UPTAKE OF DIGITAL INNOVATION STRATEGY ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

DORIS KAGENDO KIMATHI

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DECLARATION

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

Signature…… Date……

Doris Kagendo Kimathi

BS501/0003/18

Declaration by Supervisors

This thesis has been submitted with our approval as University Supervisors.

Signature……... Date…….

Dr. Ntongai David, PhD

Meru University of Science and Technology. Kenya

Signature……... Date…….

Dr. Ann Kariuki, PhD

Meru University of Science and Technology. Kenya

Signature……... Date…….

Prof. Shano Mohammed, PhD

Meru University of science and Technology. Kenya

DEDICATION

This thesis is dedicated to my husband Franco Mutua for his love, support and encouragement during the entire duration of the course. Further dedication is to my daughters, Shanice and Shania for the prayers and patience during the entire research period. This thesis will be a source of motivation for hard work when they become of age.

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LIST OF ABBREVIATIONS AND ACRONYMS

AMF	Association of Micro-finance
API	Application Programming Interface
ATM	Automated Teller Machine
AML	Anti- Money Laundry
B2B	Business –to-Business
BDOs	Business Development Officers
BI	Business Intelligence
BEEPS	Business Environment Enterprise Performance Surveys
BPM	Business Process Management
CAK	Communication Authority of Kenya
CAMELS	Capital adequacy, assets quality, management, earnings, liduidity and sensitivity
CBK	Central Bank of Kenya
CBR	Central Bank Rate
CBS	Core Banking System
CEO	Chief Executive Officer
CDM	Crepon-Duguet Mairesse Model
CFB	Corporate Financial Performance
COVID-19	Coronavirus Pandemic
CRM	Customer Relationship Management
CSR	Corporate Social Responsibility
DFS	Digital Financial Services
DLT	Distributed Ledger Technology
DRM	Dose Response Model
ECB	European Central Bank
EFA	Exploratory Factor Analysis
EO	Entrepreneurial Orientation
ES	Enterprise Survey
FSB	Financial Stability Board
GDPR	General Data Protection Regulation
GIS	Green Innovation Strategy
GMM	Generalized Method of Moments
GSMA	Global System for Mobile Communications
IBA	Indian Banks Association
ICT	Information and Communication Technology
IFS	Innovation Follow-up Survey
IRA	Individual Retirement Account
IT	Information Technology
ITU	International telecommunication Union

KBA	Kenya Bankers Association
KIBS	Knowledge-Intensive Business Service
KMO	Kaiser-Meyer-Oklin
KPI	Key Performance Indicator
KYC	Know your customer
MD	Managing Director
MFID	Market in Financial Instrument Directive
NDP	New Product Development
NEBIC	Net-Enabled Business Innovation Cycle
NPL	Non-Performing Loans
OECD	Organization for Economic Co-operation and Development
OL	Organizational Learning
OLS	Ordinary Least Squares
PLS-SEM	Partial Least Squares- Structural Equation Modelling
ROA	Return on Asset
ROE	Return on Equity
RTGS	Real-Time Gross Settlement
SACCOs	Saving and Credit Cooperative Organizations
SMEs	Small and Medium Enterprises
TE	Transition Economies
USSD	Unstructured Supplementary Service Data
VAT	Value Added Tax
VCF	Competing Values Framework

ABSTRACT

Rapid evolution of digital innovations globally, has seen Kenyan banking sector incorporate innovation strategy in its operations. Despite these momentous advancements, the extent to which the digital innovation strategy translate into improved financial performance of commercial banks in Kenya remains uncertain. Lack of extensive empirical studies on how key variables-process, product, marketing and organizational innovation strategy relates to regulatory environment exacerbates the gap further. The study sought to assess the effect of the uptake of digital innovation strategy on the financial performance of commercial banks in Kenya, specifically on Return on Equity (ROE). The specific objectives were to assess the effect of uptake of process, investigate the effect of uptake of product, establish the effect of uptake of marketing and analyze the effect of uptake of organizational innovation strategy on financial performance of commercial banks in Kenya. Government policies moderated the relationship between the independent and dependent variables while the hypotheses were derived from the study objectives. The study was guided by Rogers' Diffusion of Innovation Theory, the Evolutionary Theory of Economic Change, Disruptive Innovation Theory, Theory of Dynamic Capabilities and the Institutional Theory. The study adopted a positivist research philosophy. Using stratified random sampling, a sample size of 315 was used from a target population of 1470 employees derived from 38 commercial banks, with pilot test carried out in Kingdom Bank. Primary data was gathered using structured questionnaires, while secondary data on ROE was obtained from banking sector supervisory and innovation reports. Reliability was estimated using Cronbach's Coefficient Alpha, while content validity was assessed through the Kaiser-Mayer-Olkin (KMO) measure and Bartlett's test of sphericity. A descriptive study design was employed, and data analyzed using frequency tables, pie charts, mean, standard deviation, and bar graphs for descriptive statistics. A panel linear regression model was utilized where a simple linear regression model was used for each independent variable, followed by a joint model to determine the combined effect. The study accounted for assumptions of linearity, normality, heteroscedasticity, and multicollinearity. The study realized a significant and positive correlation ($P<0.05$) between digital innovation strategy and financial performance of commercial banks in Kenya. The study reveals that process innovation strategy, which includes ideation, routine automation, and creativity leads to operational efficiency, cost saving, revenue growth and customer satisfaction. The study recommends that commercial banks enhance their talent development strategies, engage in strategic collaborations, prioritize customer centrality, and adopt agile management practices to drive financial performance. Further, banks can invest in Greentech products, innovation labs, decentralize decision-making and stay abreast of regulatory requirements to positively improve financial performance. The study contributes to the understanding of how digital innovation strategy directly affect financial performance within Kenyan banking sector. By proposing comparative studies across diverse contexts, it offers a basis for assessing the generalizability of these findings to other industries and regions.

OPERATIONAL DEFINITION OF TERMS

Artificial Intelligence (AI)	Describes the activity and outcome of developing computer systems that mimic human thought processes, reasoning and behavior (CBK, 2021).
Compatibility	The degree to which banking innovations is perceived to be consistent with the existing values, experience and needs of the commercial banks. The innovation needs to fit the existing skills, equipment, procedures and performance criteria of the commercial banks. The innovation should be easy to assess (Vitorino et al.,2020).
Complexity	Digital innovation should be easy to understand. Innovation that is simpler for the customers and staff of commercial banks is adopted more rapidly compared to those that require users to develop new skills and knowledge (Ramadani et al.,2019).
Ideation	The development of theoretical constructs through thinking up ideas, developing existing ideas and figuring out means or methods of putting new ideas into practice. Commercial banks practice ideation by developing a plan for producing a new product or creating a new operating system through mapping

	out precisely how a new system or process will be implemented (Proenca et al.,2020).
Knowledge Transfer	Sharing or spreading information and contributing to finding solutions. Commercial banks can make knowledge transfer difficult and long to imitate if it is closely integrated in the organization. Proper knowledge transfer can lower cost with increasing cumulative production (Simao and Franco,2020).
Observability	Commercial banks that employ digital innovations the results should be visible to the users. The users will agree to adopt innovations that they can easily see the benefits. Innovations spread as potential adopters come into contact with existing users of an innovation (Shahul et al.,2022).
Performance	The degree to which an investment is lucrative, particularly in comparison to other investments. Performance can be viewed from organizational business processes and employees. When measuring performance, goals, targets and progress are to be taken into account (Mehdiabadi et al.,2020).
Product Differentiation	Business model used to set a company's products or services apart from the competitors in order to increase return on investments. Banks differentiate

	their products by highlighting the distinct differences between their products and those of competitors by product design, marketing, packaging and pricing (Ferrell et al., 2021).
Profitability	The amount of profit or financial benefit generated by a business or activity. Profitability assessment expand intermediate businesses. Banks can leverage on increasing interest rates, lending quality, improve cost efficiency and strengthen the capacity of loan proceeds to increase profits (Kenya Bankers Association,2022).
Re-Engineering	The investigation and modification of a technology in order to re-create it in a new form. It provides an approach to rethinking and redesigning the entire business behind a more focused business processes to achieve dramatic improvements in critical and contemporary measures of performance such as cost, quality, service and speed (Frei-Landau et al.,2022).
Relative Advantage	Innovations adopted should be better than the product it supersedes or competing products. Commercial banks need to look into the perceived advantage in terms of cost, return on investment, convenience, customer satisfaction and corporate

	image before adopting any form of digital innovation. It is the perceived improvements advanced by the technology in the organizational processes (Ghasemaghaei and Calic,2020).
Trialability	The ability of innovation to be experimented with a limited basis. This clears uncertainty and allows the users to learn by doing. Innovations that can be trialed will generally be adopted more quickly and users benefit more from functional effects of the innovation (Alshehhi et al.,2018).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Organizations engage in strategic decisions to adopt plans, actions and approaches to achieve their long-term goals and objectives. Strategies adopted are either corporate level, business level or functional level strategies. Innovation strategy is one the fifteen grand strategies under corporate level that organizations can leverage to achieve improved financial performance (Henry,2021; Annarelli & Nonino,2016; Lynch,2018). Mothersbaugh et al. (2020) posits that an innovation strategy allows organization to create, generate, develop and implement new ideas, products, services and processes to achieve its objectives. Chen et al. (2020) argues that for an innovation strategy to be successful, it requires strong leadership, a culture of creativity, focus on customer needs and the ability to adapt quickly to changing markets. Anand & Mantrala (2019); Wang et al. (2020) emphasize that innovation strategy involves rethinking business models and processes, allocating resources for innovation in order to achieve increased efficiency, profitability and building organizational agility. Digital innovations strategy is an essential component of modern strategic management that commercial banks are employing to create new value, enhance customer satisfaction and achieve improved financial performance (Rahmah et al.,2020; Almustafa& Allahham 2023).

Digital innovation refers to technologically planned changes in firms' activities with a view of improving firms' performance (OECD,2005; Sarkar,2016). Kogabayev and Maziliauskas (2017) described digital innovation as the integration of digital technologies into business processes to enhance efficiency and productivity. This transformation enables businesses to streamline their operations and improve customer experiences by

leveraging new digital tools and ecosystems. Ky and Rugemwitari (2019) defined digital innovation as the process through which businesses adopt and implement new digital technologies to maintain competitiveness in rapidly evolving markets. They emphasize that digital innovation fosters economic growth by improving efficiency and customer satisfaction, though it also introduces challenges such as high costs and securing funding.

Robin et al. (2018) argues that digital innovation, is framed around several fundamental constructs. Both studies emphasize the integration of digital technologies into core business operations as a primary driver of innovation. Technologies such as the Internet of Things (IoT), artificial intelligence, and cloud computing are highlighted as transformative tools that facilitate greater operational efficiency and enable businesses to offer new services and products. This integration enhances productivity, enabling companies to remain competitive in rapidly evolving markets (Qamruzzaman &Jianguo,2017).

Bellini et al. (2020) emphasize that by adopting digital tools, businesses not only improve their internal processes but also position themselves to grow in a globalized economy. The adoption of digital innovations allows organizations to streamline operations, reducing costs and improving service delivery. Bellini et al. (2020) point out that the creation of digital ecosystems plays a critical role in realizing these benefits, as these ecosystems enable businesses to share resources and knowledge, leading to more efficient production processes. Gal et al. (2019) particularly emphasize the role of digital innovation in improving customer interactions, leading to more seamless and satisfying user experiences.

Wadesango and Magaya (2020); Morgan et al. (2019) submit that in European commercial banks explore block chain and distributed ledger technology (DLT) to improve security, transparency, and efficiency in financial transactions and settlements. Block chain-based solutions enable secure and immutable record-keeping, reducing the risk of fraud and errors in transactions such as cross-border payments, trade finance, and securities settlement. Banks collaborate with industry consortia and fintech startups to pilot block chain projects and explore use cases for DLT in areas such as trade finance, supply chain management, and digital identity.

Klus et al. (2019) postulates that European commercial banks prioritize regulatory compliance and data protection to ensure the security and privacy of customer data. Banks comply with stringent regulations such as the General Data Protection Regulation (GDPR) and the Markets in Financial Instruments Directive (MiFID II), which govern data privacy, transparency, and investor protection. Banks invest in cybersecurity technologies, encryption, and data analytics to detect and prevent cyber threats, safeguarding customer information and maintaining regulatory compliance. Morgan et al. (2019) submit that digital innovation has transformed the European banking landscape, empowering commercial banks to deliver innovative products, streamline operations, and enhance customer experiences in an increasingly digital and interconnected world. As technology continues to evolve, European banks must continue to innovate and adapt to meet the evolving needs and expectations of customers while managing risks and regulatory compliance requirements (Wijanyati et al., 2021).

