2023), is the degree to which employees believe that the organization and the structures put in place are there to help them use and embrace the new technology. The employees need to feel facilitated by the organization to embrace technology. The employees ought to perceive the available ICT infrastructure and the management staff to be

capable and ready to support them use the technology (Okafor & Njelita, 2024). The Unified Theory of Acceptance and Use of Technology theory was used in this study to expound on the effect of digital capabilities such as digital infrastructure and information quality on the competitive advantage of commercial banks in Kenya.

2.3.5 Competitive Advantage Theory

These days, competition is vital to the market. Every company looks for a way to set itself apart from the competitors because of the competition. Andes et al., (2020) state that businesses will make the most of whatever edge they have to get entry to new markets. This is known as a competitive advantage. Organizations that are quick to adopt new technologies are at a competitive advantage over their rivals as technology advances. Companies can employ four techniques to outperform the market competition. "Cost leadership, differentiation, cost focus, and differentiation focus" are a few of them. In all four of these tactics, technology is essential. Despite having a low profit per sale, cost leadership firms attract more customers by providing the lowest pricing. By offering their

loans at the lowest feasible interest rate, banks hope to draw in a wider range of customers (Choudhry, 2020). Because of this, the bank can serve a large market. A company can successfully compete with its rivals if it has a large market. By differentiating their goods, businesses hope to draw in customers by making it stand out from the competition.

Numerous businesses have enhanced and differentiated their products with the use of technology. When a firm has a cost focus, it focuses on a certain niche and offers its goods and services at the most competitive pricing. The goal of differentiation is to make a product stand out while fostering brand loyalty. Core skills and corporate identity are examples of internal forces that might impact competitive advantage. These two elements influence an organization's positioning, helping it stand out in the marketplace and grow its clientele. Positive public opinion of a brand or company gives it a competitive edge over rivals. Consequently, corporations, especially banks and other financial institutions, must prioritize maintaining their business identity and core strengths.

2.4 Conceptual Framework

Conceptual framework is a diagrammatical representation of the relationship that exists between independent variables and dependent variable. The critical factors identified for the development of conceptual framework are based on literature review. The independent variables are as follows: digital channels, digital value, digital access and regulatory policies. The dependent variable is competitive advantage of Kenyan banks.

Independent Variable **Digital Transformation Strategy**

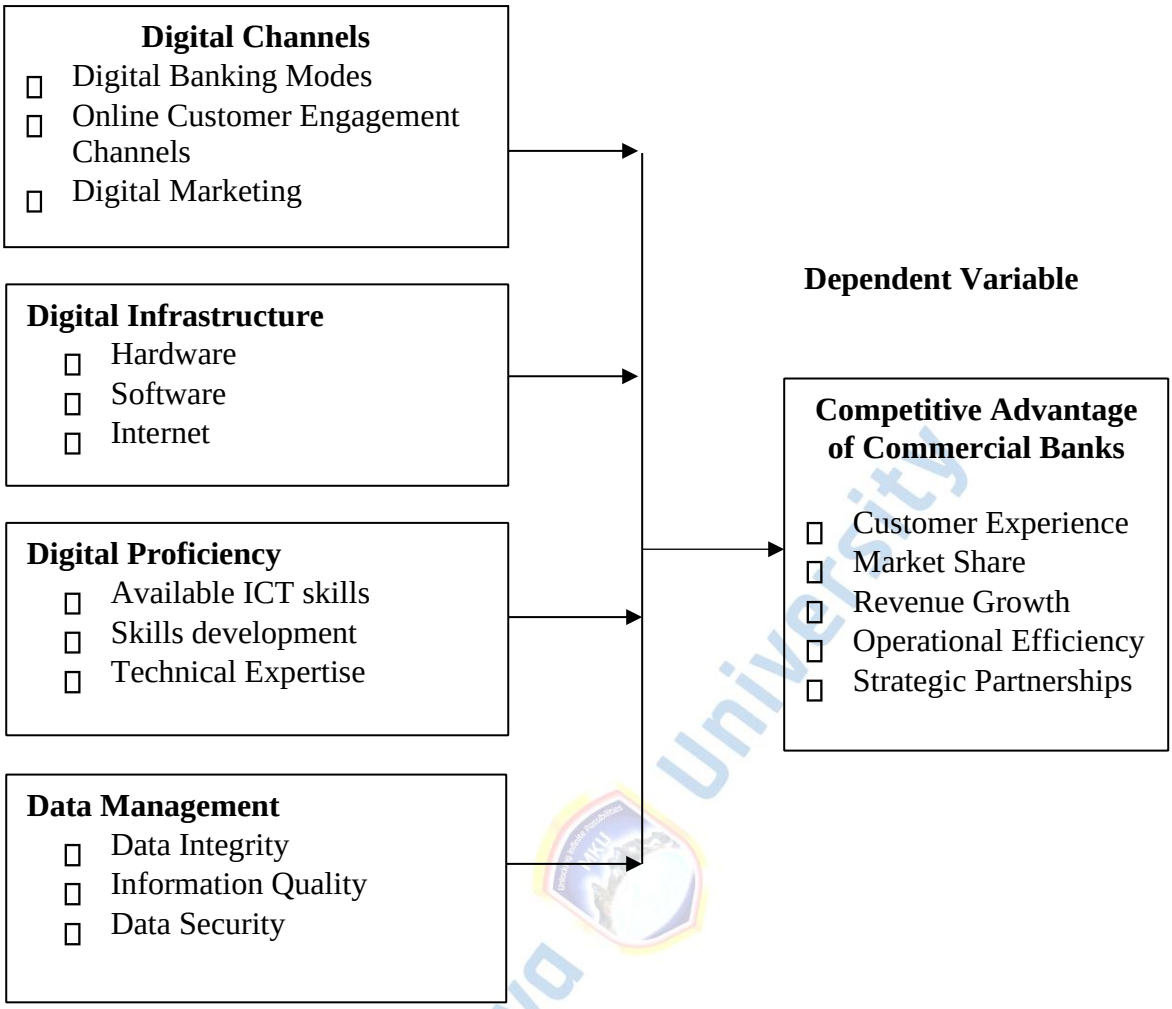


Figure 1: Conceptual Framework

Source: Researcher (2023)

2.5 Summary of Literature Review

This chapter has presented literature on the digital technology influencing competitive advantage of Kenyan banks, and how the former is specifically influenced by digital channels, digital value, digital access and digital access.

The empirical review reveals that digital technology plays a vital role in evaluating an institutional's performance. Numerous international studies have unequivocally shown how digital technology enhances a firm's success. This information relates to consumer

perception, financial performance, and efficiency. An objective view of the link has been brought about by the studies, which span the banking and MSE sectors (Mahmood & Ahmad, 2020). On the other hand, local and regional research has concentrated on the topics of digital innovation and the operations of commercial banks. Empirical research has consistently shown that investing in digital technology improves operational efficiency and financial success (Agboola et al, 2023).

The research study's broader scope has been primarily focused on the commercial banking sector, as indicated by the research papers highlighted from the empirical review. This study used a case study approach with a limited scope. Second, distinct variables that comprise digital technology and company performance have been identified by both of the empirical investigations that have been emphasized. Last but not least, this study employs a different research strategy and approach than the empirical investigations.

2.6 Research Gap

A key research gap in the literature on digital channels and organizational competitive advantage lies in exploring the longitudinal impact of digital channels on competitive advantage across different sectors and varying market conditions. Current studies, such as those by Tsou & Chen (2023) and Setzke et al. (2023), primarily use cross-sectional data and focus on specific sectors or regions, which limits understanding of how digital channels contribute to sustained competitiveness over time or under shifting economic conditions. Another potential research gap involves examining the interplay between digital channels and digital infrastructure in enhancing competitive advantage. While studies highlight the role of digital channels in improving performance, they rarely assess

how these channels interact with digital infrastructure elements (like ICT hardware and connectivity) to create more robust competitive benefits. This integrated perspective could help organizations develop more comprehensive digital transformation strategies. Additionally, there is limited research on the role of organizational digital proficiency and data management practices as mediators in the relationship between digital channels and competitiveness. While studies acknowledge the importance of digital skills and data security, understanding how these factors influence the efficacy of digital channels in achieving competitive advantage could reveal strategic insights for organizations aiming to maximize their digital investments.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Research methodology is that part which explains technical procedures in a manner appropriate for the audience. This chapter highlighted the techniques and procedures employed to facilitate in data collection. It is presented from research design, target population, research instruments, data collection procedure and data analysis techniques.

3.2 Research Design

Research design is defined as the conceptual structure within which research is conducted; it comprises of the overall plan for the collection, measurement and analysis of data (Kothari, 2019). The study adopted a descriptive survey design. A descriptive research design is appropriate for this study as it aims to understand and describe the influence of digital channels, infrastructure, proficiency, and data management on organizational competitive advantage. This design allows for detailed examination of the current state of digital transformation in organizations without manipulating any variables, making it well-suited to gather insights directly from the target population. It assists the study to determine the objectives of research, subjects of research, the sample size, the data to be collected, the procedures for collecting and recording that data, the procedures for analyzing that data and how the data is interpreted and presented (Clark et al., 2021). This study employed descriptive research design that incorporated both quantitative and qualitative data. It helped to describe and analyze phenomena as they appear without bias. Besides, a descriptive survey enabledinstitutionalized estimation increasingly exact by implementing uniform definitions upon the respondents. The design was appropriate for this

particular study because the researcher aimed to understand the extent to which digital transformation strategy contribute to competitive advantage of commercial banks in Kenya.

3.3 Location and Rationale of the Study

The study was done in Nairobi County. This is Kenya's capital city which houses all the head offices of the 39 commercial banks granted to operate in the country. The rationale for the choice of Nairobi County was because of its convenient and this is where the headquarters of all the banks are. Moreover, the rationale for choosing the head offices is because this is where most of the senior managers are, thus most strategies emanate from the head offices.