Poister (2015) argues that firms can decide to innovate their product offerings by utilizing new technologies or combine new products or significantly improve the functions of existing ones. Consequently, they can develop novel financial products and services tailored to meet the evolving needs and preferences of customers in the digital era (Chen X et al.,2021). With the advent of mobile banking, digital wallets, and peer-to-peer lending platforms, commercial banks are expanding their product portfolios to cater to a tech-savvy customer base while fostering financial inclusion and accessibility (Gartenberg et al.,2019).Qamruzzaman and Jianguo (2017) stress holistic financial solutions in commercial banking, advocating for expanded product ecosystems including non-financial services like insurance or wealth management, aligning with customer preferences. Regulatory compliance ensures trust and integrity. Sorum (2020) highlights innovation's role in differentiation, revenue growth, and competitiveness.

Hoxha and Kleinknecht (2020) opines that organization structures, progressive organizational culture, flexible work environment and decentralization of decision making are key organizational innovations to improve the firms' performance. Sipos and Ionesco (2018) argued that restructuring of traditional organizational structures and cultures are vital to foster a conducive environment for digital transformation and innovation. Through the cultivation of a culture of innovation, investment in employee training and development, and establishment of cross-functional collaboration, commercial banks can foster agility and adaptability in the face of technological disruptions (Klus et al., 2019).

Adner and Zemsky (2016) concluded that banking digital inclusion in China has made significant progress recently. It has gradually formed a unique and sustainable development path with supporting policies and regulations, including rapid development and digital innovation. Its ranking in the innovation index has risen steadily and is now the

highest among developing countries (GSMA, 2020). Chatzinikolaou and Vlados (2019) posits that China's innovation capabilities are improving faster than any other country in the world. This has seen banking sector in China experience improved financial performance over the years.

A study conducted by Sarkar (2016) concluded that Asian countries are experimenting with several new ideas in banking digital inclusion requiring immediate focus on banking and payment channels, technology platforms, and regulatory framework. On other hand, contemporary scenarios in countries like Japan and Syria suggest that e-banking is shaping the financial services industry as a product innovation. According to Ansoff et al. (2018) and Lynch (2018), the shift towards internet banking is fueled by the changing dynamics in India. In such an environment, banks across Asia are increasingly relying on business intelligence (BI) and analytics to drive their overall profitability (Gupta et al., 2023).

Demand for retail banking services in Africa has increased in recent years, owing to the continent's growing middle class and digital innovations. Hence, domestic, regional, and international banking groups are refocusing their efforts to expand their service offerings in order to meet the growing needs of this newly minted affluent class (Chatzinikolaou &Vlados, 2019). Karabulut (2015) opines that retail banking in Sub-Saharan Africa is expected to grow by 15% per year by 2024. The number of deposit account holders in Nigeria and Gabon increased by an average of 73% to 95% per 1000 adults up from 12% per 1000 adults in the year 2018. Access to retail banking services in the Central African Republic has significantly decreased due to post-conflict fragility and reconstruction costs resulting from population displacements (Ozurumba & Onyeiwu,2019). In Malawi, for instance, by 2015 only 2% of the rural population had access to banking services, mainly due to prohibitively expensive identity card (ID) schemes. An innovative banking program

administered by Opportunity International Bank of Malawi has however, attempted to reverse this through the issuance of biometric smartcards that serve as efficient IDs (Mwatsika,2016).

Angola government is taking steps towards the reduction of barriers to entry into the retail banking sector. Aluko and Ajayi (2018) reports that to encourage entry and competition in the Angolan banking sector, the minimum capital requirement gap for international and domestic banks is only USD 1 million. This is comparatively lower than the proposed minimum capital requirements in Zambia of USD20 million for local banks and USD100 million for foreign banks, which would yield a gap of K416 billion (Ky, et al.,2018). In Rwanda, Mauzu and Alagidede (2018) concludes that the number of deposit account holders increased by 1000%, representing a phenomenal annual average growth of 174%. Bara and Mudzingiri (2016) opines that the financial sector in Uganda has been slow in adopting digital solutions, where official data shows that 27 million of the estimated 45 million Ugandans own a phone, with 13 million of them connected to the internet. Industry players blame general financial illiteracy, which has slowed down the penetration and uptake of digital platforms and software (Nazir et al.,2020).

Financial system in Kenya includes; commercial banks, nonbank financial institutions, mortgage companies, forex bureaus, development finance institutions, pension schemes, SACCOs, the insurance sector, and the stock markets (CBK, 2020). Due to the interlink between commercial banks and other financial sector segments, any market shocks due to policy or otherwise will not only affect the banks but also the other segments. For example, a client that is unable to repay a loan will also be unable to pay their monthly insurance premium or pension contribution (Cherotich et al., 2015; Nandwa, 2016; CBK, 2022). According to Chipeta and Muthinja (2018) credit and debit card processing as an internal

bank process is a complex process that necessitates accurate data capture across multiple banking channels and real-time updating of bank records. Credit card processing takes time and effort when done manually, and it is also subject to mistakes and inconsistencies. Computer-controlled credit and debit card processing reduces processing costs and time.

Digital innovations in commercial banks have facilitated the emergence of new products, the uptake of new business processes and strategies, development of new multiple marketing and delivery channels and the uptake of improved organizational structures (Roseline et al., 2021; GSMA, 2019). There have been critical strategic developments since 2014 that have influenced usage of digital innovations and uptake of alternative digital platforms in the delivery of services in commercial banks (Ndung'u, 2019). Interest rate controls that were in place between 2016 and 2019 may have affected commercial bank-customer relationships, their profitability and alternative non-bank financial providers, including digital and mobile agents in the financial system (Muhindi & Ngaba,2018).

Financial performance of commercial banks can be viewed as the ability to generate revenues while leveraging strategic digital innovations (Zhao et al.,2022). Hannoon et al. (2021) and Poister (2015) postulates that digital innovation plays a crucial role in evaluating financial performance. By embracing digital innovations, commercial banks can streamline operations, offer enhanced services to customers and improve profitability in the rapidly evolving financial sector. Crawford (2021) suggests that a firm's performance is tied to its success in market, product, and process innovations. Muazu and Alagidede (2018) argue that digital innovation performance requires continuous monitoring, analysis, and improvement. By utilizing digital innovation data and feedback, commercial banks can identify performance gaps, set targets, implement corrective

actions, and measure the impact of these interventions. This process of continuous improvement encourages a culture of learning, innovation, and adaptability, which is vital for commercial banks to enhance their financial performance and remain resilient in an ever-evolving business landscape (Rossignoli et al., 2016).

Commercial banks are financial institutions that offer a range of services, including accepting deposits, providing loans, and facilitating various financial transactions for individuals, businesses, and the broader economy (Matar & Eneizan, 2018). In the modern financial landscape, digital innovations have become a cornerstone for enhancing the performance and competitiveness of many institutions. According to Matar and Eneizan (2018) financial performance in commercial banks measures the ability to generate profits, manage costs, and maximize shareholder value, which is significantly influenced by the uptake of digital innovations.

Key financial performance indicators for commercial banks include revenue growth, profitability ratios (such as return on assets and return on equity), liquidity ratios, leverage ratios, and shareholder returns. These indicators reflect the bank's financial health and sustainability over time. Soewarno and Tjahjadi (2020) highlight that operational performance in commercial banks focus on the efficiency and effectiveness of digital innovations. Key operational performance indicators include productivity measures, process cycle times, resource utilization rates, quality metrics, and customer satisfaction scores, which can be achieved by being innovative (Nandram, 2016).

However, despite its advantages, digital innovation introduces significant challenges and barriers. Bellini et al. (2020) and Gal et al. (2019) both discuss the high costs of adopting and implementing new digital technologies, especially for smaller firms. Additionally, regulatory barriers and the challenge of securing funding for innovation are persistent

obstacles that businesses must navigate in order to fully leverage the potential of digital tools. By incorporating digitization into the fabric of banking services, Annarelli and Nonino (2016) concludes that banks can keep up with changing customer expectations and fierce market competition. According to Ngugi (2015) loan processing is a lengthy process with several critical steps from loan application to disbursement. The use of manual processing has been the source of bank performance decline. Consequently. Muthinja and Chipeta (2018), argues that processing loans individually entails heaps of documentation, excessive delays in approvals and verification, unexplained bottlenecks, increased opportunities for fraud, and multiple rejections and re-applications.

1.1.1 Process Innovation Strategy

Process innovation in commercial banks refers to the transformation and optimization of banking operations through the integration of digital technologies, aimed at improving efficiency, customer experience, and competitiveness (Mowery et al.,2019). Jin and Cedrola (2019) defined it as the application of technologies like automation (ATMS), Automated delivery techniques, artificial intelligence, and blockchain to streamline core banking processes, such as loan processing, payments, and customer service, resulting in faster and more efficient service delivery. Nambisan et al. (2020) highlight that digital process innovation in commercial banks enables them to leverage real-time data and analytics, which enhances decision-making and operational flexibility in responding to customer needs and market changes. Karabulut (2015) further emphasizes that digital innovations in banking processes not only improve internal operations but also reshape how banks interact with customers and partners, fostering new digital channels, personalized services, and ultimately creating competitive advantages.

In examining the constructs related to digital process innovation, several key themes emerge from the works of (Alshehhi et al.,2018). Kholi and Melville (2019) emphasize the significance of digital transformation as the integration of digital technologies into innovation and entrepreneurship, which fundamentally reshapes business operations and value creation. They highlight the role of real-time data, ideation, and analytics as essential tools that enhance decision-making capabilities, enabling organizations, including commercial banks, to remain adaptable and responsive to the dynamic market landscape.

Chen et al. (2020) introduce the concept of digital business model transformation, which incorporates technologies such as artificial intelligence and blockchain to redesign traditional business processes. This transformation serves to improve operational efficiency and enhance customer service within the banking sector. Furthermore, they identify various enablers of digital transformation, which encompass the tools, technologies, and practices that facilitate the shift from conventional to digital operations. Lynch (2018) contributes to this discourse by linking digital transformation to value creation, asserting that digital technologies optimize internal workflows while simultaneously reshaping interactions with external stakeholders. This process fosters the development of digital channels and personalized services, reflecting the transformative impact of digital innovations on customer engagement and satisfaction in commercial banks.

Keklik (2018) positioned innovation at the center of the economic debate and made a distinction between invention, defined as the manifestation of a new idea, and the ability to successfully apply that notion in practice. Commercial banks leverage process innovation by integrating digital technologies to streamline internal operations, enhance efficiency, and optimize resource utilization. Through the automation of routine tasks,

implementation of online banking platforms, and adoption of creative technology for secure transactions, banks can achieve significant cost savings and operational improvements (Alshehhi et al.,2018). Biemans (2018) asserts that businesses require a Business Process Management (BPM) solution that addresses multiple aspects of business operations in dimensions such as system processes, rule engines for automating business processes and monitoring business activity that provides visibility in the system processes. Chen et al. (2020) argues that business process automation in the banking industry is driven by key business requirements such as mergers and acquisitions, regulatory compliance, and the need for operational flexibility.

Rossignoli et al. (2016) posits that organizations can invest in creative innovations to develop innovations in-house or work in conjunction with external partners by adopting innovations developed by other firms as part of diffusion process. Use of new knowledge require innovative efforts that is distinguished from standardized routines. Digital innovations aim at improving firms' financial performance (Wadesango & Magaya,2020). Tahir (2016) argues that investing in equipment and software that embody innovation is key to every innovative firm. Wijayanti et al. (2021) posits that firms can achieve significant operational efficiency by adopting new procedures and techniques in delivery of services. New innovative ideas can be tested and utilized digitally to achieve efficiency (Kholi &Melville,2019).

The OECD (2019) report highlights commercial banks' focus on enhancing customer experience through process innovation, redesigning traditional processes like account opening and loan approvals to be more seamless and personalized. By prioritizing customer-centric design, banks strengthen relationships, increase satisfaction, and differentiate themselves. Naqshbandi and Singh (2015) emphasize the pivotal role of

process innovation in driving banks' competitiveness and transformation. Continuous process innovation allows banks to adapt to market trends, deliver value, and enhance return on equity (ROE), ensuring they remain ahead in the dynamic financial landscape (GSMA, 2019).

Lynch (2018) observed that with the rapid advancement of technology, commercial banks are increasingly leveraging digital solutions to innovate their processes. This includes implementing online banking platforms, mobile banking apps, electronic payment systems, and automated customer service channels (Korableva &Kalimullina,2016). Digital transformation streamlines various banking processes, such as account management, transaction processing, loan applications, and customer support, leading to improved convenience, speed, and accessibility for customers. Process innovation often involves the automation of repetitive and time-consuming tasks through the use of robotic process automation (RPA), artificial intelligence (AI), machine learning (ML) and other technologies (Hoxha &Kleinknecht,2020). Automated processes can significantly reduce manual errors, accelerate transaction processing times, and free up employees to focus on more value-added activities, such as customer relationship management and strategic decision-making (Gupta et al.,2023).

The integration of digital innovations into banking processes has revolutionized traditional banking operations. Processes such as customer onboarding, loan approvals, and transaction processing have become more efficient and convenient through the use of digital platforms and automation technologies (Nord et al., 2019). Furthermore, digital innovations have facilitated the development of new banking products tailored to meet the evolving needs of customers, ranging from mobile banking applications to innovative loan products (Mwangi et al., 2019). These advancements have not only expanded banks'

product offerings but have also enhanced their competitiveness in the market. As a result of the automation of services, more opportunities are provided to make services more tangible than intangible. Sarkar (2016) posits that process innovation can generate significant gains in product quality and service levels which can contribute to the firm's performance.

In this study, process innovation focuses on ideation, automated delivery techniques, and creativity, ensuring that banks streamline their operations to boost efficiency. Process automation plays a pivotal role in improving service delivery while minimizing operational costs. Major researchers have supported these indicators in process innovation. For example, in their research, Chowdhury and Li (2023) explore the integration of Virtual Reality (VR) and Artificial Intelligence (AI) in the ideation process. They argue that these technologies enhance creative brainstorming by facilitating collaboration and immersion, which are critical for innovation in engineering design. Their study emphasizes the role of creativity in competitive product ideation and identifies the need for innovative solutions to address challenges in group ideation.

A study by Zhao et al. (2020) discusses how automated delivery techniques can streamline processes and enhance creative outputs in product development. They highlight the importance of incorporating creativity and ideation into automated systems to improve overall efficiency and innovation in business models. The framework suggests that merging technology with creative processes is essential for driving successful process innovations (Zhao et al., 2020).

1.1.2 Product Innovation Strategy

Product innovation refers to new financial products or alterations to current products, which may be further divided into categories, functions, or attributes (Johne ,2018). These

include securitized assets, weather derivatives, foreign currency mortgages, hedge funds, exchange-traded funds, private equity, and retail structured products (Tahir et al.,2018; Klus et al., 2019). In the words of Johne (2018) and Rikap (2021), product innovation refers to alterations that enhance design, materials, feel, appearance, capacity, efficiency, and ultimate customer experience, thus impacting the firm's profitability or, more broadly, return on equity (ROE). According to Robin et al. (2018) development of innovative banking products entails introduction of a good or service that is tailored or significantly improved to meet the evolving needs of customers.

Robin et al. (2018) opines that development of innovative banking products entails introduction of a good or service that is tailored or significantly improved to meet the evolving needs of customers. Redman (2021) opines that there is need for digital products to have significant improvement on how they are provided in terms of their efficiency and speed, ease of use and customer access. Commercial banks can innovate products by improving internet banking services, enhance security features within the banking hall such as queuing system, advanced features in ATM and introduction of many mobile banking features to improve performance (Gupta et al.,2023).

The constructs related to product innovation, as articulated by Johne (2018), Tahir et al. (2018), and Klus et al. (2019), present a comprehensive understanding of the dynamics involved in developing new products. Johne (2018) underscores the significance of new product development (NPD) as a structured process that involves essential stages such as market research, concept development, and prototyping. This construct emphasizes the necessity of aligning product innovation with customer needs and market trends to achieve successful product launches.

Tahir et al. (2018) highlight the importance of user-centered design in the product development process. They argue that involving users is crucial for enhancing the relevance and usability of new products, thereby ensuring that product innovations effectively address consumer preferences and behaviors. Furthermore, they emphasize the role of cross-functional collaboration, suggesting that effective product innovation requires teamwork across different organizational functions, such as marketing, engineering, and design, to foster creativity and create a holistic approach to product development.

Klus et al. (2019) contribute to the discourse by introducing the construct of sustainable product innovation, asserting that integrating environmental considerations into the product development process is essential for long-term success and regulatory compliance. This perspective highlights the need for innovations that not only satisfy consumer demands but also address ecological impacts. The authors also stress the importance of market orientation, indicating that companies must remain attuned to market signals and consumer preferences to create successful new products.

Cooper (2019) posits the importance of quality improvement and product differentiation as critical factors that contribute to effective new product development processes. He argues that firms must focus on these elements to enhance their competitive advantage and ensure successful product launches (Cooper, 2019). Chen and Yang (2019) highlights how effective new product development (NPD) processes are intertwined with quality improvements and product differentiation. Creativity and leadership play a role in enhancing these processes, thereby facilitating greater innovation outcomes (Cheng & Yang, 2019).

In Kenya, the advent of digital technologies has revolutionized the way banking services are delivered and consumed. From mobile banking applications to online payment systems, these innovations have not only enhanced the efficiency of banking operations but have also redefined customer experiences (Mwanzia, 2021). As commercial banks open themselves to stakeholders and communities, they tend to specialize and collaborate with other organizations that complement and extend their core expertise. Mudzingiri (2016) opines that these relationships are the reason for efficiency and effectiveness in providing a complete solution for their customers. According to CBK (2019) examples of new innovations in Kenyan banks include the uptake of ATMs, smart cards, the internet, and digital banking mobile banking. A survey done by CBK, (2020) found out that 26% of consumers preferred mobile banking while 76% would rather use the mobile apps.

Roseline et al., (2021) product innovation is characterized by new product development, quality improvement, and product differentiation, driving banks to create more competitive and diverse offerings to meet evolving customer needs. Kiplangat and Tibbis(2018) opines that there is need for digital products to have significant improvement on how they are provided in terms of their efficiency and speed, ease of use and customer access. Commercial banks can innovate products by improving internet banking services, enhance security features within the banking hall such as queuing system, advanced features in ATM and introduction of many mobile banking features to improve performance (Mwangi et al.,2019). In this current study Digital product innovations constructs include: New Product development, Quality Improvement and Product differentiation through use of ATMs, debits cards, credit cards, self-directed IRA accounts, linked certificates of deposits and money market deposits.

1.1.3 Marketing Innovation Strategy

According to Trott (2017) and Biemans (2018), marketing innovations involves implementing new marketing methods that significantly alter product design, packaging, placement, promotion, or pricing. Tahir et al. (2018) describe it as employing new marketing techniques alongside distribution innovations to enhance business performance. Sorum (2020) highlights how commercial banks leverage digital channels, such as online advertising and social media, for targeted messaging and real-time campaign optimization. Utilizing data analytics allows banks to understand customer behavior, enabling tailored marketing campaigns and improved segmentation (Ihm, 2019). This data-driven approach enhances customer engagement and satisfaction in a dynamic banking landscape.

Trott (2017); Biemans (2018); Tahir et al. (2018); Sorum (2020); and Ihm (2019), suggests that marketing innovations provide a comprehensive framework for understanding how organizations can effectively adapt their marketing strategies to enhance competitive advantage. Trott (2017) emphasizes the importance of innovative marketing strategies, which involve the development of new approaches to promote products and services, targeting the ever-changing preferences of consumers. This construct underscores the need for organizations to continually assess and adapt their marketing tactics to remain relevant in a competitive environment. Biemans (2018) expands on this notion by introducing the concept of value co-creation in marketing innovation. He posits that engaging customers as active participants in the marketing process can lead to enhanced value propositions and stronger customer relationships, highlighting the collaborative nature of modern marketing practices.

Supriyanto et al. (2021) describes the role of digital marketing innovation, which encompasses the use of digital technologies and platforms to reach and engage consumers effectively. Their work underscores how leveraging digital channels can enhance marketing efficiency and customer interaction, allowing organizations to tap into new markets and demographics. In a similar vein, Sorum (2020) discusses the significance of data-driven marketing, asserting that the utilization of big data and analytics is crucial for making informed marketing decisions. This construct highlights how data insights can optimize targeting, personalization, and overall marketing effectiveness. Wang et al. (2020) adds another layer to the discussion by focusing on integrated marketing communication as a key construct in marketing innovation. They argue that a cohesive approach to marketing communication, which aligns messaging across various channels and platforms, is essential for building brand consistency and enhancing customer engagement.

Vitorino et al. (2020) posits that implementation of a new marketing methods involving significant changes in product design or packaging, product placement, product promotion or pricing. To devise targeted marketing strategies and improve customer engagement, focus on leveraging digital channels and data analytics is critical (Tahir et al.,2018). Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales. According to CBK (2022) digital marketing platforms in commercial banks include; mobile apps strategy, social media, website design/development, online advertising, display advertising and email advertising.

Kholi and Melville (2019) banks can implement marketing innovations by addressing customer needs, opening up new markets or positioning its newly innovated products in

the market with the objective of increasing firms' sales subsequently improving its' profitability. Firms utilize digital channels and data analytics to enhance customer engagement, personalize marketing strategies, and drive customer acquisition and retention. Kolodiziev et al. (2018) posits that by leveraging social media, marketing channels, and customer relationship management systems, banks can cultivate stronger brand loyalty and gain a competitive edge in the market.

Biemans (2018); Vitorino et al. (2020) and Mothersbaugh et al. (2020) emphasize that marketing innovation in commercial banks involves crafting distinct brand identities, value propositions, and positioning strategies to stand out in the market. This entails investing in creative branding, visual design, storytelling, and emotional connections to deepen customer engagement. Brand innovation aids in building loyalty and leaving a lasting impression. Additionally, forging strategic partnerships with businesses, influencers, and community groups expands banks' marketing reach, taps into new segments, and enhances credibility. Collaborations allow banks to utilize shared resources for mutually beneficial marketing initiatives (Muhindi and Ngaba, 2018).

Mothersbaugh et al. (2020) emphasizes the importance of adapting distribution strategies to enhance efficiency and customer reach. Innovative distribution models can lead to better market penetration and responsiveness to consumer needs, especially in the evolving digital landscape. Schumpeter (2021) highlights the role of market development strategies in fostering competitive advantage. He argues that effective channel diversification allows businesses to reach new customer segments and adapt to changing market conditions, thereby driving growth and innovation. Kotler (2022) outlines the significance of distribution innovation as a critical component of marketing strategies. His analysis focuses on how companies that embrace new distribution channels and techniques can

differentiate themselves in crowded markets and respond to the dynamic preferences of consumers.

Marketing strategies have also undergone significant transformations with the advent of digital innovations. Commercial banks are leveraging digital channels such as social media, search engine optimization, and targeted advertising to reach and engage with their customer base more effectively (Misati et al.,2019). By personalizing marketing messages and delivering them through digital platforms, banks can enhance customer engagement and loyalty, ultimately contributing to improved performance metrics. Marketing innovation introduces advancements such as distribution innovation, channel diversification, and market development, enabling banks to expand their market reach through digital platforms and non-traditional channels (Omwanza &Jagongo,2019).

In the current study, the indicators of marketing innovation applied include distribution innovation, channel diversification, and market development. Distribution innovation involves creating new methods for delivering products and services, essential in today's fast-paced market where traditional channels may fall short. By exploring innovative strategies, organizations can enhance reach and customer satisfaction through efficient delivery mechanisms. Channel diversification expands the variety of channels for offering products, catering to evolving consumer preferences and increasing market penetration. This approach reduces reliance on a single channel, fostering resilience against market fluctuations. Lastly, market development focuses on exploring new markets for existing products, allowing businesses to target untapped segments and drive revenue growth beyond their current customer base (Wang et al.,2020; Seifollahi &Hamidzadeh,2021; Sarkar &Rakshit,2023).

1.1.4 Organizational Innovation Strategy

Organizational innovation refers to developing and applying new management practices and processes to enhance firm performance (Nandram, 2016), including recruitment strategies, resource allocation, and managerial incentives (Moreno et al., 2015). Annarelli and Nonino (2016) describe it as reshaping business practices and external relations. In commercial banks, this involves adopting new structures and practices to improve efficiency and agility in response to market shifts and technological advancements, ultimately boosting return on equity (ROE). Simao and Franco (2020) note that agile methodologies foster flexibility and collaboration, enabling banks to respond quickly to customer feedback and competitive pressures, enhancing productivity and decision-making.

The constructs related to organizational innovation, as articulated by Nandram (2016), Moreno et al. (2015), and Annarelli and Nonino (2016), provide a nuanced understanding of how organizations can adapt and thrive in a rapidly changing environment. Nandram (2016) emphasizes the importance of organizational culture as a fundamental construct of organizational innovation. He argues that a culture that promotes creativity, collaboration, and risk-taking is essential for fostering innovation within an organization. This construct highlights the role of leadership in shaping a supportive environment where employees feel empowered to contribute new ideas and engage in innovative practices. Annarelli and Nonino (2016) further expand on organizational innovation by highlighting the construct of strategic renewal. They argue that organizations must continuously evolve their strategies to respond to changes in the external environment, including technological advancements and shifting consumer preferences. Proactive planning and adaptability

ensure that organizations remain relevant and resilient in the face of disruption (Zulkifli et al.,2023)

Wijayanti et al. (2021) highlight the importance of knowledge transfer and sharing in enhancing organizational performance, emphasizing that effective knowledge management practices foster innovation and adaptation within organizations. Kotter (2021) discusses change management in his latest work, outlining how successful change initiatives require strong leadership, clear communication, and a focus on cultural transformation to facilitate organizational innovation. Simao and Franco (2020) emphasizes the significance of organization re-engineering, arguing that rethinking and redesigning organizational processes are crucial for achieving innovation and maintaining competitiveness in today's dynamic business environment.