3.4 Target Population

A target population refers to the larger group of individuals or objects to which the researcher ultimately would like to generalize the results of the study (Levitt, 2021). A population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. A target population is a collection of all the objects or items of interest in a study (Maxwell, 2021). According to the Central Bank of Kenya (CBK, 2023), there are 39 licensed commercial banks in Kenya. The banks served as the units of analysis, while the employees within these licensed banks were the units of observation. As reported by the Kenya Bankers Association (2023), the total workforce in Kenya's commercial banks is 29,600. Among these employees, 9% are in top management, 27% are in middle management, and 64% are in lower-level positions. The survey aimed at senior management since they are the main decision-makers and understand most of the strategies adopted in the banks including the digital transformation strategies. Since they are 9% of the entire banks' workforce, it

implies that the targeted population for the survey was 2,664 participants which is equivalent of 9% of 29,600.

3.5 Sampling Procedure

Creswell et al., (2021) noted that it is prudent for researchers to select the study' sample size by using appropriate technique of sampling. Sampling entails selecting a fraction of study elements to represent the entire population under investigation. A sample is a portion or part of the population of interest. The purpose of sampling is to gain an understanding about some features or attributes of the whole population based on the characteristics of the sample (Creswell et al., 2021). When dealing with people, it can be defined as a set of respondents (people) selected from a larger population for the purpose of a survey. It is important that an appropriate sampling method is chosen to ensure that the sample is representative of the whole population under investigation.

Senior managers from all the 39 commercial banks in Kenya were surveyed. This ensured that the study findings were inclusive on the opinions from all the banks hence producing more reliable findings. Yamane's (1967) formula was used to compute the sample size for the study. According to Lakens (2022), a sampling formula should provide an adequate and appropriate sample size that represents the targeted population in a study. Yamane' (1967) formula provides an adequate sample size and it is appropriate for large population sizes exceeding 1,000 respondents. This justifies the choice of the formula in this study.

$$n = \frac{N}{1+N*e^2}$$

Where:

n is the sample size

N is the target population (2,664) e

is the error margin (0.05)

$$n = \frac{2664}{1+2664*0.05^2}$$

n = 347

The study therefore sampled 347 participants in the 39 commercial banks in Kenya. The participants were picked through stratified random sampling where the strata were the banks.

Table 1: Distribution of the Sample Size

Banks Category	Number of Banks	Target Population	Sample Size	Percentage
Tier One Banks	9	1,014	132	38.0%
Tier Two Banks	8	718	94	27.1%
Tier Three Banks	22	932	121	34.9%
Total	**39**	**2,664**	**347**	**100%**

Source: Researcher (2024)

3.6 Data Collection Instruments

According to Mugenda & Mugenda (2008), data collection is the process of systematically seeking information from the research objects by use of the selected research instrument. It is the actual gathering of research data for use in the study at hand. A structured questionnaire was used to collect the data from the sampled respondents. The questionnaire was divided into seven sections whereby the first section was used to gather information on the demographic data, section two (2) to section six (6) gathered information on the four (4) independent variables while section seven (7) covered the dependent variable. The questionnaire had close-ended questions

where a 5-points Likert's scale was employed to evaluate the participants' level of contentment with specific statements.

3.7 Pilot Testing the Research Instruments

Teresi et al., (2022) defines pilot study as the testing study that is conducted prior to the actual study so as to determine the accurateness of the research instruments. The pilot study was done before the actual study to test for reliability and validity of the research instrument. According to Teresi et al., (2022) the pilot study can be done with between 5 to 15% of the sample size. To this end, the study used 5% of the sample size to carry out the pilot test. This gave a total of 17 participants who were selected from the bank's branches apart from the headquarters.

3.7.1 Reliability of the Research Instrument

According to Clark et al.,(2021) reliability is the ability of the research instruments to produce the desired results thus enabling the intended findings for the study. Instrument reliability refers to the consistency of scores or answers from one administration of an instrument to another, and from one set of items to another. Reliability score of an instrument indicates the stability and consistency of items contained and to what limit it measures the concept in a correct manner as intended in the study. For this study, Cronbach's Alpha (α) was used to test for the instrument reliability (Forero, 2024). It is the measure of the extent to which all the variables in the scale are positively related to each other (Taber, 2018).

A Cronbach's Alpha (α) coefficient ranges from 0.00 to 1.00, with 0.00 indicating no consistency in measurement and 1.00 indicating perfect consistency. Referencing

Cronbach (1951) and Nunnally (1978), Kellstedt and Whitten (2013) suggest that the general guideline for assessing Cronbach's Alpha should be a value above 0.70, where a coefficient of 0.70 or higher is considered reliable, while a coefficient below 0.70 is deemed unreliable. In this study, a threshold of 0.7 was used, with coefficients below 0.7 considered unreliable and those above 0.70 accepted as reliable.

3.7.2 Validity of the Research Instrument

Mugenda & Mugenda (2008) defines validity as the ability of the research instruments to present their content meaningfully such that the respondent is aware of what is required of him or her. Instrument validity ensures the ability of an instrument to measure the intended concept (Al-Shboul et al., 2022). They add that is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform. Three kinds of validity were employed in the study. The types include face, content and construct validities. Face validity is the ability of the research instrument to be realistic and consistence such that the respondents understand the questions as it is intended. Since face validity is majorly subjective, it was tested by seeking the opinions of experts in digital transformation as well as the supervisor. Construct validity on the other hand refers to the suitability of the scale used for the purpose of operationalising the theoretical construct and measuring it. This type of validity was assessed using Principal Component Analysis (PCA) method of factor extraction. The responses from the plot study were loaded to the SPSS and factor loadings generated. According to Huansuriya et al., (2022), an item (question) had construct validity if the factor loadings were above 0.350. This means that any item with a factor loading below 0.350 was considered invalid and, therefore, subject to review.

Lastly, content validity which is the extent to which the items on an instrument accurately represent the subject of the study was evaluated. This assessment was carried out using a pre-test method, where the instrument was administered to a conveniently selected focus group of two experts. The purpose was to evaluate the clarity of the instrument's items, allowing for the removal or modification of any items that were insufficient in measuring the variables. This process was intended to enhance the quality of the research instrument and increase its validity.

3.8 Data Collection Procedure

The questionnaire was distributed using a drop-and-pick method, where it was delivered to the respondents at their workplace and collected at a mutually agreed time for analysis. To enhance the response rate, the respondents' assurance of confidentiality and willingness to participate and withdraw their participation at their time of need was upheld. Permission from the National Commission for Science, Technology and Innovation (NACOSTI) was sought and the license attached on the questionnaire as well as a research authorization letter from Mount Kenya University Graduate School.

3.9 Data Analysis

Data analysis is the sorting and simplification of the information gotten from the respondents and making it appropriate for presentation and interpretation for easier understanding. According to Clerk et al.,(2021) data analysis entails enhancing the usability of the responses by study respondents as per the study variables and making them bring out an elaborate framework of the research findings. Analysis of the data for this study was based on the research objectives whereby the data was graded

based on the variables of the study. All the quantitative questions in the questionnaire were assigned codes which were entered into the software (SPSS).

Quantitative data was analyzed using both descriptive and inferential statistics. Descriptive statistics were employed to describe the data as observed, using measures such as means, standard deviations, and frequencies. Inferential statistics, on the other hand, were used to examine the statistical relationships between the study variables, which was achieved through a regression model.

The regression model adopted in the study was of the form;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

Y = Competitive Advantage of Commercial Banks

X_1 = Digital Channels

X_2 = Digital Infrastructure

X_3 = Digital Proficiency X_4 = Data Management e = The error term β_1, β_2, β_3 and β_4 = Beta (β) Coefficients

3.10 Ethical Considerations

The research was designed, reviewed and undertaken with utmost integrity and guided by the principles of the Data Protection Act 2019. All participants were informed fully on the purpose, methods and intended possible uses of this research; what their participation entails, and any risks involved. They were encouraged to participate voluntarily, free from any coercion. Confidentiality of information

supplied by research subjects and the anonymity of respondents was held with utmost regard. The independence of this research was clear, as any conflicts of interest or prejudice were unequivocal. To ensure the confidence of the respondents based on the purpose of the study, a research approval from Mount Kenya University graduate school was attached on the questionnaire. Moreover, a research permit from the National Commission for Science, Technology and Innovation (NACOSTI) were attached on the questionnaire.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

The chapter presents the study findings on the effect of digital transformation strategies on competitive advantage of commercial banks in Kenya. The section highlights the rate of the responses, the demographic findings and descriptive analysis of the results on the effect of digital channels, digital infrastructure, digital proficiency and data management on competitive advantage of commercial banks in Kenya.

4.2 Response Rate

A total of 283 questionnaires were duly filled and met the intended criteria. A total of 347 questionnaires were issued to the sampled respondents. As expounded by Ngulube (2021), a response rate above 60 percent is sufficient for representation of the sample, while Kothari (2019) holds that a response of above 70% for relatively small sample sizes is adequate.

Table 2: Response Rate

Issued Questionnaires	Retrieved Questionnaires	Response Rate	Non-Response
347	283	81.6%	18.4%

Source: Researcher (2024)

As the results on Table 4.1 portray, the response rate was 81.6% where for the 347 sampled participants, 283 met the intended criteria. This response conforms to the threshold articulated by Kothari (2019), where 70% and above was obtained for both categories of respondents. This implies that the study had obtained the minimum required representation to make conclusions and recommendations.

4.3 Reliability Test Results

A test for reliability of the obtained data was carried out to ensure that internal consistency was attained even after the main data was collected. According to Price, Jhangiani, and Chiang (2015), it is appropriate to confirm the reliability of obtained data as it creates confidence in adequacy of collected data in terms of consistently responding to the research questions. This was conducted using Cronbach's alpha coefficient, with a threshold of 0.70 being maintained.

Table 3: Reliability Test

Variables	Cronbach's Alpha Coefficient (α)	Number of Items	Decision
Competitive Advantage of Commercial Banks	0.816	8	All 8 items are Reliable
Digital Channels	0.793	7	All 7 items are Reliable
Digital Infrastructure	0.809	7	All items Reliable
Digital Proficiency	0.811	8	All 8 items Reliable
Data Management	0.799	9	All 9 items are Reliable

Source: Researcher (2024)

From the above test the eight items under competitive advantage of commercial banks (dependent variable) had a cumulative Cronbach's alpha coefficient of 0.816 which is above the 0.70 threshold, implying that all the items were internally consistent. On the digital channels, all the seven (7) questions had a cumulative coefficient of 0.793>0.70, an indication that the items were reliable. Digital infrastructure had a coefficient of 0.809 with seven (7) items/questions. This was found to be reliable as it is above the 0.70 threshold. Digital proficiency was the other variable in the study which was addressed using eight (8) questions. As the results show, a coefficient of 0.811 was obtained for the

variable, implying that all the eight questions were internally consistent. Lastly, data management was addressed using nine (9) questions, all of which had a cumulative coefficient of 0.799>0.70 portraying that the questions were reliable and could consistently provide adequate information regarding data management.

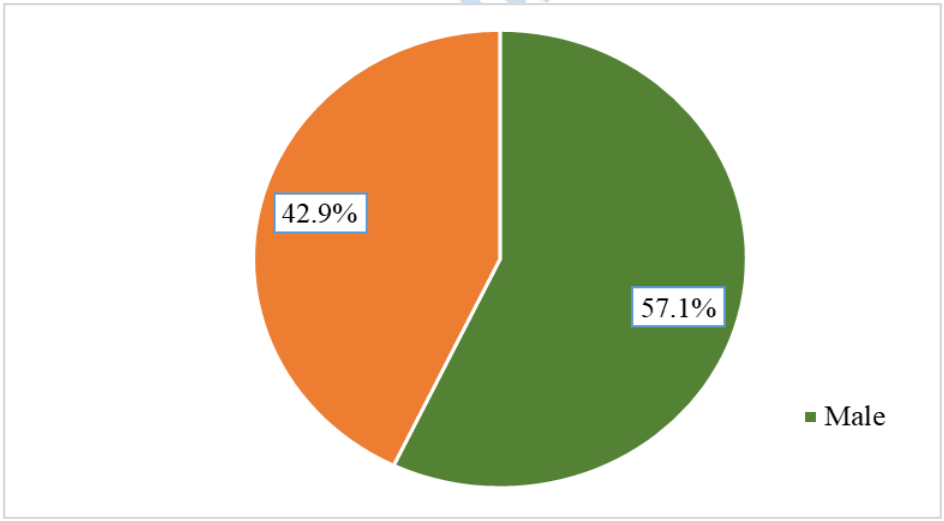
4.4 Demographic Results

The study collected several demographic information in a bid to seek background understanding of the respondents.

4.4.1 Gender of the Respondents

The study asked the participants to indicate their gender. This was meant to examine the gender distribution among the employees in he surveyed commercial banks, amidst the calls for gender inclusivity even in careers.

Figure 2: Gender of the Respondents



Source: Researcher (2024)

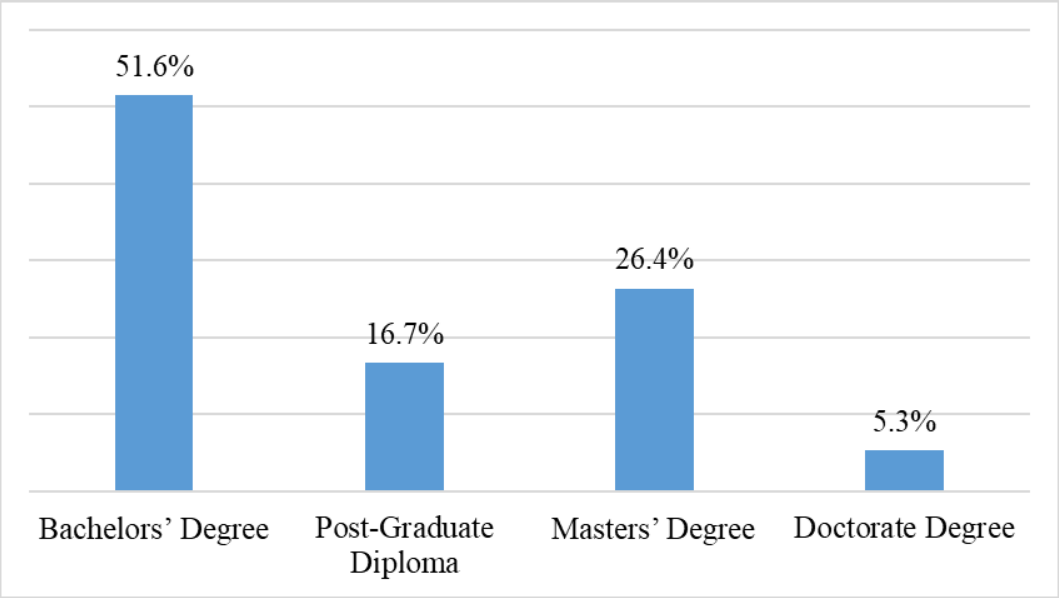
Majority of the participants (57.1%) were male with 42.9% being female. This signifies that most of the banks are still male-dominated as far as their staff is concerned. However,

with 42.9% being female, it shows that the banks have at least met the two-third gender rule that requires not more than two-thirds of employees in an organization to be from the same gender.

4.4.2 Education Level

The study sought to profile participants in relation to education level where participants were required to highlight the highest grade attained in relation to education status.

Figure 3: Education Level



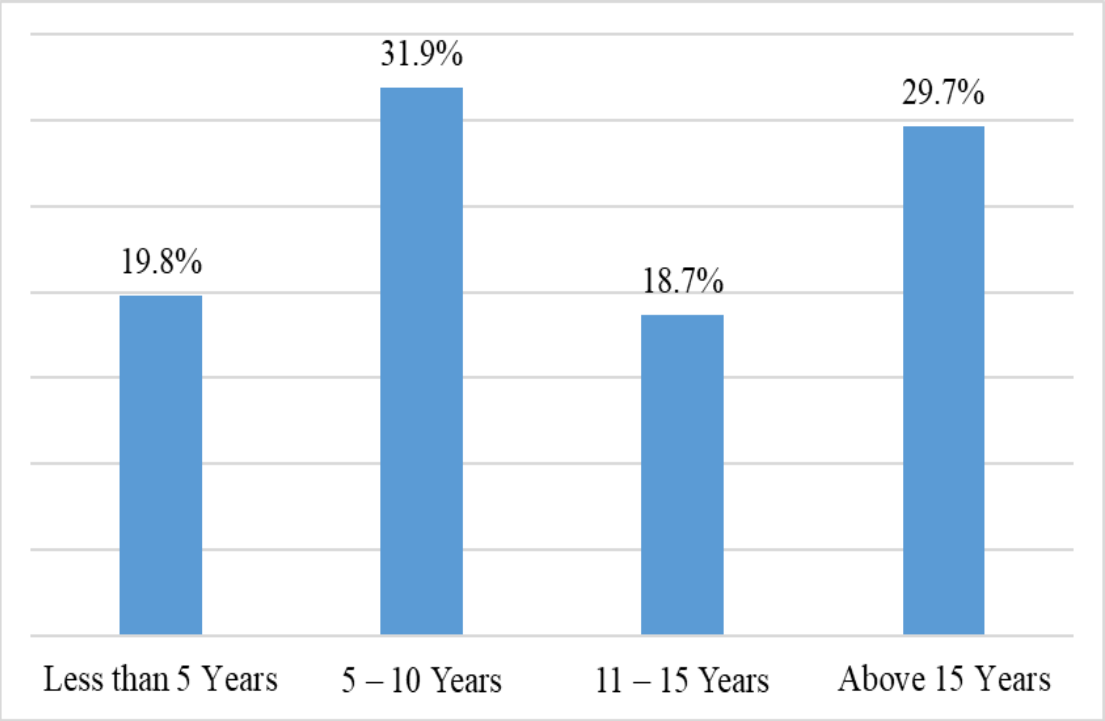
Source: Researcher (2024)

51.6% of the participants had a bachelors' degree, 16.6% had a post-graduate diploma as their highest level of educational attainment. Further, it was established that 26.4% of participants had a masters' degree, while 5.3% had a doctorate degree as their highest education attainment level. The results imply that most of the respondents had adequate educational background to effectively respond to the key research questions.

4.4.3 Level of Experience

The study also assessed the working experience among participants in their respective banks. This involved questions pertaining to the number of years that an employee had spent working in respective banks.

Figure 4: Level of Experience



Source: Researcher (2024)

From the above findings 19.8% of respondents had a previous working experience of less than 5 years, 31.9% had worked in banks for a period of ranging from 5 to 10 years, while 18.7% of the participants had previous working experience ranging between 11 to 15 years. The results further portray that 29.7% of the participants had an experience of over 15 years. With most of the participants having been in the industry for over 5 years, it shows that they have adequate experience and understanding on how their banks are managed and the extent to which they had embraced digital transformation strategies for enhanced competitiveness.

4.5 Descriptive Analysis Results

Descriptive analysis was done, where the participants' opinions on the research questions were presented as they were. Key statistics included standard deviations, means, and percentages. The analysis was systematically aligned with the research aims of the study. According to Merkiers (2020), descriptive statistics is crucial for not only interpreting the findings as obtained from the respondents, but also showing a clear picture of the situation as far as the research problem is concerned.