Awino et al. (2018) argues that organizational innovations encompass changes in the organizational structure, culture, and management practices to foster a culture of innovation and adaptability. Consequently, a more flexible form of organization allows a greater autonomy to make decisions and define employee responsibilities. This kind of fluid organization encourages workers who are creative and develop new ideas and ways of doing things (Annarelli & Nonino,2016). Wijayanti et al. (2021) predisposes that robo-advisors are gaining popularity among European commercial banks, offering automated investment advice and portfolio management services to retail investors. These digital wealth management platforms use algorithms to analyze customer risk profiles, investment goals, and market trends, providing personalized investment recommendations and asset allocation strategies. Robo-advisors offer cost-effective and accessible investment solutions, attracting tech-savvy customers and expanding banks' wealth management offerings.

Knowledge transfer and sharing is crucial in this study, highlighting the importance of disseminating information and best practices within organizations. Fostering a culture of knowledge sharing leverages collective expertise, enhances collaboration, accelerates problem-solving, and promotes continuous learning, essential for adapting to a rapidly changing business environment (Shahul et al.,2022). Change management, involves the preparation and support of individuals and teams during organizational changes. Strong leadership and communication are necessary to engage employees and facilitate smooth transitions, minimizing resistance and enhancing the success of innovation initiatives (Schulz-Knappe et al.,2019). Organization re-engineering focuses on fundamentally redesigning business processes to improve performance and efficiency. This approach encourages organizations to evaluate and reshape existing structures, enhancing agility and positioning for success in a competitive landscape (Troung et al.,2021). Together, these indicators of organizational innovation are applied in this study to create a comprehensive framework for enhancing organizational effectiveness, fostering a culture of continuous improvement, and ensuring the successful implementation of innovative strategies in response to evolving market demands.

Organizational innovation emphasizes knowledge transfer, change management, and organizational re-engineering, facilitating internal transformation and the adoption of new digital frameworks that support long-term growth. Together, these constructs serve as critical indicators of how digital innovation can influence the financial performance of commercial banks by fostering greater agility, customer satisfaction, and market responsiveness (Weerakkody et al.,2021).

1.1.5 Digital Innovations Strategy

The joint effect of digital innovation and government policy in the context of commercial banks refers to the combined impact that advancements in digital technologies and regulatory frameworks established by government authorities have on the operations and performance of the banking sector. Digital innovation in banking encompasses the utilization of technology to create new or improved financial products, services, and processes. This includes online banking, mobile payment systems, blockchain technology, artificial intelligence (AI) for customer service, and data analytics for personalized banking experiences (Reddy & Jha, 2021). The impact of digital innovation on the banking sector is multifaceted. Firstly, it enhances operational efficiency by automating processes and reducing the time and cost associated with traditional banking (Chen et al., 2020). Secondly, digital innovations improve customer engagement and satisfaction through more convenient and accessible services (Zhao & Li, 2022). Moreover, digital channels allow banks to reach underserved populations, thereby promoting financial inclusion (Chowdhury & Li, 2023).

Digital innovation has the potential to enhance financial inclusion, especially in developing regions. Investigating this joint effect is important for identifying best practices that can be replicated in other contexts to ensure that financial services are accessible to all segments of society (Reddy and Jha,2022). Understanding the interplay between digital innovation and government policy can inform more effective and adaptive regulatory frameworks. By examining successful case studies and outcomes, researchers can provide insights that help policymakers craft regulations that not only protect consumers but also promote innovation (Adeleke et al., 2023). This research can guide the development of

frameworks that balance regulation and innovation, ensuring the long-term sustainability of the banking sector (Osei & Hagan, 2024).

Government policy in the banking sector includes regulations and guidelines that govern the operation of financial institutions, such as capital requirements, consumer protection laws, anti-money laundering (AML) regulations, and policies promoting digital financial services (Rossignoli et al., 2016). The impact of government policy on banking can be significant. Clear regulations foster a secure environment for digital banking, encouraging innovation while simultaneously protecting consumers (Osei & Hagan, 2024). Additionally, governments may provide support for digital transformation initiatives through funding, partnerships, and incentives for technology adoption (Gichuhi, 2023). Effective policies contribute to the stability of the financial system, instilling confidence among consumers and investors (Osei and Hagan,2024).

Commercial banks that effectively leverage digital innovations while adhering to regulatory frameworks gain a competitive edge in the marketplace hence improving financial performance. The integration of technology enhances service delivery, customer engagement, and operational efficiency, positioning these banks favorably against competitors (Zhao & Li, 2022). Such synergy allows banks to adapt swiftly to changing consumer preferences and technological advancements (Tawfik et al.,2022). The joint effect of innovation and regulation can help mitigate risks associated with new technologies. Governments can establish frameworks that promote safe digital practices, enhancing consumer trust (Wijayanti et al.,2021).

Overly stringent regulations can stifle innovation, making it difficult for banks to adapt quickly to technological changes and can lead to a stagnation of new ideas and solutions that could benefit consumers (Chowdhury & Li, 2023). Regulatory bodies that impose

excessive compliance requirements, may make banks divert resources from innovation efforts to meet these obligations (Zhao et al.,2022). Inconsistencies in the implementation of government policies can create confusion and uncertainty in the banking sector. If policies are not uniformly enforced, it can lead to competitive imbalances, where some banks benefit from lax regulations while others comply strictly, hindering fair competition (Osei & Hagan, 2024). Such disparities can discourage investment in digital innovation, as banks may be uncertain about the regulatory landscape (Zhao & Li, 2022).

Muller and Jones (2023) opines that well-defined policies can encourage banks to invest in digital transformation by providing incentives, grants, or tax breaks. Such support can lower the financial barriers for banks seeking to innovate, ultimately leading to a more dynamic and responsive banking sector. This approach fosters a culture of continuous improvement and responsiveness to market needs (Khan et al., 2024). The joint effect allows for a balanced approach between regulation and innovation. A conducive regulatory environment can stimulate innovation, while effective regulations ensure that innovation does not compromise consumer protection or financial stability (Mwangi & Kamau, 2022). This balance is essential for maintaining trust in the banking system, which is foundational for its long-term viability (Gichuhi ,2023).

The interaction between digital innovation and government policy can create a synergistic effect that accelerates the transformation of the banking sector. Supportive government policies can facilitate the adoption of digital innovations, which, in turn, can lead to improved regulatory compliance and risk management. However, this joint effect can also present challenges. Rapid digital innovation may outpace regulatory frameworks, leading to gaps in consumer protection and risk management (Njoroge & Mukulu, 2023). Conversely, overly stringent regulations may stifle innovation, limiting the potential

benefits of digital advancements (Mwangi & Kamau, 2022). The combination of digital innovation and supportive government policies can significantly enhance financial inclusion by providing access to banking services for underserved populations. For instance, mobile banking solutions, supported by government initiatives, can bridge the gap for individuals without traditional bank accounts. This inclusivity fosters economic growth and reduces poverty levels (Olaleye et al.,2024).

1.1.6 Government Policy

Government policies provide a regulatory framework through which all commercial banks are operated. Schulz-Knappe et al. (2019) posits that government fiscal policies, encompassing taxation, spending, and budgetary measures, impact commercial banks' performance. Fiscal stimuli like infrastructure investments or tax incentives bolster economic growth, increasing demand for banking services and enhancing bank performance. Conversely, austerity measures or tax hikes may curb consumer spending and investment, dampening credit demand and affecting bank revenues. Soewarno and Tjahjadi (2020) emphasize that government policies promote competition and market efficiency moderate bank performance. Antitrust laws and competition regulations foster fair competition, innovation, and customer satisfaction, driving improved bank performance and better outcomes for consumers in a competitive market environment.

Klus et al. (2019) examine the political economy of banking regulations, noting that government policy often includes fines and regulatory frameworks aimed at curbing the influence of large banks. Gal et al. (2022) emphasize the importance of government policies in regulating, supervising, and handling distress in public banks. Aslam and Raza (2022) opines that policies need to balance financial stability with a competitive banking environment. Ayadi & De Groen (2019) argued that while the EU’s Banking Union

policies promote integration and oversight, they may also reduce competition, as smaller banks struggle to comply with strict regulations designed primarily for larger institutions. Bellini et al. (2020) examined the European Central Bank's (ECB) policies and their role in handling the European debt crisis. They highlighted how government intervention and monetary policies by the ECB helped stabilize the banking system but also raised concerns about moral hazard as banks became more dependent on bailouts.

Liu and Zhang (2021) focused on the evolving banking regulations in South Korea, noting that government intervention played a critical role in modernizing the banking sector. Yao & Jiang (2019) analyzed China's government policies that emphasize state control over major banks and realized that Chinese government has maintained tight control over the banking sector to direct capital flows into strategic sectors, which has led to robust economic growth but also risked creating inefficiencies in capital allocation.

Beck & Cull (2021) examined the role of government policy in South Africa, focusing on how regulation has shaped the development of both large commercial banks and smaller community banks. They observed that while regulatory frameworks are essential for maintaining stability, they also noted the burden of compliance for smaller institutions and the impact on financial inclusion. Kasekende & Atingi-Ego (2019) explored government policies in Uganda, particularly how financial sector reforms have helped improve bank performance and financial inclusion. They noted that regulatory frameworks and liberalization policies fostered a more competitive and resilient banking sector, though challenges remain in expanding access to underserved populations.

According to Arungai, (2015); Mwangi (2018) commercial banks in Kenya are subject to stringent regulatory requirements and oversight by the Central Bank of Kenya (CBK) and other regulatory authorities. Compliance with regulatory requirements, including capital

adequacy ratios, liquidity ratios, and anti-money laundering (AML) regulations, requires significant resources and investment in systems and processes. Failure to comply with regulatory requirements can result in fines, penalties, reputational damage, and loss of customer trust (Ongo'ong'e &Eddie,2021). The banking sector in Kenya is highly competitive, with numerous commercial banks, including both local and international players, vying for market share. Intense competition puts pressure on banks to differentiate themselves through innovative products and services, efficient operations, and superior customer experience. Banks must continually invest in technology, marketing, and customer service to improve their profitability (FSD, 2019)

In this current study, government policy is conceptualized through three critical dimensions: lending policy, taxation, and data protection. The lending policy aspect refers to the rules and regulations set by the government and central bank that influence the availability of credit to businesses and individuals. It plays a pivotal role in determining the financial accessibility of commercial banks (Ozurumba &Onyeiwu,2019). Government-imposed lending caps or interest rate regulations can directly affect a bank's ability to extend loans and thus influence its financial performance. By examining lending policy, this study acknowledges how government directives can either facilitate or restrict the flow of credit within the economy, impacting liquidity and risk management for banks (Proenca et al.,2020).

The taxation policy governs how commercial banks are taxed on their profits and income. Government decisions regarding corporate tax rates, tax incentives for specific banking activities (like lending to underserved sectors), or VAT on financial services can have profound implications for the profitability and operational costs of banks. Taxation is an essential element in this study, as it directly affects the financial performance of banks by

influencing their capital structure, investment decisions, and overall fiscal health. It helps contextualize how governmental tax frameworks either incentivize growth or impose constraints on banking operations (Rao,2021; Rehman 2021).

Data protection policy has gained prominence due to the increasing digitalization of banking services. Banks handle vast amounts of sensitive data, and government policies on data security and privacy, such as regulations on how data is collected, stored, and shared, are crucial for compliance. Policies such as those informed by the General Data Protection Regulation (GDPR) or the Kenyan Data Protection Act can safeguard customer data but also impose operational costs on banks to ensure compliance (Roseline et al.2021). Data protection policies affect banks' risk exposure to cyber threats and legal liabilities, thereby playing a vital role in their financial performance. These three constructs of government policy—lending policy, taxation, and data protection—provide a comprehensive framework for understanding the ways in which governmental decisions and regulations shape the financial performance of commercial banks. Each policy area influences the operational dynamics of banks, either providing avenues for growth and profitability or imposing regulatory burdens that could impact efficiency and competitive advantage.

1.1.7 Performance of Commercial Banks

Performance of commercial banks in Kenya can be evaluated using various financial and operational metrics that reflect their profitability, efficiency, asset quality, liquidity, and capital adequacy. Robin et al. (2018) asserts that Return on equity (ROE) is one of the key measures of performance and that it measures a bank's profitability relative to its shareholders' equity and indicates how efficiently the bank is generating profits from its shareholders' equity. A higher ROE indicates better profitability. Commercial banks strive

to maintain a healthy ROE by managing their operating expenses and credit risk effectively. Chen et al. (2021) argues that Return on Equity (ROE) measures a bank's profitability relative to its shareholders' equity and indicates the return generated on shareholders' investment. A higher ROE reflects better profitability and shareholder value creation. Commercial banks aim to maximize ROE while balancing risk and capital requirements.