4.5.1 Digital Channels in Commercial Banks in Kenya

The study aimed at examining the function of digital channels in enhancing competitive advantage of commercial banks in Kenya. The responses were sought from the respondents in regard to extent to which they consented or did not consent on key statements on digital channels embraced in their respective banks.

Table 4: Descriptive Statistics on Digital Channels

Statements	SD %	D %	N %	A %	SA %	Mean	Std. Dev.
1. We offer various digital banking modes to our customers to enhance efficiency service delivery	16.4%	7.5%	12.1%	29.9%	34.2%	3.69	0.81
2. The online banking methods adopted in our bank are frequently enhanced to ensure reliability	26.4%	23.6%	9.9%	16.0%	24.2%	2.41	1.00

3. Our bank has an online platform where customers can raise their queries anytime	33.0%	16.5%	19.8%	9.9%	20.9%	2.91	0.99
4. Our bank has active social media platforms for sharing information with our customers	13.1%	8.6%	17.6%	25.4%	35.4%	3.71	0.91
5. There are prompt responses and feedback to our customers' concerns through digital platforms	29.7%	32.1%	8.8%	14.1%	15.4%	2.63	0.95
6. Our bank has optimized digital marketing to expand its reach to more customers	31.9%	12.1%	15.4%	27.5%	13.2%	3.09	1.06
7. We frequently promote our products through social media as a key digital market tool	26.6%	39.3%	10.7%	14.5%	8.9%	2.48	1.26

Source: Researcher (2024)

Most of the participants agreed that their banks offered various digital banking modes to our customers to enhance efficiency service delivery as indicated by a mean of 3.69 and a standard deviation of 0.81 (Agree = 29.9%; Strongly Agree = 34.2%). The respondents however disagreed that the online banking methods adopted in their respective banks were frequently enhanced to ensure reliability. This is indicated by an average of 2.41 and a standard deviation of 1.00. The participants disagreed that their banks had online platforms where customers could raise their queries anytime (Mean = 2.91; Standard Deviation = 0.99). The results are a clear indication that while most of the banks had embraced online banking modes, the banks failed to adequately improve these modes to enhance their efficiency and effectiveness towards delivering quality services to the customers. The banks also lacked proper engagement platforms to seek and give feedback to their customers as and when needed. These aspects as argued by Hanelt et al. (2021) are the major setbacks to effectiveness of digital platforms towards contributing to competitive advantage.

The findings also posited that most of the banks had active social media platforms for sharing information with their customers (A = 25.4%; SA = 35.4%; Mean = 3.71; Standard deviation = 0.91). The participants did not consent to the notion that there were prompt responses and feedback to their customers' concerns through digital platforms. This is depicted by an average of 2.633 and a standard of 0.958. With ineffective feedback and prompt responses, the banks fail to engage their customers effectively, despite having the active social media platforms which would be effective tools for customer engagement. The participants neither agreed nor disagreed on the perception that the banks had optimized digital marketing to expand their reach to more customers (Mean = 3.097; Standard Deviation = 1.063) but disagreed that they frequently promote their products through social media as a key digital market tool (Strongly Disagree = 26.6%; Disagree = 39.3%; Mean = 2.48; Std. Dev. = 1.26). The findings are an implication that the digital channels although in existence, they have not been effectively utilized among most of the banks in enhancing effective service delivery for enhanced competitiveness. These findings are in line with those by Kainduku and Ngelei (2021) who stated that while organizations may uphold key digital channels as one of their digital transformation strategy, without effective alignment of these channels with the daily activities of the bank, the potential of these channels may not be achieved.

4.5.2 Digital Infrastructure in Commercial Banks in Kenya

The second aim of the study was to examine the effect of digital infrastructure on competitive advantage of commercial banks in Kenya. Responses were sought from respondents in regard to the function played by digital infrastructure as a digital transformation strategy on competitiveness of their respective banks.

Table 5: Descriptive Statistics on Digital Infrastructure

Statements	SD	D	N	A	SA	Mean	Std. Dev.
	%	%	%	%	%		
1. Our bank has adequate information technology hardware tools to support digital processes	23.6%	24.2%	12.1%	23.1%	17.1%	2.910	1.003
2. The ICT hardware available in our bank is up-to-date and in good working condition to support the bank's digital activities	27.5%	23.1%	12.1%	17.6%	19.8%	2.611	0.977
3. The bank has adequate software such as operating systems to support its digital platforms	24.2%	31.9%	17.6%	13.2%	13.2%	2.709	1.005
4. The bank has secure softwares that are not prone to digital security threats such as cyber attacks	23.1%	42.9%	6.6%	18.7%	8.8%	2.640	1.088
5. The bank has a reliable internal network to support its internal communications	25.3%	23.2%	7.6%	19.8%	24.2%	2.873	1.031
6. The bank has a stable external network to support its external communications	36.3%	25.3%	8.8%	6.6%	23.1%	2.915	0.856
7. The management invests adequately in improving the status of the bank's digital infrastructure from time to time	41.7%	21.1%	12.1%	8.7%	17.5%	2.582	0.917

Source: Researcher (2024)

Most of the participants did not consent to the notion that their respective banks had adequate information technology hardware tools to support digital processes. This is depicted by an average mean of 2.910 and a standard deviation of 1.003. The findings indicate that most of the participants were in disagreement with the statement that the ICT hardware available in the banks was up-to-date and in good working condition to support the bank's digital activities (Mean = 2.611 Standard Deviation = 0.977). The findings are a clear indication that the banks lacked adequate and effective technologic equipment (physical) to support their digital operations and promote effective and efficient service delivery to their customers. According to Ndubuisi et al. (2021), without

appropriate ICT hardware, organizations found it challenging to implement key digital approaches and processes as the equipment are central to any ICT process.

The results further revealed that most of the respondents did not consent with the notion that their banks had enough software such as operating systems to support their digital platforms as highlighted by an average mean of 2.709 and standard deviation of 1.005. The findings are an implication that the management of these banks was not keen on ensuring that the banks were in a good capacity to integrate key digital processes as these processes require the right ICT software which most of the lacked. From the findings above most banks lacked secure softwares that were not prone to digital security threats such as cyber-attacks (Mean = 2.640; Standard deviation = 1.088). Having software that is prone to attacks is a major threat to digital presence of every organization, particular commercial banks. According to Abuhasan and Moreb (2021), most modern organizations fail to benefit fully from digitalization strategy as they fail to keenly lay emphasis on appropriate technology softwares to support their digital platforms.

Most of the participants failed to agree with the notion that their respective banks had a reliable internal network to support their internal communications. This depicted by an average mean of 2.873 and a standard deviation of 1.031. From the findings, most of the participants disagreed that their respective banks had a stable external network to support their external communications (Mean = 2.915; Std. Dev. = 0.856). The participants also disagreed that the prevailing management in their workplace had invested adequately in improving the status of the banks' digital infrastructure from time to time (Mean = 2.482; Std. Dev. = 0.917). Network and specifically internet is an integral component of digital infrastructure that promotes connectivity and seamless flow of information. Without a stable internal network, the banks are disadvantaged of effective communication

internally, and without a stable and strong external network, the banks are deprived of external information flow which is essential for continuous learning and understanding what is happening in the external world. The findings corroborate those of Mukuni (2019) who postulated that as a result of ineffective integration of proper digital infrastructure, modern organizations failed to fully implemental digital strategies as infrastructure is a core driver to these strategies.

4.5.3 Digital Proficiency in Commercial Banks in Kenya

The study sought to examine the effect of digital proficiency on competitive advantage of commercial banks in Kenya. The respondents were requested to express their levels of agreement or disagreement with key statements related to digital proficiency within their respective banks.

1.	Our bank has adequate ICT personnel dedicated to undertake the digital processes	27.5%	30.8%	7.7%	11.0%	23.1%	2.712	0.919
2.	The ICT personnel in the bank have the right digital skills that aligns with digital competences needed	29.7%	15.4%	16.5%	15.4%	23.1%	2.986	1.038
3.	The management supports frequent training of the employees on ICT skills required to run our digital platforms	27.5%	30.8%	12.1%	11.0%	18.7%	2.754	0.993

	19.8%	28.7%	14.3%	18.7%	18.6%	2.711	1.026
4. Employees are allowed to seek further training to enhance their digital proficiency							
5. There are on-the-job training programmes in our bank dedicated to equip the staff with digital skills	17.6%	25.3%	14.3%	18.7%	24.2%	2.918	0.856
6. The bank has the right technical support team to undertake technical issues in our digital processes	34.1%	22.1%	6.6%	13.2%	23.1%	2.412	1.071
7. The bank outsources critical technical experts when need arises to keep our digital platforms running	23.4%	34.9%	12.8%	14.0%	14.9%	2.721	1.430
8. The current level of digital proficiency in our bank is adequate to effectively run digital programmes and platforms in the bank	27.0%	34.9%	19.1%	10.4%	8.5%	2.183	1.261

Statements	**SD %**	**D %**	**N %**	**A %**	**SA %**	**Mean**	**Std. Dev.**

Table 6: Descriptive Statistics on Digital Proficiency

Source: Researcher (2024)

From the findings majority of the participants did not consent to the perception that their banks had sufficient ICT personnel dedicated to undertake the digital processes (Mean = 2.712; Std. Dev. = 0.919). Most of the participants further did not consent to the notion that the ICT personnel in their respective banks possessed the right digital skills that aligns with digital competences needed. This is depicted by an average mean of 2.986 and a standard deviation of 1.038. The results indicated that most of the participants disagreed that their respective banks' management supported frequent training of the employees on ICT skills required to run the digital platforms as illustrated by a mean of 2.754 and a standard deviation of 0.993. This portrays that most of the banks lacked

appropriate ICT skills where there were inadequate personnel dedicated to ICT. With inadequate ICT skills, it makes it difficult for the banks to effectively utilize digital strategies for enhanced competitiveness. According to Kingori and Mwemba (2022), for banks to fully integrate digital systems and processes for enhanced competitiveness, they ought to have adequate ICT skills and competencies.

The findings further stated that most of the participants failed to agree that employees in their workplace were allowed to seek further training to enhance their digital proficiency (Mean = 2.711; Std. Dev. = 1.026). Majority of the respondent leaned on the opinion that their banks lacked the right technical support team to undertake technical issues in their digital processes (Mean = 2.918; Standard dev. = 0.856). Most of the participants also disagreed that their respective banks outsourced critical technical experts when need arises to keep their digital platforms running (Mean = 2.412; Std. Dev. = 1.071). The participants also did not agree with the notion that the current level of digital proficiency at their banks was adequate to effectively run digital programmes and platforms in the bank (Strongly Disagree = 27.0%; Disagree = 34.9%; Mean = 2.183; Std. Dev. = 1.261).

The findings are an indication that digital proficiency was not adequate in most of the banks, and this would limit their ability to integrate digital strategies for enhanced competitiveness. According to Maingi & Wachira (2022), digital proficiency has a pivotal function in steering the knowledge and expertise of organization's workforce on use and embrace of digital technologies towards enhancing competitiveness.

4.5.4 Data Management in Commercial Banks in Kenya

The last objective of the study was to examine the effect of data management on competitive advantage of commercial banks in Kenya. Data management is a critical

digital transformation strategy that enhances the banks' ability to safely store use and disseminate data for continued competitiveness. The respondents were asked to express their level of agreement or disagreement using a five-point Likert scale.

Table 7: Descriptive Statistics on Data Management

Statements	SD %	D %	N %	A %	SA %	Mean	Std. Dev.
1. The bank has always ensured accuracy of customers' data by ensuring the right information is captured and stored appropriately	13.2%	14.3%	11.0%	27.5%	34.1%	3.78	1.104
2. The consistency and completeness of our bank's data has been maintained through embrace of digital systems	37.4%	14.3%	9.9%	8.8%	29.7%	2.88	0.968
3. The bank has been committed in ensuring data integrity to enhance trust among the customers	31.9%	11.0%	18.7%	12.1%	26.4%	2.98	0.89

4. Digital systems have been used to manage information in our bank to enhance its quality	30.9%	24.2%	15.4%	16.5%	13.1%	2.61	1.01
5. The available data management systems in our bank have always provided well-organized and valid information	15.4%	11.0%	9.9%	42.9%	20.9%	3.71	0.97
6. The information generated through our systems is more reliable and ease to use	14.3%	11.0%	14.3%	31.9%	28.6%	3.82	1.12
7. There have been no serious incidences of data breach in our bank for the last five years	19.8%	11.0%	14.3%	30.8%	24.2%	3.78	1.10
8. The bank has always assured its customers and other stakeholders of security of its data stored in the digital platforms	33.8%	26.3%	9.1%	11.3%	19.5%	2.470	1.117
9. The current approaches used in managing data in our bank are adequate to maintain quality, accessible, adequate and valid data	28.4%	36.5%	7.1%	16.8%	18.2%	2.421	1.226

Source: Researcher (2024)

The study indicates that most of the respondents agreed that their respective banks had always ensured accuracy of customers' data by ensuring the right information is captured and stored appropriately. This is depicted by a mean of 3.78 and a standard deviation of 1.10. They also failed to agree that the consistency and completeness of their banks' data had been maintained through embrace of digital systems (Mean = 2.88; Std. Dev. = 0.96). In addition, 31.9% of the participants strongly disagreed that their respective banks had been committed in ensuring data integrity to enhance trust among the customers, while 26.4% of the participants strongly agreed with the notion. This is an indication that data integrity was not adequately upheld in most of the banks. According to Nousopoulou et al. (2022), without effective uphold of data integrity, organizations risk losing their data to fraudsters, as well as lack of customer trust due to data insecurity.

Majority of the participants disagreed that digital systems had been used to manage information in their bank to enhance its quality (Strongly Disagree = 30.9%; Disagree = 24.2%; Mean = 2.61; Std. Dev. = 1.01). The participants however agreed that the available data management systems at their workplace had always provided wellorganized and valid information (Agree = 42.9%; Strongly Agree = 20.9%; Mean = 3.71; Std. Dev. = 0.97). The respondents also agreed that the information generated through their systems was more reliable and ease to use (Agree = 31.9%; Strongly Agree = 28.6%; Mean = 3.82; Std. Dev. = 1.12). The findings are an indication that the respondents still perceive information stored and generated through digital systems to be more accurate and easy to use than manual data.

From the findings, most of the participants consented to the perception that there had been no serious incidences of data breach in their respective banks for the last five years (Agree = 30.8%; Strongly Agree = 24.2%; Mean = 3.78; Std. Dev. = 1.10). Further, most of the participants did not agree to the perception that their banks always assured their customers and other stakeholders of security of the data stored in the digital platforms (Strongly Disagree = 33.8%; Disagree = 26.3%; Mean = 2.470; Std. Dev. = 1.117). The respondents also disagreed that the current approaches used in managing data in their respective banks were adequate to maintain quality, accessible, adequate and valid data (Strongly Disagree = 28.4%; Disagree = 36.5%; Mean = 2.421; Std. Dev. = 1.226). The findings are an indication that digital systems are essential in enhancing effective data management. The findings corroborate those of Kinyanjui (2020) who concluded that data management through digital systems is integral in enhancing ease access to data for effective decision-making.

4.5.5 Competitive Advantage of Commercial Banks

The study aimed to establish the respondents' views in regard to competitive advantage of commercial banks. Competitive advantage was assessed using customer experience, market share, revenue growth, operational efficiency, and strategic partnerships. The respondents were asked to express their level of agreement or disagreement with specific statements related to various aspects of competitive advantage. **Table 8: Descriptive Statistics on Competitive Advantage**

Statements	SD %	D %	N %	A %	SA %	Mean	Std. Dev.
1. Our bank has always met customer needs and expectations in the past five years	41.8%	20.8%	14.3%	7.7%	15.5%	2.73	0.97
2. The level of customer satisfaction in our bank has increased significantly for the past five years	30.7%	36.2%	5.5%	13.3%	14.4%	2.70	1.02
3. We have retained more customers in our bank in the past three years	39.5%	27.5%	14.3%	13.3%	5.5%	2.66	0.98
4. The bank's market share has significantly grown for the past three years	29.7%	38.5%	7.6%	8.8%	15.5%	2.72	0.89
5. There has been a significant revenue growth in our bank for the last three years	19.8%	34.1%	16.5%	17.6%	12.1%	2.78	1.01
6. The bank operates more efficiently that it was in the past five years	29.8%	33.4%	6.4%	11.3%	19.1%	2.76	1.54

7. The waiting time of our services has significantly reduced in the last five years	34.0%	32.1%	6.2%	17.2%	10.5%	2.57	1.24
8. The bank has created strategic partnerships to foster its delivery of services in the last three years	27.7%	34.0%	12.8%	21.3%	4.3%	2.40	1.23

Source: Researcher (2024)

The findings indicate that most of the participants disagreed with the notion that their respective banks had always met customer needs and expectations dating back to the previous five years (Strongly Disagree = 41.8%; Disagree = 20.8%; Mean = 2.73; Std. Dev. 0.97); and that the level of customer satisfaction in the banks had rised significantly for the past five years (Strongly Disagree = 30.7%; Disagree = 36.2%; Mean = 2.70; Std. Dev. 1.02). The findings concluded that most of the participants disagreed with the perception that their respective banks had retained more customers in the past three years (Strongly Disagree = 39.5%; Disagree = 27.5%; Mean = 2.66; Std. Dev. 0.98).

The findings indicated that majority of participants stated that the banks had not significantly grown their market share during the previous five years (Strongly Disagree = 29.7%; Disagree = 38.5%; Mean = 2.72; Std. Dev. 0.89). The respondents further disagreed that there had been a significant revenue growth in their respective banks during the last three years (Strongly Disagree = 19.8%; Disagree = 34.1%; Mean = 2.78; Std. Dev. 1.01); and that the banks operated more efficiently that they were in the previous five years (Strongly Disagree = 29.8%; Disagree = 33.4%; Mean = 2.76; Std. Dev. 1.54). The findings showed that most of the banks had not significantly reduced waiting time of their services in the last five years (Strongly Disagree = 34.0%; Disagree = 32.1%; Mean = 2.57; Std. Dev. 1.24). Moreover, most of the banks had not created strategic partnerships to foster delivery of services in the last three years (Strongly Disagree = 27.7%; Disagree = 34.0%; Mean = 2.40; Std. Dev. 1.23). The findings are an indication that most of the banks were not competitive as they did not see a significant growth in market share, revenues and customer satisfaction.

4.6 Correlation Analysis Results

A correlation analysis was conducted to determine the relationship between the independent variables (digital channels, digital infrastructure, digital proficiency, and data management) and the dependent variable (competitive advantage of commercial banks in Kenya). This was done using the Pearson Correlation coefficient (r) which assumes that strong correlations have a correlation coefficient of above 50% (0.5). As depicted in table 9, Pearson Correlation coefficient (r) between digital channels and the competitive advantage of commercial banks was 0.761, indicating a strong correlation of 76.1%. Additionally, the results showed that digital infrastructure had a strong correlation with the competitive advantage of commercial banks in Kenya, with a coefficient of 0.754. The correlation between digital proficiency and competitive advantage was 0.751, reflecting a strong relationship of 75.1%. Moreover, the correlation between data management and the competitive advantage of commercial banks in Kenya was also strong, with a coefficient of 0.772 (r =0.772). The levels of significance for all the variables were within the 95% confidence level (P<0.05) implying that digital channels, digital infrastructure, digital proficiency, and data management had a significant correlation with competitive advantage of commercial banks in Kenya. The findings agree with those by Verma et al. (2022) who concluded that digital transformation strategies are integral in enhancing firm competitive advantage.