Efficient banks can allocate resources more effectively and remain competitive in the market (Sarkar, 2016; Vitorino et al.,2020). The measurement of banking institution profitability serves an important purpose in that it helps to benchmark an individual bank's relative performance against the industry as the "best practice" bank(s) and evaluate the impact on these institutions. Most studies on financial institution profitability have addressed the issue of efficiency, either in terms of scale and scope, or in terms of x-efficiency, or both (Rao,2021). According to Sipos &Soewarno(2018)and Zouari & Abedlmalek(2020)the performance of commercial banks globally is influenced by various factors, including economic conditions, regulatory environments, technological advancements, and competitive dynamics. While performance metrics may vary across countries and regions, there are several key trends and factors that impact the overall performance of commercial banks on a global scale.

Liu and Zhang (2021) in their study, they emphasize that ROE is a crucial metric for assessing the profitability of banks, as it indicates how effectively a bank generates profit from its equity capital. They analyze various factors influencing ROE and its relevance in comparing banking performance (Liu & Zhang, 2021). Abdullah, and Muda (2022) discuss the importance of ROE in the context of banking performance measurement. Their research highlights how ROE can serve as a benchmark for investors when evaluating the

financial health and efficiency of banks (Abdullah & Muda, 2022). In addition, Aslam, and Raza (2023) as authors of repute provides insights into the significance of ROE as a key performance indicator in the banking sector, arguing that it reflects a bank's ability to generate returns on shareholders' equity, which is vital for investment decisions. These studies highlight ROE's role as a fundamental performance metric in assessing the effectiveness and profitability of commercial banks in recent years.

Mwanzia (2021) posits that despite showing signs of improvement in 2020, the banking sector faced uncertainty as a result of the COVID-19 pandemic that delayed full containment, elevated credit risk, rising inflationary pressure, and headwinds from disruptions in global economic outturn, which innovation in the banking sector could not be able to moderate (FDS, 2019). On the other hand, CBK (2021) reported that Banking sector total operating income sustained its growth in 2019, marginally rising by 9.4 percent to Kshs. 628.5 billion from Kshs. 574.7 billion in 2020. The report further says Operating costs declined as banks deployed cost rationalization measures supporting bank income recovery including downsizing of workforce, reduce use of other innovations.

Despite the advancements in digital innovations, the relationship between the uptake of digital innovation and the financial performance of commercial banks in Kenya remains complex and multifaceted (Coetzee,2018). While digital innovations offer numerous opportunities for enhancing efficiency, expanding market reach, and improving customer experiences, they also present challenges such as cybersecurity risks, regulatory compliance, and digital divide concerns (Fasano &La Rocca,2021). Therefore, it is essential to empirically examine how different dimensions of digital innovation, including process, product, marketing, and organizational innovations, collectively influence the performance of commercial banks in the Kenyan context.

In the current study, the indicator of financial performance applied was Return on Equity (ROE). Return on Equity (ROE) was a vital measure of financial performance for commercial banks, assessing profitability relative to shareholder equity. This study aimed to provide insights into how effectively banks utilized equity to generate profits, reflecting their financial health and operational efficiency. Using ROE as a key performance indicator was relevant because it clarified how well a bank maximized shareholder value. In the competitive banking sector, a high ROE signaled effective resource management, boosting investor confidence and attracting further investment. Furthermore, analyzing ROE facilitated comparisons among banks, providing benchmarks for performance evaluation, identifying best practices, and informing strategic decisions to enhance financial performance and sustainability. (FSB,2019; Amidjaya &Widagdo,2020; Chen et al.,2021).

1.2 Statement of the Problem

Globally, the banking sector has undergone significant transformation due to rapid progression in adopting digital innovations (Hoxha & Kleinknecht,2020). Penetration of mobile banking application, rise of fintech companies and need to enhance operational efficiency are some of the factors that have transformed the digital adoption in Kenyan Commercial Banks (CBK,2022). According to GMSA (2020) 83% of Kenyan population have access to mobile application solution, from various financial service providers. Despite the momentous advancements, the extent to which digital innovation strategy such as process, product, marketing and organizational innovations translate into improved financial performance of commercial banks in Kenya remains uncertain (Roseline et al., 2021). Additionally, understanding the regulatory environment is crucial for assessing how

uptake of digital innovation strategy affects financial viability of commercial banks in Kenya (Misati et al,.2019).

The conceptual framework of the study posits that uptake of digital innovation strategy influences financial performance of commercial banks in Kenya with Return on Equity (ROE)as the indicator. This influence is moderated by government policies which significantly influence this relationship. The framework posits that successful integration process innovations such as automation of routine processes, embracing ideation and creativity can lead to enhanced operational efficiency and customer satisfaction, ultimately improving financial performance (Rao,2021). Introduction of new and differentiated digital products which are of high quality can significantly improve banks profitability. Commercial banks can leverage marketing innovations such as customized distribution channels and diversified marketing channels to improve customer engagement and streamline operations consequently improving performance (Ndungu & Muturi,2019; CBK, 2022). However, resistance to change, inadequate technological infrastructure and regulatory challenges may hinder successful uptake of digital innovations in the banking sector (Mwanzia,2021; Roseline et al.,2021). According to CBK (2022), the digital operational risk of commercial banks stood at 62% with cyber risk, third party and vendor management risk due to outsourcing being at 92%. Credit processes such as loan application, credit appraisal, credit approval and disbursement and repayment processes were least digitalized in most commercial banks.

Empirical evidence on the influence of uptake of digital innovation strategy on the financial performance of commercial banks in Kenya is still nascent. A gap persists in realizing the precise influence of these innovations on financial performance of commercial banks in Kenya. A gap is further aggravated by lack of extensive empirical

studies that methodologically assess the relationship between key innovations such as process, product, marketing and organizational innovations and financial performance of commercial banks in Kenya (Gupta et al.,2023). Existing studies have focused on segregated facets of digital innovations without capturing entirely the broader view of digital innovations. This disintegrated approach limits the understanding of mutual effect of process, product, marketing and organizational innovations on overall financial performance of commercial banks (FSD, 2019; CBK,2022). This impedes development of digital innovation strategies that harness digital technologies effectively in commercial banks.

Few attempts like study done by Ndungu and Muturi (2019) on this subject of digital innovations have mainly focused on the linkages between financial innovation and financial inclusion and the implications of financial innovation on monetary policy transmission; without considering the effectiveness of business process, product or organization innovations as the primary channel through which digital innovation impacts organizational performance. Some researchers have entrenched the argument that financial innovation expands economic activities (Khan et al.,2023), while others (Milan et al.,2023; Msamba et al.,2022; Nejad,2022) point to the possibilities of instabilities arising from digital innovation without proper regulations, which can lead to instability in the performance of commercial banks. The outlined studies that explore the Kenyan case have several shortcomings. First, they ignore the possible direct link between digital innovation strategies and practice. Second, they ignore the separate effects of different components of digital innovation, which are process, product, marketing and organizational innovations (Njuguna,2019; Mwanzia,2021; Osei & Hagan, 2024). The study aimed to fill this empirical gap by utilizing qualitative and quantitative methodologies to assess the

effect of uptake of digital innovations on financial performance of commercial banks in Kenya taking into account process, product, marketing and organizational innovations.

To gain a comprehensive understanding of the research problem, structured questionnaires were used to collect data from banks employees and ROE data was obtained from audited CBK supervisory reports. The findings assisted in providing actionable recommendations and strategies that can antecede for a more expeditious and successful digital transformation in the Kenyan commercial banking sector.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to assess the effect of uptake of digital innovation strategy on financial performance of commercial banks in Kenya.

1.3.2 Specific Objectives

The specific objectives of this study were;

i) To assess the effect of uptake of digital process innovation strategy on financial performance of commercial banks in Kenya.
ii) To investigate the effect of uptake of digital product innovation strategy on financial performance of commercial banks in Kenya.
iii) To establish the effect of uptake of digital marketing innovation strategy on financial performance of commercial banks in Kenya.
iv) To analyze the effect of uptake of digital organizational innovation strategy on financial performance of commercial banks in Kenya

v) To determine the joint effect of digital innovation strategy on financial performance of commercial banks in Kenya.

vi) To assess the moderating effect of government policy on the relationship between uptake of digital innovation strategy and financial performance of commercial banks in Kenya.

1.4 Research Hypotheses

The hypotheses were stated in a null context as follows;

$H_0$1: There is no statistically significant relationship between uptake of digital process innovation strategy and financial performance of commercial banks in Kenya.

$H_0$2: There is no statistically significant relationship between uptake of digital product innovation strategy and financial performance of commercial banks in Kenya.

$H_0$3: There is no statistically significant relationship between uptake of digital marketing innovation strategy and financial performance of commercial banks in Kenya.

$H_0$4: There is no statistically significant relationship between uptake of digital organizational innovation strategy and financial performance of commercial banks in Kenya.

$H_0$5: There is no statistically significant relationship between joint effect of digital innovation strategy and financial performance of commercial banks in Kenya.

$H_0$6: There is no statistically significant relationship between moderating effect of government policy, uptake of digital innovation strategy and financial performance of commercial banks in Kenya.

1.5 Significance of the Study

The study provided actionable recommendations and strategies to commercial banks that can pave way for a more accelerated and successful digital transformation in the Kenyan banking sector. This knowledge will bring a better understanding of how to address digital innovation challenges to unlock the full potential of digital banking, enhance customer experiences and ensure efficient operations amidst the global wave of digital disruptions (Lynch, 2018).

The findings also assisted the Kenyan government to understand the importance of developing clear guidelines and harmonized regulatory environment that ensure commercial banks embrace transformative digital initiatives without fearing potential legal and compliance ramifications. The findings will help future researchers by providing reference materials. Policy makers in the Kenyan financial sector will get to what may impede the development of a dynamic and agile banking ecosystem responsive to the rapidly changing needs of customers and develop actionable policies around the subject matter.

1.6 Limitations and Delimitation of the Study

1.6.1 Limitation

The study encountered several limitations across contextual, conceptual, and methodological dimensions that could potentially impact the robustness and generalizability of its findings. Contextually, the research was conducted within Nairobi, focusing on branches of 39 commercial banks, all located in their respective head offices. While it was assumed that these branches operate homogeneously with other branches across Kenya, the unique market conditions, regional variations, and branch-specific

dynamics outside Nairobi were not accounted for, limiting the broader applicability of the study's results across different regions.

Conceptually, digital innovation in banking is a multifaceted and evolving concept. Defining and measuring key variables like digital adoption rates, technological capabilities, and the influence of digital initiatives on financial performance proved to be challenging. The study faced complexities in operationalizing these constructs, which might limit the accuracy of findings, particularly when comparing digital innovation trends across different banks or regions. This limitation suggests that further refinement and alignment of digital innovation metrics may be needed to ensure comparability and precision in future studies.

Methodologically, several challenges were encountered. The reliance on self-reported data from bank executives posed the risk of social desirability bias, where respondents may have provided responses aligned with organizational goals rather than objective truths. Although rigorous survey design, confidentiality assurances, and triangulation from multiple sources (such as Central Bank reports and Kenya Bankers Association surveys) were employed to minimize bias, the potential for skewed data remains a concern. Moreover, data availability and quality presented additional hurdles, as comprehensive and reliable historical data on digital innovation was not always accessible. This may have constrained the depth of analysis, particularly in exploring long-term trends.

Ethical considerations were paramount, particularly with regard to data privacy, confidentiality, and informed consent, as the study involved sensitive financial data and insights into the internal operations of banks. Institutional review board approval was obtained to ensure adherence to ethical standards, yet the potential for ethical dilemmas, especially concerning the privacy of customers and employees affected by digital

innovations, persisted. Despite these limitations, the study employed a mixed-methods approach, combining qualitative and quantitative data collection techniques. This integration allowed for a richer and more comprehensive understanding of the impact of digital innovation on the financial performance of commercial banks. The use of triangulation from multiple data sources also helped validate the findings and explore the nuances of the digital transformation in the banking sector, though it could not completely eliminate all constraints related to data reliability, bias, and operational complexities.

1.6.2 Delimitation

There was assurance of getting the correct records to give the true findings of this research by ensuring obscurity of respondents. Drop and pick method of questionnaires was employed and replacing the misplaced questionnaires to ensure adequate data is collected. All levels of management in the banking industry which included senior management, supervisory management and lower level employees of the banks were considered in the study hence adequate data was assured.