Table 9: Correlation Analysis Results

		Banks' Competitive Advantage	Digital Channels	Digital Infrastructure	Digital Proficiency	Data Management
Banks' Competitive Advantage	Pearson Correlation	1				

	Sig. (2tailed)					
	N	283				
Digital Channels	Pearson Correlation	.761**	1			
	Sig. (2tailed)	.000				
	N	283	283			
Digital Infrastructure	Pearson Correlation	.754**	.669**	1		
	Sig. (2tailed)	.000	.000			
	N	283	283	283		
Digital Proficiency	Pearson Correlation	.751**	.606**	.653**	1	
	Sig. (2tailed)	.000	.000	.000		
	N	283	283	283	283	
Data Management	Pearson Correlation	.772**	.624**	.729**	.788**	1
	Sig. (2tailed)	.000	.000	.000	.000	
	N	283	283	283	283	283

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

Source: Researcher (2024)

4.7 Regression Analysis Results

Regression analysis using a multiple regression model was used to establish the relationship between digital channels, digital infrastructure, digital proficiency, and data management and competitive advantage of commercial banks in Kenya. The following model was utilized:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where:

Y: Competitive Advantage of commercial banks;

X_1: Digital Channels;

X_2: Digital Infrastructure;

X_3: Digital Proficiency;

X_4: Data Management

$\mathcal{E}$: the error term, β_0: constant term; and β_1, β_2, β_3, & β_4 were coefficients for independent variables.

4.7.1 Model Summary

A model summary was utilized to assess the strength of the model as illustrated in table 10. As the results portray, the R (which is the correlation coefficient) of 0.874 was obtained, implying that when combined, the independent variables had an overall correlation of 87.4% with competitive advantage of commercial banks in Kenya. The RSquare (R2) of 0.765 on the other hand implied that there was a 76.5% variation in competitive advantage of commercial banks as a results on the combined effect of digital channels, digital infrastructure, digital proficiency, and data management.

Table 10: Model Summary Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874[a]	.765	.755	.48226

a. Predictors: (Constant), Digital channels, digital infrastructure, digital proficiency, and data management

Source: Researcher (2024)

4.7.2 Analysis of Variance

An analysis of variance (ANOVA) test was carried out, which is meant to test the significance of the regression model. Through this test an F-statistic of 130.331 was obtained. This being within the 95% confidence level as shown by the P-value of 0.000<0.05, it was concluded that the model was statistically significant in forecasting the association between digital transformation strategies (digital channels, digital infrastructure, digital proficiency, and data management) and competitive advantage of commercial banks in Kenya.

Table 11: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	174.016	4	43.504	130.331	.000[b]
Residual	92.793	278	.334		
Total	266.809	282			

a. Dependent Variable: Competitive Advantage of Commercial Banks
b. Predictors: (Constant), Digital channels, digital infrastructure, digital proficiency, and data management

Source: Researcher (2024)

4.7.3 Regression Coefficients

The regression coefficients were fit in a model as in table 11. The unstandardized beta coefficients (β) were used in this study, as they portray the original scenario as far as the association between manipulating variables and the response variable is concerned. From the coefficients, the following model is derived:

$$\mathbf{Y = 0.151 + 0.303X_1 + 0.212X_2 + 0.214X_3 + 0.232X_4}$$

From the model, therefore, it can be concluded that with a Beta coefficient (β) of 0.303, digital channels has the strongest influence on competitive advantage of commercial banks in Kenya. It can also be deduced that a unit change in digital channels influences competitive advantage of commercial banks in Kenya by 0.303 units, holding all the other variables constant. Moreover, it was established that digital infrastructure had the lowest influence on competitive advantage of commercial banks in Kenya as shown by the Bet Coefficient (β) of 0.212. A unit change in digital infrastructure influences competitive advantage of commercial banks by 0.212 units.

Table 4.11: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	.151	.163		.925	.357
Digital Channels	.303	.062	.339	4.868	.000
Digital Infrastructure	.212	.077	.215	2.734	.007
Digitals Proficiency	.214	.077	.230	2.787	.006
Data Management	.232	.094	.223	2.469	.001

a. Dependent Variable: Competitive Advantage of Commercial banks

Source: Researcher (2024)

The regression coefficient (β) for digital channels is 0.303 and the p-value is 0.000<0.05. This implies that digital channels would influence competitive advantage of commercial banks by up to 0.303. The P-value of 0.000 is below the standard threshold of 0.05, indicating that digital channels have a significant impact on the competitive advantage of commercial banks in Kenya. These findings align with Setzke et al., (2023), who found that digital channels play a crucial role in improving the efficiency of banking processes,

including facilitating the delivery of products through digital platforms for enhanced service efficiency and effectiveness.

The Beta coefficient for digital infrastructure was 0.212, suggesting that a change in digital infrastructure affects the competitive advantage of commercial banks in Kenya. The P-value for digital infrastructure was 0.007, which is less than 0.05, indicating that digital infrastructure has a significant impact on the competitive advantage of commercial banks. These results are consistent with Ogiri (2020), who noted that digital infrastructure is crucial for the effective adoption of digital processes. Similarly, Muhoro & Mungai (2018) highlighted that appropriate digital infrastructure, including ICT hardware and software, is essential for banks to effectively integrate key digital systems and enhance their operational efficiency.

The findings on Table 11 further reveal that the digital proficiency significantly influenced competitive advantage of commercial banks in Kenya (β=0.214; P=0.006<0.05). The beta coefficient of 0.214 implies that digital proficiency is responsible for 0.214 of competitiveness of commercial banks in Kenya. The P-value of 0.006 1is less than the standard p-value of 0.05, implying that digital proficiency would significantly influence the competitiveness of commercial banks in Kenya. The results concur with those by Wang et al. (2020) who established that digital proficiency through ICT skills has a pivotal role in enhancing effectiveness of digital processes in an organization.

The regression coefficient (β) for data management is 0.232 and the p-value is 0.001<0.05. This coefficient indicates that data management contributes to 23.2% of the competitiveness of tier-three commercial banks in Kenya. The p-value of 0.001 signifies

that data management significantly improves the competitive advantage of commercial banks in Kenya. These results align with the findings of Tsou and Chen (2023), who demonstrated that effective data management is crucial for optimizing digital processes, thereby enhancing performance and competitiveness.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter covers the summary of findings of the study regarding the effect of digital transformation strategies on competitive advantage of commercial banks in Kenya. The chapter highlights the summary of findings on specific objectives of the study. The chapter also covers the conclusions, the recommendations as well as suggestion for further studies.

5.2 Summary of the Study

The study's main aim was to examine the effect of digital transformation strategies on competitive advantage of commercial banks in Kenya. The study specifically sought to examine the effect of: digital channels on competitive advantage of commercial banks, digital infrastructure on competitive advantage of commercial banks, digital proficiency on competitive advantage of commercial banks, and data management on competitive advantage of commercial banks in Kenya.

5.2.1 Digital Channels and Competitive Advantage of Commercial Banks in Kenya

The first object of the study was to examine the effect of digital channels on competitive advantage of commercial banks in Kenya. The findings revealed that while commercial banks in Kenya have implemented various digital banking modes to enhance service efficiency, significant shortcomings hinder their competitive advantage. The majority of respondents agreed that these banks offer digital banking services, indicating a positive perception of service delivery. However, there is a notable lack of frequent enhancements

to ensure the reliability of these services. Additionally, banks appear to lack adequate online platforms for customers to raise queries, indicating insufficient customer engagement mechanisms. While many banks maintain active social media platforms for information dissemination, they fail to provide prompt responses to customer concerns, an issue that could ultimately affect customer satisfaction. These findings suggest that despite the presence of digital channels, they are not effectively utilized, limiting their potential to enhance service delivery and competitiveness.

5.2.2 Digital Infrastructure and Competitive Advantage of Commercial Banks in Kenya

The study aimed to assess the impact of digital infrastructure on the competitive advantage of commercial banks in Kenya. The findings revealed significant deficiencies in the digital infrastructure of most of the surveyed banks. A majority of respondents disagreed that their banks possessed adequate information technology hardware, indicating insufficient physical tools to support digital processes. Additionally, most respondents believed that the existing ICT hardware was outdated and not in good working condition. Similarly, there was a consensus that the banks lacked adequate software, including secure operating systems necessary for digital platforms, with the majority also concerned about the susceptibility of the software to digital security threats like cyberattacks. Furthermore, respondents indicated that both the internal and external networks were unreliable, hampering effective communication and connectivity. There was also a noted lack of investment in upgrading digital infrastructure. Overall, the results suggest that inadequate and outdated digital infrastructure significantly hinders the banks' ability to implement digital strategies effectively and thus impacts their competitive advantage.

5.2.3 Digital Proficiency and Competitive Advantage of Commercial Banks in Kenya

The study investigated the effect of digital proficiency on the competitive advantage of commercial banks in Kenya. The findings revealed that most of the banks surveyed lacked adequate ICT personnel dedicated to digital processes. Furthermore, the existing ICT staff were perceived to lack the necessary digital skills aligned with required competencies. It was also found that bank management did not sufficiently support frequent training for employees on essential ICT skills. This lack of investment in developing digital skills suggests a broader deficiency in ICT expertise within these institutions. Additionally, respondents disagreed that employees were encouraged to pursue further training to enhance their digital proficiency. The study also noted that banks lacked the appropriate technical support teams to handle technical issues, and rarely outsourced critical technical experts when necessary. Overall, respondents felt that the current level of digital proficiency was insufficient to effectively manage digital programs and platforms. These findings underscore a significant gap in digital proficiency, which could impede the banks' ability to integrate and leverage digital strategies for competitive advantage.

5.2.4 Data Management and Competitive Advantage of Commercial Banks in Kenya

The study aimed to assess the effect of data management on the competitive advantage of commercial banks in Kenya. The findings indicate a mixed perception regarding the effectiveness of data management practices. A majority agreed that their banks ensured the accuracy of customer data, suggesting that correct information is being captured and stored. However, respondents disagreed that data consistency and completeness were

adequately maintained through digital systems. There was also a divided opinion on the commitment to data integrity; indicating a lack of uniform standards in maintaining data integrity. The results also showed that many respondents did not believe digital systems had been effectively used to manage information quality. Despite this, many agreed that the data management systems in place provided well-organized and valid information and that the information generated was reliable and easy to use. The majority also reported no serious data breaches in the last five years. Nonetheless, a significant portion of respondents disagreed that their banks assured customers of data security and maintained adequate data management practices. These findings highlight the critical role of digital systems in data management but also reveal significant gaps in ensuring data integrity and security.

5.3 Conclusion of the Study

The study concludes that while Kenyan commercial banks have adopted digital channels, these platforms are not being fully leveraged to achieve competitive advantage. The banks have established various digital banking modes and active social media presence, but there are critical gaps in their implementation, particularly in terms of service reliability, customer engagement, and responsiveness. The inadequacy of prompt feedback mechanisms and the underutilization of digital marketing tools further hinder the potential benefits of these channels. This misalignment between digital strategies and operational practices results in a failure to fully capitalize on digital channels, ultimately limiting the banks' ability to enhance service delivery and compete effectively in the market.

The study concludes that the digital infrastructure of commercial banks in Kenya is insufficient and outdated, undermining their ability to maintain a competitive edge. The lack of adequate and up-to-date ICT hardware and software, alongside unreliable internal and external networks, presents significant challenges to the banks' digital transformation efforts. The vulnerability of their software to cyberattacks further exacerbates the risks associated with their digital operations. These deficiencies prevent the banks from fully implementing key digital strategies, thereby limiting their potential to offer efficient and secure digital services. As a result, the banks are at a disadvantage compared to more digitally equipped competitors.

On digital proficiency as another core digital transformation strategy, it was concluded that the lack of digital proficiency in Kenyan commercial banks significantly hampers their ability to achieve a competitive advantage. The findings highlight a deficiency in both the quantity and quality of ICT personnel, as well as inadequate support for employee training and development in digital skills. This shortfall in digital expertise extends to a lack of technical support and reluctance to outsource necessary technical expertise. Consequently, the current digital proficiency levels are insufficient to effectively run and manage digital platforms and programs, limiting the banks' potential to fully embrace and benefit from digital transformation strategies.

Lastly, the study concluded that while Kenyan commercial banks have implemented some digital systems for data management, there are notable deficiencies that could undermine their competitive advantage. Although there is some confidence in the accuracy and reliability of data generated through digital systems, issues such as data consistency, integrity, and security remain problematic. The inconsistent commitment to maintaining data integrity and the lack of assurance regarding data security indicate

weaknesses in the banks' data management practices. These shortcomings can affect customer trust and the banks' overall effectiveness in leveraging data for decision-making and competitive positioning.

5.4 Recommendations of the Study

To enhance the effectiveness of digital channels and secure a competitive edge, it is recommended that Kenyan commercial banks invest in regularly upgrading their digital platforms to ensure reliability and improve user experience. They should establish comprehensive online platforms for real-time customer support and feedback, which will enhance customer engagement and satisfaction. Additionally, banks should adopt a proactive approach in digital marketing, utilizing social media and other digital tools to promote their products and services more frequently. By aligning digital strategies with day-to-day operations and fostering a responsive digital environment, banks can better meet customer needs, improve service quality, and strengthen their market position.

To enhance their competitive advantage, it is recommended that Kenyan commercial banks invest in upgrading their digital infrastructure. This includes acquiring up-to-date ICT hardware and ensuring it is well-maintained to support digital operations effectively. Additionally, banks should implement secure, reliable software systems to protect against cyber threats and support seamless digital transactions. Improving both internal and external network stability is crucial for efficient communication and information flow. Management should prioritize ongoing investments in digital infrastructure to keep pace with technological advancements and maintain robust, secure, and efficient digital platforms. By addressing these critical areas, banks can better implement digital strategies, improve service delivery, and enhance customer satisfaction.

To improve digital proficiency and, in turn, enhance competitive advantage, Kenyan commercial banks should prioritize hiring and retaining qualified ICT personnel dedicated to digital processes. It is crucial for these institutions to invest in regular and comprehensive training programs to ensure that their employees possess up-to-date digital skills and competencies. Banks should also encourage and support continuous professional development by allowing employees to seek further training in digital technologies. Establishing a robust in-house technical support team, complemented by the strategic outsourcing of specialized expertise when necessary, will help address technical challenges promptly. By fostering a culture of digital proficiency, banks can better implement digital strategies, improve operational efficiency, and strengthen their market position.

The management of commercial banks in Kenya has a duty to ensure effective data management to enhance their competitive advantage. The managers should prioritize the implementation of robust digital systems that ensure data consistency, integrity, and security. This involves investing in advanced technologies and protocols that protect against data breaches and ensure the secure handling of customer information. Banks should also establish clear standards and practices for maintaining data accuracy and completeness, supported by regular audits and updates. Additionally, it is crucial to enhance communication with customers and stakeholders about the measures taken to secure their data, thereby building trust and confidence. Strengthening the data management framework will not only improve the quality and accessibility of information but also support more effective decision-making processes, ultimately contributing to the banks' competitive edge.

5.5 Suggestion of Areas for Further Studies

The study focused on digital transformation strategies in enhancing competitive advantage of commercial banks in Kenya. Four main digital transformation strategies were addressed including digital channels, digital infrastructure, digital proficiency and data management. It is recommended that a similar study focuses on other digital transformation strategies that could enhance competitive advantage of commercial banks apart from the four utilized in this study.

The study focused on commercial banks in Kenya in regard to digital transformation strategies. It is recommended that a different study focuses on other banking institution such as Saccos and Micro-finance institutions which also operate on a similar market with commercial banks.

The study addressed digital transformation strategies in commercial banks. It is suggested that a different study focuses on other aspects that could affect competitive advantage of commercial banks apart from digital transformation strategies.

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APPENDICES

Appendix I: Introductory Letter

HARETHA KALMOY MOHAMED
Mount Kenya University
P. O. Box 100-70200
WAJIR
+254722309883/0722966664 harethakmoha@gmail.com

Dear Sir/Madam,

RE: DATA COLLECTION REQUEST

I Haretha Mohamed a Master student in the School of Business and Economics, Mount Kenya University pursuing a Masters' Degree in Business Administration , Strategic Option . One of my academic outputs before graduating is a thesis and for this, I have chosen the research topic entitled: **"Digital technology And Competitive advantage of Kenyan banks"**.

Yours sincerely,

HARETHA KALMOY MOHAMED

Appendix II: Questionnaire

SECTION A: DEMOGRAPHIC INFORMATION

1. Please indicate your gender?

Male [ ] Female [ ]

2. Please indicate your level of education?

   Diploma [ ] Bachelor's Degree [ ] Post-Graduate Diploma [ ]

   Masters' [ ] PhD [ ]

3. Please indicate your level of experience

   Below 5 years [ ] 5 – 10 years [ ] 10 – 15 years [ ]

   Above 15 years

SECTION B: DIGITAL CHANNELS

1. Please indicate your level of agreement or disagreement with the following statements regarding the role of digital channels on your bank's competitive advantage. Use a Likert's Scale of 1-5 where: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Statement	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**
1. We offer various digital banking modes to our customers to enhance efficiency service delivery					
2. The online banking methods adopted in our bank are frequently enhanced to ensure reliability					

3. Our bank has an online platform where customers can raise their queries anytime					
4. Our bank has active social media platforms for sharing information with our customers					
5. There are prompt responses and feedback to our customers' concerns through digital platforms					
6. Our bank has optimized digital marketing to expand its reach to more customers					
7. We frequently promote our products through social media as a key digital market tool					

SECTION C: DIGITAL INFRASTRUCTURE

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

Statement	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**

1. Our bank has adequate information technology hardware tools to support digital processes					
2. The ICT hardware available in our bank is up-to-date and in good working condition to support the bank's digital activities					
3. The bank has adequate software such as operating systems to support its digital platforms					
4. The bank has secure softwares that are not prone to digital security threats such as cyber attacks					
5. The bank has a reliable internal network to support its internal communications					
6. The bank has a stable external network to support its external communications					
7. The management invests adequately in improving the status of the bank's digital infrastructure from time to time					

SECTION D: DIGITAL PROFICIENCY

3. Please indicate your level of agreement or disagreement with the following statements regarding the role of digital proficiency on your bank's competitive advantage. Use a Likert's Scale of 1-5 where: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Statement	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**
1. Our bank has adequate ICT personnel dedicated to undertake the digital processes					
2. The ICT personnel in the bank have the right digital skills that aligns with digital competences needed					
3. The management supports frequent training of the employees on ICT skills required to run our digital platforms					
4. Employees are allowed to seek further training to enhance their digital proficiency					
5. There are on-the-job training programmes in our bank dedicated to equip the staff with digital skills					
6. The bank has the right technical support team to undertake technical issues in our digital processes					

7. The bank outsources critical technical experts when need arises to keep our digital platforms running					
8. The current level of digital proficiency in our bank is adequate to effectively run digital programmes and platforms in the bank					