To address sampling bias, the researcher did diversify sample by including a broader range of banks employees thus used stratified sampling techniques that helped to ensure adequate representation across various categories of respondents, enhancing the generalizability of findings. To have quality data the study prioritized data quality by using reliable and comprehensive data sources, validating data accuracy and completeness, and addressing missing or erroneous data. Collaborating with industry partners, leveraging standardized datasets, and conducting data validation checks did improve the reliability of study findings.

The use of refine measurement tools and methodologies to accurately capture digital innovation variables and their impact on bank performance was well applied. This

involved developing standardized metrics, conducting pilot studies to assess instrument validity and reliability, and incorporating multiple data sources and perspectives to triangulate findings. Sensitivity analyses and robustness checks further validated study findings. The research prioritized ethical considerations by obtaining informed consent from participants, ensuring data privacy and confidentiality, and adhering to ethical guidelines and regulatory requirements. Transparent reporting of study methods, limitations, and ethical procedures enhanced research integrity and trustworthiness. By employing these strategies, the study overcame limitations that is related to digital innovation in banking, enhance the vigor and validity of our findings, and contribute valuable insights to the growing body of knowledge in this field.

1.7 Assumptions of the Study

The study assumed that banks are increasingly embracing digital innovations to enhance operations, improve customer experiences, and maintain competitive advantages. This trend highlights the growing significance of digital transformation within the banking sector and serves as a foundational premise for examining the extent and impact of digital uptake. Another key assumption posited that customer behavior is significantly influenced by digitalization, with an increasing preference for digital channels and services among banking customers. This reflects the shift in consumer expectations towards greater convenience, accessibility, and personalized experiences offered by digital banking platforms. The study also assumed that the competitive dynamics within the banking industry are affected by digital uptake, where digital-native banks and fintech startups pose challenges to traditional banks' market positions. This underscores the need for conventional banks to innovate and adapt to ongoing digital disruptions to sustain competitiveness.

Additionally, it was assumed that the regulatory environment governing banking and digital technologies shapes banks' strategies for digital uptake. This includes compliance with regulations related to data privacy and cybersecurity, which are crucial in guiding banks through their digital transformation journeys. Organizational culture and capabilities were also assumed to influence the effectiveness of banks in adopting and leveraging digital technologies. This highlights the importance of leadership, organizational structure, employee skills, and change management practices in driving digital transformation within banking institutions.Moreover, it was assumed that digital uptake may exacerbate existing disparities in access to financial services, creating a digital divide between those with and without access to digital channels. This highlights the critical need for promoting financial inclusion and addressing barriers to digital access and literacy.

In addition to these assumptions, the study adhered to several foundational principles of Ordinary Least Squares (OLS) regression analysis, including: Linearity: The relationship between the independent variables and the dependent variable is linear. Normality: The residuals (errors) of the regression model are normally distributed. Homoscedasticity: The variance of the residuals is constant across all levels of the independent variables and independence: The observations are independent of each other. These OLS assumptions are crucial for ensuring the validity of the regression results and enhancing the credibility of the study's findings. Researchers must critically evaluate these assumptions and consider contextual factors that may influence the results, providing a comprehensive understanding of the complex relationship between banks and digital uptake.

1.8 Scope of the Study

The study focused on the 38 commercial banks in Kenya (CBK,2022). This study was carried out in Nairobi where the banks have their head offices and head office branches.

The reason for choosing Nairobi is because all the banks in Kenya have their main or headquarters offices in the city and also the operations of commercial banks are the same for all their respective branches. The primary data was collected from bank employees, which includes Senior Management, Middle Level Management, and First Line Management of the 38 commercial banks. Triangulation of secondary data was done and mainly obtained from Central Bank of Kenya annual financial reports and Banking sector innovation survey reports.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter provides a detailed literature review on theoretical framework, empirical review and conceptual framework.

2.2 Theoretical Review

A theory is a reasoned statement supported by evidence that is intended to explain some phenomenon (Varpio et al., 2020). Theories are developed to explain, predict, and comprehend occurrences, as well as to challenge and extend existing knowledge, within the constraints of critical boundary assumptions (Braidotti, 2019). Thus, theoretical literature assists the researcher to clearly comprehend the study's variables, provides a general framework for data analysis, and aids in the selection of an appropriate research design (Nord et al.,2019). Roger's diffusion of innovation theory, Evolutionary theory of economic change, disruptive innovation theory, dynamic capabilities and Institutional theory were utilized in this study.

2.2.1 Rogers Diffusion of Innovation Theory

The diffusion of innovation theory was forwarded by Everett Rogers in 1962.It seeks to explain how, why, and at what rate new innovations are diffused and accepted in a given society through various channels. Rogers further asserts that five main characteristics of innovation influence the diffusion of a new idea. These include; relative advantage. compatibility; complexity; testability; and observability. According to Rogers (2003) innovation is an idea, practice, or object that is perceived as new by individuals or groups

within a social system. Innovations can range from new technologies and products to novel behaviors or organizational practices (OECD, 2005). The characteristics of an innovation, such as its complexity, compatibility with existing norms and values, and relative advantage over existing alternatives, influence its adoption and diffusion. Diffusion refers to the process by which an innovation spreads over time among members of a social system. It involves the communication, adoption, and utilization of the innovation by individuals or groups within the system. Diffusion is not a uniform process but varies in speed and extent depending on factors such as the characteristics of the innovation, the social context, and the communication channels used (Naqshbandi &Garib, 2015).

Morton (2019) posits that adoption is the decision by an individual or group to make use of an innovation. Adoption involves the evaluation of the innovation's perceived benefits, costs, and risks, as well as its compatibility with existing norms and practices. Morton identified five adopter categories based on the timing of their adoption relative to the introduction of the innovation: innovators, early adopters, early majority, late majority, and laggards. Ballas and Chapman (2018) noted that communication channels are the means by which information about the innovation is transmitted within the social system. These channels can include interpersonal networks, mass media, social media, opinion leaders, and formal organizations. The choice of communication channels influences the speed and reach of diffusion, as well as the perceived credibility and trustworthiness of the information. Frei-Landau et al. (2022) argued that Rogers' Diffusion of Innovation Theory provides valuable insights into the dynamics of innovation adoption and diffusion within social systems. By understanding the factors that influence the adoption process, innovators and change agents can develop strategies to facilitate the successful introduction and implementation of innovations, ultimately leading to their widespread acceptance and integration into society.

Rogers explains the need for innovation to undergo trial before committing to using it. The theory further explains how leaders influence people's behaviour through observation while interacting with them (Naqshbandi & Garib, 2015). This demonstrates how visible the technology's output and gain are. It is what potential adopters see to be the attributes of an innovation that is the important thing (Kogabayev & Maziliauskas,2017). Rogers indicated that relative advantage is an important factor that influences the diffusion of innovation to determine the extent to which innovation offers improvements over currently available tools. Ballas and Chapman (2018) opines that Roger's diffusion of innovation is the way in which innovations spread, through market or non-market channels, from their very first implementation to different consumers. Without diffusion, an innovation has no economic impact.

Rogers' Diffusion of Innovation Theory has been widely influential and has provided valuable insights into the adoption and spread of innovations, it has also faced several criticisms and limitations. Frei-Landau et al. (2022) critics Rogers's models in that the model is oversimplifies the complex process of innovation adoption by reducing it to a linear sequence of stages and adopter categories. In reality, the diffusion process is often messy and nonlinear, influenced by a wide range of factors including social, cultural, economic, and political dynamics. They add that Rogers' theory tends to focus primarily on individual-level factors influencing adoption, such as perceived relative advantage and compatibility, while largely neglecting broader social and structural factors (Alojairi et al., 2019).

Lundblad and Jennifer (2003) argue that Rogers' theory does not tell us whether the system states of organizations need to be in normal operating mode in order for the theory to apply, or whether the theory holds in all types of organizations or only in certain types.

Specifically, the theory begins to describe the innovation-decision process within organizations but not to the level of addressing whether and how the characteristics of an innovation interact to affect its uptake within organizations; type, size, or industry affect uptake. In addition, while there is an innovation-decision process described for individual organizations, there is no description of how the variables interact when innovations are diffused across organizations. The theory does not adequately address issues such as selective exposure, interpretation, and persuasion, which can significantly influence the spread of innovations. Another addition is observed that Rogers' theory tends to downplay the role of resistance to change in the diffusion process. Resistance stemming from factors such as vested interests, cultural inertia, and fear of uncertainty, can impede the adoption of innovations even when they offer clear benefits. The theory does not provide a robust framework for understanding and addressing resistance effectively (Naqshbandi & Garib, 2015).

Despite all those critics, research in the use of innovation dissemination has been extensive. Arungai (2015) conducted a study on the role of service innovation on competitive advantage in the banking sector and the findings indicated that innovations are diffused faster if the five characteristics of innovations forwarded by Rogers theory are adopted and accepted in an organization. Makokha and Mutisya (2016) conducted a study on the uptake of e-learning systems, and they offer a conceptual model based on Rogers' diffusion of innovation theory. The findings revealed that e-learning knowledge and advantages were the most significant factors influencing uptake for all participants (Supriyanto et al.,2021).

The theory was anchored on process innovation, to explain how new ideas are diffused within an organization for maximum benefit. When new delivery methods are automated

there is need for them to undergo trial first for them to produce desired results. The methods should not be too complex to be understood by the users. Innovation requires substantial investment in creativity order to develop unique and not easy to imitate digital processes for the firm to gain large market share. How creativity is diffused within the organization is paramount to increasing returns on investments.

2.2.2 Evolutionary Theory of Economic Change

Nelson and Winter (1961) forwarded Evolutionary Theory of Economic Change. The theory analyses the capabilities of the firms associated with dynamic economic change and the response of firms and the industry to changed firms' products through innovation. The theory proponents that firms can leverage on innovation to achieve economic growth, technological progress and compete favorably with each other. The theory further poses that for firms to improve their profit margins, they need to search for innovative solutions that embrace dynamic economic change by firms offering high quality products. According to Nelson et al. (2018) success in rapidly changing markets is dependent on restructuring the firm's or offering uniqueness through product differentiation to achieve quick internal and external change. Organizations must develop transformational and unique products that allow them improve their profits (Teece, 2016).

Saviotti and Metcalfe (2018) posits that the evolutionary theory of economic change, also known as Evolutionary Economics, is a theoretical framework that views economic systems as unique, dynamic, and evolving systems. It emphasizes the role of new product development, careful selection, and adaptation in driving economic change and development over time. Nelson et al. (2018) emphasizes that innovation and technological change play a central role in driving economic evolution and development. Innovations can take various forms, including technological innovations, organizational innovations,

institutional innovations, and business model innovations. Innovation creates differentiated products, disrupts existing arrangements, and drives superior products within the economy. Evolutionary economics emphasizes the importance of product innovation to achieve dynamic economic change such as improved ROE. Institutions including new product development, offering superior products and enhancing uniqueness to check on imitation as key drivers to compete favourably in the industry. Effective institutions can support innovation, entrepreneurship, and economic development, while weak or dysfunctional institutions may impede progress (Trott, 2017).

According to Saviotti, and Metcalfe (2018) the theory comprises differentiation that sires' variation. Variation refers to the existence of diverse economic actors, behaviors, strategies, technologies, institutions, and organizational forms within an economic system. Variation is essential for generating innovation, experimentation, and new possibilities for economic development. Economic systems exhibit heterogeneity and diversity, with different actors pursuing different approaches and strategies. Selection involves the process of competition and selection among economic actors, behaviors, strategies, technologies, institutions, and organizational forms. Market forces, competition, and institutional arrangements act as selection mechanisms that favor certain traits, behaviors, or strategies over others. Successful innovations, strategies, or organizational forms are selected and replicated, while less successful ones are eliminated or marginalized (Rossignoli et al., 2016).

Nelson et al. (2018) opines that adaptation is the process by which economic actors, behaviors, strategies, technologies, institutions, and organizational forms adjust to changing circumstances and environments. Economic agents continuously learn, innovate, and modify their behaviors and strategies in response to feedback from the environment

and competitive pressures. Adaptation allows economic systems to evolve and respond to challenges and opportunities over time.

While the Evolutionary Theory of Economic Change has provided valuable insights into understanding economic dynamics, innovation, and products development, it has also faced criticism and limitations from various perspectives. Nelson et al. (2018) contributed on criticizing the theory by arguing that evolutionary economics underestimates the role of market forces, competition, and price mechanisms in shaping economic outcomes. While evolutionary economics emphasizes the importance of innovation, institutions, and social dynamics, it may overlook the efficiency and allocative properties of market processes in certain contexts. Kholi and Melville (2019) argue that evolutionary economics provides limited guidance for policymakers seeking to promote economic development or address specific economic challenges. While the theory offers insights into the processes of innovation and change, it may lack clear policy prescriptions or recommendations for addressing complex economic problems.

Rikap (2021) criticized the theory for not putting into consideration resources available in the firms for dynamic change to be effective. Any organization that doesn't their focus on the resource available to change its products (or do product innovation) in the form of organization innovation is doing disservice to itself, since resources are key. Commercial banks are tasked with harmonizing, assembling, and reconstructing capacity requirements in order to compete with their tier one counterparts. Without resources to do this Hong et al. (2018) acclaim this as an exercise in vain, the tier one banks will always be ahead on competition and profit. Schumpeter and Swedberg (2021) added The Evolutionary Theory of Economic Change provides a dynamic and multidimensional framework for understanding economic development, innovation, and change. By emphasizing the

importance of variation, selection, and adaptation, this theory offers insights into the processes that drive economic evolution and shape the trajectory of economic systems over time.

According to Trott (2017) study on influence of product innovation on firms' competitiveness recommends that organizations need to literally look at their capabilities to implement some strategies before mounting or making decisions on innovation to adapt. This will allow the organization to choose which innovation is most suited to its available resources, such as human resources or capital investment, as well as its impact on overall performance. Bank operations are expected to change dramatically over the next decade as a result of technological advancements, changing consumer preferences, and operational methods. This is likely to reshape the business strategy for the services and products offered, as well as how interactions and user experiences occur. The use of strategic digital innovations in the banking sector is not new, but the extent of digital innovation growth in the past decade in many spheres of the economy has not gone unnoticed (Coetzee, 2018).

It is against this background that this theory was anchored on product innovation variables of this study. For firms to realize higher returns on investments there is need to continually develop new products, provide high quality services and leverage on product differentiation by embracing dynamic changes in the strategies employed on services to offer. The fact that new product development was established, that emphasizes quality improvement, hence product differentiation, has been as a result of economic changes within the banks to a greater extent (Misati et al., 2019).

2.2.3 Disruptive Innovation Theory

Christensen (1990) initiated the theory of disruptive innovation. The theory's proponent describes it as a process where an entrant company with fewer resources is able to challenge an incumbent company with resources by entering at the bottom of the market and continuing to move up-market. He observes that though the incumbent innovates, they mainly concentrate on appealing to the most demanding and profitable customers, ignoring the needs of those in the down market. The entrants target the ignored market segment by meeting their needs at a reduced cost and eventually move upmarket to even offer innovative solutions that appeal to incumbent customers, thus causing disruption (Christensen et al., 2016).

Disruptive innovation, according to Simao and Franco (2020) also known as stealth innovation, involves applying new technology or processes to the company's current market. It is stealthy in nature since newer tech will often be inferior to existing market technology. This newer technology is often more expensive, has fewer features, is harder to use, and is not as aesthetically pleasing. It is only after a few iterations that the new technology surpasses the old and disrupts all existing companies. Disruptive Innovation Theory, developed by Clayton Christensen in the late 1990s, is a framework for understanding how new technologies, products, or services can disrupt existing markets and industries, often by offering simpler, more affordable, or more accessible alternatives to incumbent products or services. This theory has been influential in explaining the dynamics of innovation-driven competition and the strategies that companies can use to respond to disruptive threats (Christensen et al.,2018).

Christensen et al. (2018) emphasized that disruption is a key component of this theory in which it occurs when a new entrant introduces an innovation that initially targets low-end

or niche segments of the market that incumbent firms may overlook or underserve. Disruptive innovations typically offer lower performance along traditional dimensions that mainstream customer value, such as quality or features, but they excel in other dimensions that are less important to mainstream customers, such as affordability, accessibility, or convenience. On the other hand, market incumbents are established firms that dominate an industry or market segment. Incumbents often focus on sustaining innovations, which involve incremental improvements to existing products or services to meet the needs of their most demanding customers. However, incumbents may be vulnerable to disruption if they fail to recognize or respond effectively to emerging disruptive threats.

Simao and Franco (2020) argued that sustaining innovation vs. disruptive innovation is part of the component of disruptive innovation. Christensen distinguishes between sustaining innovations and disruptive innovations. Sustaining innovations are improvements to existing products or services that enhance performance along dimensions that mainstream customer value. In contrast, disruptive innovations initially offer lower performance along traditional dimensions but eventually improve to meet the needs of mainstream customers, often surpassing incumbent offerings. Christensen et al. (2018) adds that the Innovator's Dilemma refers to the challenge faced by incumbent firms in responding to disruptive threats. Incumbents may be reluctant to invest in disruptive innovations, as these innovations initially offer lower profit margins and may cannibalize sales of existing products. However, failing to respond to disruption can leave incumbents vulnerable to competitive threats and market shifts.

Naqshbandi and Garib (2015) argued that innovations often follow distinct trajectories as they evolve and mature. Christensen identifies different market entry strategies that disruptors can use to gain a foothold in the market, including targeting underserved or

overlooked segments, competing on new performance dimensions, or leveraging new business models or distribution channels. This was agreed by Christensen et al. (2018) by saying that disruptive Innovation Theory emphasizes the importance of understanding market dynamics and industry evolution in predicting and responding to disruptive threats. Disruptions can lead to significant shifts in market share, profitability, and competitive dynamics, reshaping entire industries and creating new winners and losers. Incumbent firms can adopt various strategies to respond to disruptive threats, including investing in disruptive innovations themselves, creating separate business units or spin-offs to pursue disruptive opportunities, acquiring or partnering with disruptors, or focusing on differentiating their offerings to target higher-end market segments.

According to Mikes and Kaplan (2014) disruptive Innovation Theory provides a valuable framework for understanding the dynamics of innovation-driven competition and the challenges and opportunities that arise from disruptive threats. By recognizing the distinct characteristics of disruptive innovations and their implications for market dynamics and industry evolution, firms can develop strategies to navigate disruptive changes and sustain competitive advantage in rapidly evolving markets. Wheelen et al. (2017) draws on Christensen's work to strengthen his understanding of disruptive innovations, viewing them as disrupting normal progress through business innovations. Tahir (2018) clarifies the misuse of the word disruption in business by saying that it’s what happens when the incumbent is so focused on pleasing their most profitable customers that they neglect the needs of their other segments.

According to Mikes and Kaplan (2014) Christensen's theory failed to explain that sometimes the incumbent can choose to move further upstream by being more innovative and focusing on greater profit margins. It’s also evident that not all entrants embrace

disruptive innovation to be able to compete favorably with incumbents. Braidotti (2019) critics of this theory in that disruptive innovation development process is an interdependent system based on the concepts of system thinking and of dynamic strategic thinking with learning as a central aspect. This process is affected by exogenous determinants such as economic, social, and political factors; competition and infrastructure; and endogenous determinants such as resources, corporate structure, and corporate culture.

Wadesango and Magaya (2020) criticized the theory by indicating that while Disruptive Innovation Theory emphasizes the challenges that incumbents face in responding to disruptive threats, critics argue that it may provide limited guidance on how incumbents can effectively respond to disruption. The theory's emphasis on the Innovator's Dilemma highlights the difficulties that incumbents face but may not offer sufficient strategies for incumbents to navigate disruptive change proactively. Also, Disruptive Innovation Theory may have limited predictive power in forecasting specific disruptive events or outcomes within industries. While the theory provides valuable insights into the mechanisms of disruption and the conditions under which disruption may occur, its ability to predict the timing, magnitude, and impact of disruptive events may be uncertain. Factors such as market complexity, uncertainty, and the agency of actors may introduce variability and unpredictability into the dynamics of disruption.

A study done by Nandram (2016) on the performance of SMEs and innovation, and based on its argument on the theory of disruptive innovation, discovered that innovations ensure that there is improvement in routines, procedures, and processes employed to execute firm activities. Wadesango and Magaya (2020) conducted another study, and the findings from the study supported the theory upon which this study was based, as it brought out the positive relationship between product innovation and organizational performance.

Commercial banks are coming up with ways of forming collaborations through partnerships on the digital platform with established technology firms or other third-party vendors as well as setting up their own technological subsidiaries (CBK, 2020). Disruptive innovations in the credit market by non-bank actors and mobile network providers are examples of technology-enabled innovations in financial services (Financial Stability Board, 2019).

Christensen (1990) who invented disruptive innovation, focused on new entrants in the market who bring in new things by mainly focusing on the ignored market. This in essence disrupts the already existing processes in the bank or firm. Cherotich et al. (2015) posits that one of the key challenges facing banks is the impact of disruptive new technologies on their retail payments business—the so-called "rise of FinTech". What is different now is that various factors are coinciding that look set to fundamentally change the landscape of the retail payments market, and in ways that threaten banks' dominant market position (Cherotich et al., 2015). Mikes & Kaplan (2014) argue that disruptive innovation is a process that helps organisations plan and develop strategies for innovation that are more growth-oriented and cost-effective.

This theory was anchored on the objective of marketing innovation. It's seen in the understanding disruptive innovation where firms develop variety of marketing channels so as to reach unserved markets. According to Nandram (2016) managers are better placed to use disruptive innovations so as to be able to know what kinds of channels can be used to do marketing as they embark on marketing innovation strategies like distribution innovation, channel diversification, market development, and online marketing. It also helps to explain how organizations can use the most preferred channels so that customers can be reached in an easier and more convenient manner. If an organization in Kenya

observes the benefits of mobile and internet banking, they will embrace these innovations given other factors such as the availability of the required tools (Musau et al., 2018). Lundblad and Jennifer (2003) note that it is faster in organisations that have internet access and information technology departments than in organisations without the internet and technology. Despite the potential gain of digital marketing innovation, commercial banks have not achieved optimal successful uptake of these innovations, thus affecting the performance of some of the commercial banks. The theory supported that idea that some upcoming commercial banks develop new markets that compete favorably with incumbent organizations that have been in the market for long and manage to penetrate their products in wider markets.

2.2.4 Theory of Dynamic Capabilities

This theory was forwarded by David Teece, Amy Shuen, and Gary Pisano in 1997. Dynamic capability is the capability of an organisation to purposefully adapt an organization's resource base in product production (Teece et al.,1997). The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities are responsible for enabling firms to integrate, marshal and reconfigure their resources and capabilities to adapt to rapidly changing environment. Annarelli and Nonino (2016) add that the term is often used in the plural form, "dynamic capabilities," emphasizing that the ability to react adequately and timely to external changes requires a combination of multiple capabilities on a given product in an organization innovation.

Teece et al. 1997; Saviatti and Metcalfe (2018) further expounded the theory by discussing competitive advantage as the ultimate goal of dynamic capabilities which is to create and sustain competitive advantage for the firm. This can be achieved by continuously sensing,

seizing, and reconfiguring in response to changing market conditions, firms can develop unique sources of competitive advantage that are difficult for competitors to replicate or imitate. Organizational learning and knowledge management has been emphasized by the theory as the importance of organizational learning and knowledge management in building and leveraging capabilities. Firms must develop mechanisms for capturing, sharing, and leveraging knowledge and insights from past experiences, both successes, and failures, to inform future strategic decisions and actions.

According to Qaiyum et al. (2018) the theory also includes Strategic leadership and organizational culture as one of the key capabilities. Effective strategic leadership and organizational culture are critical enablers of dynamic capabilities. Leaders must foster a culture of innovation, experimentation, and adaptability within the organization, encouraging employees to take risks, challenge the status quo, and embrace change as a source of opportunity rather than a threat (Teece,2016).Overall, the Theory of Dynamic Capabilities provides a comprehensive framework for understanding how firms can develop and leverage their internal capabilities to navigate turbulent environments, seize opportunities, and sustain competitive advantage over time. By continuously sensing, seizing, and reconfiguring in response to changing market conditions, firms can adapt and thrive in dynamic and uncertain business landscapes (Schumpter and Swedberg, 2021). The contemporary dynamic capabilities approach defines digital, electronic, and system economics, as well as the reduction in costs associated with the use of specific services or product.

Hong et al. (2018) advocated for dynamic capabilities to be operationalized and evaluated in a variety of situations and countries. Wheeler presented a gross implementation developed from the dynamic capability theory to help elucidate topics linked to the

dynamic capability and absorptive capacity theories. The Net-Enabled Business Innovation Cycle by Wheeler using the dynamic capability theory, Qaiyum et al. (2018) enhance understanding and predict how enterprises translate dynamic capabilities linked with net-enablement into consumer value as product innovation based on organizational innovation. For instance, learning periodicity may aid in the modification of all forms of dynamic and operational capabilities, whereas management skills may generate, change, and extend many types of capabilities, such as those for invention, acquisition, and alliance (Alojairi et al., 2019).

Campanella et al. (2017) discovered two unique methods for understanding how managers produce economic rents for their firms: resource selecting and capacity development. According to the first mechanism, organizations generate economic rent by being more successful at resource selection than competitors in order to produce a product in focusing at product innovation or the organization innovation. There are really probably several reasons for the immense interest in dynamic capabilities. It is strongly related to the resource-based perspective (Dubey et al., 2017; Ferreira and Lisboa ,2019; Gartenberg, 2019) which is a very active area of research in and of itself. Its emphasis, like that of the resource-based perspective, is on basic concerns such as competence and company performance, which have long been important in the field of strategic management. Its focus, in contrast to the resource-based paradigm, is on dynamics.