SECTION E: DATA MANAGEMENT

4. Please indicate your level of agreement or disagreement with the following statements regarding the role of data management on your bank's competitive advantage. Use a Likert's Scale of 1-5 where: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Statement	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**
1. The bank has always ensured accuracy of customers' data by ensuring the right information is captured and stored appropriately					
2. The consistency and completeness of our bank's data has been maintained through embrace of digital systems					

3. The bank has been committed in ensuring data integrity to enhance trust among the customers					
4. Digital systems have been used to manage information in our bank to enhance its quality					
5. The available data management systems in our bank have always provided well-organized and valid information					
6. The information generated through our systems is more reliable and ease to use					
7. There have been no serious incidences of data breach in our bank for the last five years					
8. The bank has always assured its customers and other stakeholders of security of its data stored in the digital platforms					
9. The current approaches used in managing data in our bank are adequate to maintain quality, accessible, adequate and valid data					

SECTION F: COMPETITIVE ADVANTAGE OF COMMERCIAL BANKS

5. Please indicate your level of agreement or disagreement with the following

statements regarding the competitive advantage of commercial banks. Use a Likert's Scale of 1-5 where: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Statement	**1 (SD)**	**2 (D)**	**3 (N)**	**4 (A)**	**5 (SA)**
1. Our bank has always met customer needs and expectations in the past five years					
2. The level of customer satisfaction in our bank has increased significantly for the past five years					
3. We have retained more customers in our bank in the past three years					
4. The bank's market share has significantly grown for the past three years					
5. There has been a significant revenue growth in our bank for the last three years					
6. The bank operates more efficiently that it was in the past five years					
7. The waiting time of our services has significantly reduced in the last five years					
8. The bank has created strategic partnerships to foster its delivery of services in the last three years					

Thank You for your Participation

Appendix III: List of Commercial Banks in Kenya

The following list of commercial banks has been adopted from Central Bank of Kenya (2023).

	Market Share (%)
Large Peer Group >5%	
1. KCB Bank Kenya Ltd	13.81
2. Equity Bank Kenya Ltd	13.57
3. NCBA Bank Kenya PLC	9.72
4. Co-operative Bank of Kenya Ltd	9.42
5. Absa Bank Kenya Plc	6.37
6. Standard Chartered Bank (K) Ltd	5.70
7. Diamond Trust Bank Kenya Limited	5.64
8. I M Bank Limited	5.31
9. Stanbic Bank Kenya Ltd	5.22
Sub-Total	**74.76**
Medium Peer Group (1-5%)	
10. Bank of Baroda (Kenya) Limited	3.14
11. Prime Bank Ltd	2.43
12. National Bank of Kenya Ltd	2.31
13. Citibank N.A. Kenya	2.30
14. Family Bank Ltd.	1.81

15. Bank of India	1.72
16. Ecobank Kenya Ltd	1.49
17. SBM Bank Kenya Ltd	1.21
Sub-Total	**16.41**
Small Peer Group < 1%	
18. HFC Ltd	0.86
19. Victoria Commercial Bank	0.74
20. Guaranty Trust Bank	0.71
21. Bank of Africa Ltd	0.65
22. Gulf African Bank	0.62
23. Sidian Bank Ltd	0.60
24. African Banking Corporation Ltd	0.57
25. Habib Bank AG Zurich	0.46
26. Credit Bank Ltd	0.41
27. First Community Bank Ltd	0.38
28. Guardian Bank Limited	0.31
29. Development Bank of Kenya Ltd	0.30
30. Mayfair CIB Bank Limited	0.29
31. Kingdom Bank Limited	0.29

32. DIB Bank Kenya Ltd	0.29
33. M-Oriental Commercial Bank	0.26
34. Consolidated Bank of Kenya Limited	0.22
35. Paramount Bank Ltd	0.22
36. Access Bank (Kenya) PLC	0.21
37. UBA Kenya Bank Ltd	0.19
38. Middle East Bank (K) Ltd	0.18
39. Spire Bank Limited	0.05
Sub-Total	**8.82**
Grand-Total	**100**

Appendix IV: ERC Certificate

Mount Kenya University

REF: **MKU/ISERC/3784** Date: 12 June 2024

TO: **HARETHA KALMOY MOHAMED**

REG: **MBA/2023/42602**

Dear Sir/Madam,

RE: ROLE OF DIGITAL TRANSFORMATION STRATEGY ON ENHANCING COMPETITIVE ADVANTAGE IN COMMERCIAL BANKS IN KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2828.** The approval period is **12/06/2024 - 11/06/2025.**

This approval is subject to compliance with the following requirements;

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

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

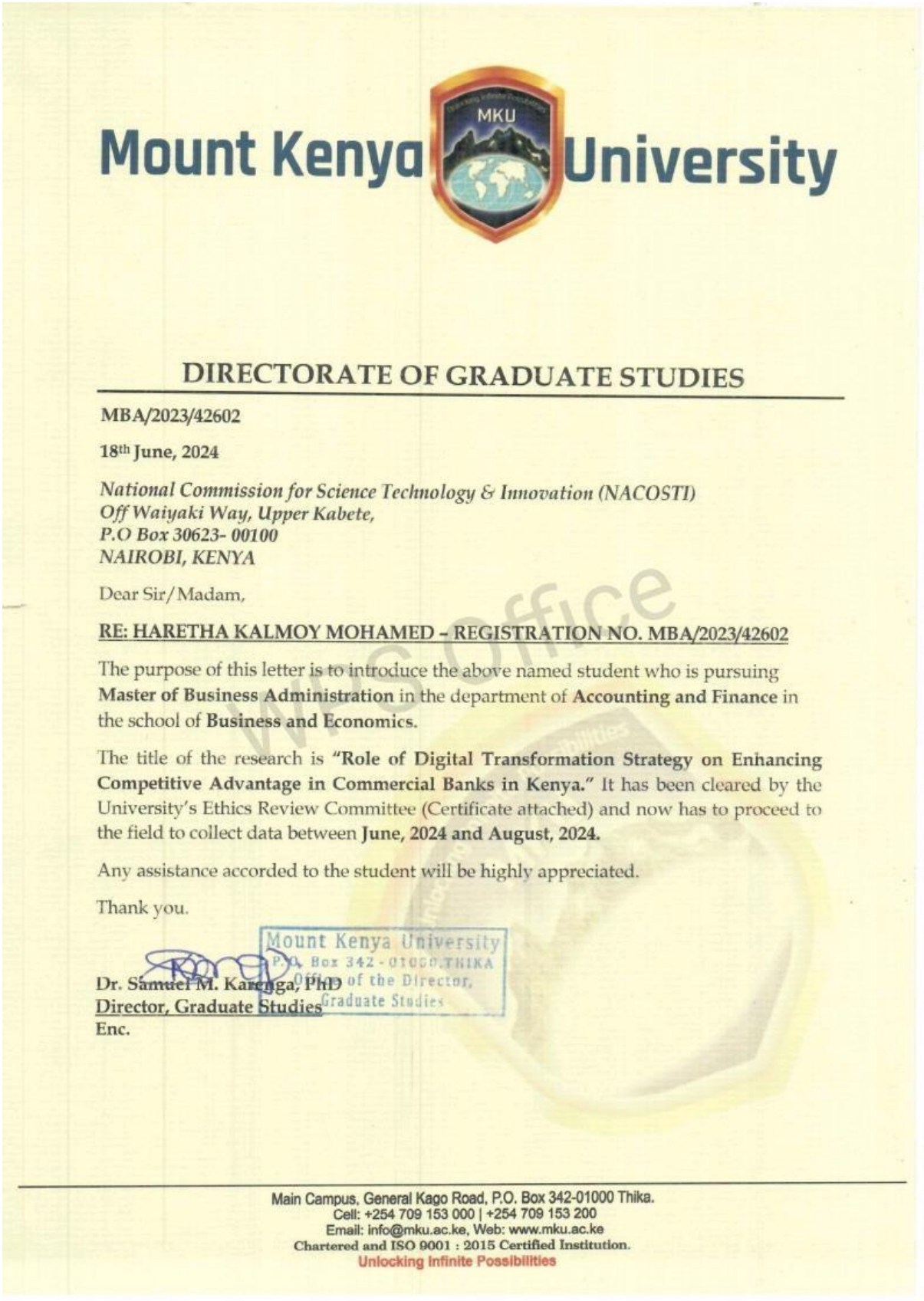
Yours sincerely,

The Chairman
Mount Kenya University

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 | +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2015 Certified Institution.
Unlocking Infinite Possibilities

Appendix V: Introductory Letter



Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MBA/2023/42602

18th June, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: HARETHA KALMOY MOHAMED – REGISTRATION NO. MBA/2023/42602

The purpose of this letter is to introduce the above named student who is pursuing **Master of Business Administration** in the department of **Accounting and Finance** in the school of **Business and Economics.**

The title of the research is **"Role of Digital Transformation Strategy on Enhancing Competitive Advantage in Commercial Banks in Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2024 and August, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342 - 01000 THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, PhD
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
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Email: info@mku.ac.ke, Web: www.mku.ac.ke
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Appendix VI: NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **212402**

Date of Issue: **05/July/2024**

RESEARCH LICENSE

This is to Certify that Ms.. Haretha Kalmoy Mohamed of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: ROLE OF DIGITAL TRANSFORMATION NSTRATEGY ON ENHENCING COMPETITIVE ADVANTAGE IN COMMERCIAL BANKS IN KENYA for the period ending : 05/July/2025.

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Appendix VI: Similarity Index Report

ROLE OF DIGITAL TRANSFORMATION STRATEGY ON ENHANCING COMPETITIVE ADVANTAGE IN COMMERCIAL BANKS IN KENYA

by Haretha Kalmoy

Submission date: 30-Aug-2024 05:17AM (UTC-0500)
Submission ID: 2441138276
File name: Final_Revised_Research_Project_-_Haretha_-_30._August_2024.docx (7.78M)
Word count: 22892
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