While the Theory of Dynamic Capabilities has been influential in strategic management research, it has also faced criticism and scrutiny from various perspectives. Saviotti and Metcalfe (2018) have argued that the concept of dynamic capabilities is often ill-defined and ambiguous, making it difficult to operationalize and measure empirically. There is a lack of consensus on what constitutes a dynamic capability, how it differs from other types

of capabilities, and how it contributes to competitive advantage. This conceptual ambiguity may limit the theory's applicability and predictive power. Awino et al. (2018) argue that the Theory of Dynamic Capabilities may overlook the importance of external factors like industry structure, market dynamics, and competitive positioning. They argue that replicating dynamic capabilities across different firms and industries can be challenging due to factors like organizational culture, leadership, resource endowments, and historical path dependencies. They also argue that the theory may overemphasize internal capabilities, leading to an incomplete understanding of how firms achieve and sustain competitive advantage. Saviotti and Metcalfe (2018) argue that firms must consider these external factors when developing and implementing dynamic capabilities.

Mwazumbo (2016) conducted a study in which the study conceptualized the connection between management resources, environmental dynamism, dynamic capabilities, and organizational performance of typical manufacturing companies in Kenya using dynamic capabilities theory, and the findings were that, in line with legislation, the study confirmed that resources could improve the success and effectiveness of the organizations to improve performance by utilizing dynamic capabilities. Thus, organizations may concentrate on resource integration and reconfiguration to attain long-term comparative benefit.

In their study, Kogo and Kimencu (2018) discovered a very substantial positive association between organizational capability dynamism and performance. The report recommended that transportation businesses invest more in research and development (R & D) to deal with the ever-changing external environment. In their study on food and beverages, Awino et al. (2018) discovered that the independent effects of company capabilities in human capital, research and development, information technology, and marketing demonstrated statistical significance. However, according to Hong et al. (2018), dynamic capabilities

can take various forms and involve various functions, such as marketing, product development, or process development, but the overarching common characteristics are that they are higher-level capabilities that provide opportunities for knowledge gathering and sharing, continuous updating of operational processes, interaction with the environment, and decision-making evaluations.

Klus et al. (2019) on the other hand, believe that dynamic capabilities reflect best practices and display equifinality. As a result, they contend, dynamic capacities cannot be used to gain a competitive advantage or outperform competitors. Teece (2007) responds to these assertions by claiming that, while best practices will not provide a competitive advantage, they are unlikely to have dynamic capabilities, adopt a more agnostic approach to this topic, noting merely that dynamic capabilities are used to enhance efficacy (Amidjaya et al., 2020). The theory of Dynamic Capabilities has provided valuable insights into the importance of adaptation and resource reconfiguration for achieving competitive advantage, it is not without its limitations and criticisms (Adner & Zem, 2016).

This theory, was anchored on the organizational innovation objective.The theory elucidates the need for the commercial banks in Kenya to integrate, build and reconfigure its internal and external competences to address issues around organizational re-engineering, manage change and enhance knowledge transfer through collaboration with other players in the industry. By embracing various capabilities within the organization, the firm is able to perform effectively as every stakeholders' capacity is maximally utilized. The theory examined the impact of organisational innovation on commercial bank performance and can only be seen from the perspective of dynamic capability. Secondly, the theory, according to Hong et al. (2018), is founded on the premise that firm ROE is the cornerstone for reviving short-term skills through change management as an

organizational re-engineering process. Finally, and based on Teece (2016), who opines that the firm's profitability is based on the use of both new and existing organizational capabilities that are found in knowledge transfer and sharing.

2.2.5 Institutional Theory

Institutional Theory was initially developed by Meyer and Rowan (1977) and later expanded by DiMaggio and Powell (1983) through the concept of institutional isomorphism, which describes how organizations become similar due to external pressures. The theory examines the role of social, cultural, and regulatory environments in shaping organizational behavior and strategies. Institutional Theory postulates that organizations are not merely shaped by internal factors such as efficiency and competition but also by external forces, including government policies, regulatory frameworks, and societal expectations (Prange and Pinho,2017). The theory argues that organizations adopt structures and innovations primarily to gain legitimacy within their institutional environment (Truong et al.,2021). This legitimacy is crucial for organizations to access critical resources, reduce risk, and ensure survival in competitive industries hence institutional isomorphism.

Institutional isomorphism is conceptualized through three distinct mechanisms that drive organizations toward homogeneity. First, coercive isomorphism arises from formal pressures imposed by the state, regulatory bodies, or other authoritative institutions, compelling organizations to conform (Rahmah et al.,2020). Second, normative isomorphism emerges from professionalization, where industry standards and norms shape organizational behavior and practices (Hameed et al.,2022). Finally, mimetic isomorphism occurs when organizations mimic the actions of successful peers in response to uncertainty, seeking to align with prevailing industry trends and practices (Mardani et

al.,2018). In the context of this study, Institutional Theory helps explain how commercial banks in Kenya adapt to government policies related to digital innovation, such as the adoption of mobile banking technologies, digital payment systems, and online banking platforms. These innovations are not only driven by internal competitiveness but also by the need to comply with regulatory demands and maintain legitimacy in the eyes of regulators and stakeholders (Anand and Mantrala,2019).

Institutional Theory offers several strengths as a framework for analyzing organizational behavior. First, it emphasizes the role of external forces, particularly government policies and societal expectations, in shaping organizational strategies. This focus is particularly useful for understanding the adoption of new technologies, as organizations are often pressured by regulatory bodies to innovate or adapt in response to external mandates (Weerakkody et al.,2021). Second, Institutional Theory provides a valuable explanation for why organizations seek legitimacy by conforming to external norms, regulations, and policies. This pursuit of legitimacy is essential for organizational survival and financial success, especially in industries subject to strict regulatory oversight, such as banking (Mardani et al.,2018). Organizations in these sectors often align their strategies with external demands to maintain credibility and ensure compliance, which in turn enhances their financial performance.

Third, the theory's applicability to regulated sectors, particularly the banking industry, highlights its relevance. Commercial banks, operating in a highly regulated environment, are frequently subjected to coercive pressures that influence their adoption of digital innovations and other strategic decisions. Institutional Theory explains how these pressures shape banks' behavior as they respond to the need for compliance and legitimacy within the constraints of legal and regulatory frameworks (Prange and Pinho,2017). Thus,

the theory is particularly well-suited to analyzing organizational responses to regulatory requirements in the banking sector.

Institutional Theory, despite its significant contributions, faces several critiques that highlight its limitations. First, a key weakness is its limited focus on internal organizational dynamics. The theory predominantly emphasizes external pressures, such as regulatory and societal forces, while often neglecting crucial internal factors like organizational culture, leadership styles, and strategic decision-making processes. This narrow focus may result in an incomplete understanding of how organizations evolve, particularly in cases where internal dynamics play a significant role in shaping organizational strategies (Seifollahi and Hamidzadeh,2021).

Institutional Theory's emphasis on conformity and isomorphism can lead to the potential for organizational inertia. By stressing the need for organizations to conform to external pressures, the theory may overlook instances where organizations resist change or innovation. This resistance can lead to inertia, where organizations are slow to adapt to technological advancements or market shifts. Such a tendency toward maintaining the status quo, even in the face of innovation, limits the theory's ability to explain dynamic, rapidly changing environments (Truong et al.,2021).

Institutional Theory underpins this study by providing a framework to understand the relationship between government policies, digital innovation, and financial performance in the Kenyan banking sector. The theory suggests that commercial banks adopt digital innovations not solely for internal gains or efficiency improvements, but also to comply with regulatory frameworks and maintain legitimacy in the institutional environment (Medase and Abdul-Basit,2020).

The objective of this study is to determine the joint effect of digital innovation and government policy on the financial performance of commercial banks**.** Coercive isomorphism, a key concept within Institutional Theory, explains how government policies related to digital banking technologies, such as regulations on mobile money and digital transaction security, create pressures that compel banks to adopt digital innovations. These innovations, in turn, have the potential to improve financial performance by enhancing operational efficiency, expanding customer reach, and reducing transaction costs (Otieno and Juma,2024).

The theory highlights that the regulatory environment plays a crucial role in shaping the success or failure of digital innovations. Government policies that promote or restrict digital innovations can significantly impact how well banks perform financially. For instance, a supportive regulatory framework may encourage banks to innovate more freely, thereby improving financial outcomes, while restrictive policies may limit the scope of digital advancements and adversely affect financial performance. In summary, Institutional Theory links with the current study by offering insights into how government policies and digital innovations interact to shape the financial performance of commercial banks in Kenya (Gichuhi,2023). It explains that banks conform to regulatory pressures to ensure legitimacy and compliance, which influences their decision to adopt digital technologies, thereby impacting their financial outcomes.

2.3 Empirical Literature Review

Pandey and Pandey (2021) define an empirical literature review as a method that analyzes previous studies to address a specific research question using observations and measurements, rather than theories or beliefs. This approach guided the study's exploration of digital innovations in processes, products, markets, and organizations,

considering the moderating effects of government policies. The study concludes by assessing how these factors collectively impact the performance of commercial banks in Kenya. By synthesizing empirical evidence, the study offers insights into the dynamics between digital innovation, government regulation, and bank performance, contributing to the understanding of these complex interactions.

2.3.1 Process Innovation Strategy on Financial Performance of Commercial Banks

Process innovation refers to new ways of operating businesses and implementing information technology, such as the Automated Teller Machine (ATM), mobile banking, and online banking, geared toward increasing efficiency in the banking system. Jin and Cedrola (2019) define process innovation as the introduction of new technology or methods to enhance an organization's competitiveness and customer satisfaction through automated delivery techniques. Karabulut (2015) advances the idea that process innovation in commercial banks involves implementing new processes to enhance efficiency, productivity, customer service, and performance, reducing costs and meeting evolving customer and stakeholder needs.

On the global front, Cherrafi et al. (2018) examined the link between lean, green practices, process innovation, and green supply chain (GSC) performance across 13 countries. They surveyed 374 manufacturing firms using structured questionnaires and analyzed the data with structural equation modeling (SEM). Results showed lean practices, like JIT and waste reduction, significantly enhanced GSC performance. However, process innovation did not directly impact GSC performance. The study suggests prioritizing lean and green practices for GSC improvement. Yet, contradictions arise as process innovation's influence remains unclear. Further research is urged to understand process innovation's role and explore the varied impacts across regions and industries. The study highlights the

significance of digital transformation in enhancing the operational efficiency and customer engagement of banks. It emphasizes the need for banks to adopt innovative technologies to remain competitive in the evolving financial landscape. A gap exists in the specific impact of these innovations on financial performance metrics in developing economies like Kenya.

Kahn (2018) study explored the integration of digital technologies in banking particularly, how they influence customer experience and operational efficiency. Employing a qualitative approach, the study conducted a conceptual analysis based on existing literature to delineate innovation dimensions. While lacking a specific sample size, the research highlighted innovation's ubiquity and elusiveness, simultaneously emphasizing it as both an outcome and a process. Identifying three elements—outcome, process, and mindset—the study offers a comprehensive understanding of innovation within organizations. Recommendations advocate for a holistic approach to innovation integration into vision, mission, and objectives, fostering a culture supportive of innovative thinking among employees at all levels. While the study emphasizes customer-centric approaches, it lacks a detailed analysis of quantitative impacts on financial performance, which was the focus of the current study.

A study done Wellalage and Fernandez (2019) in USA on technological change and financial innovation in banking on some implications for Fintech. The study first describes the role of the financial system in a modern economy and how technological change and financial innovation can affect social welfare. Drawing on the literature on process innovations from the 2000s and 2018s informs what they expect from recent developments. The study reveals that technological advancements like faster computing and internet adoption (process innovation) have improved payment systems and

accelerated product innovation in the banking sector. Consumer lending has shifted from human-centered to automated underwriting processes, resulting in greater credit availability. Fintech has also catalyzed financial innovation, leading to new products, services, production methods, and organizational structures. Advanced technologies like blockchain, distributed ledger, artificial intelligence, and machine learning are revolutionizing banking, including cryptocurrency issuance, early-stage funding, marketing, and credit decision-making processes. This study found a positive correlation between technological adoption and financial performance in the banking sector, specifically highlighting emerging markets, but does not delve into the unique challenges faced by Kenyan banks in this regard, presenting an opportunity for further exploration.

Naqshbandi and Singh (2015) study examined the role of technology in improving financial inclusion and customer service in banks. The emphasis was on the use of data analytics by commercial banks to drive process innovation, leveraging customer data to optimize operations, personalize experiences, and identify new opportunities. Predictive analytics and real-time monitoring enable data-driven decisions, while agile methodologies facilitate iterative development and rapid adaptation to market changes. The study highlights agile practices' role in promoting collaboration and rapid prototyping, allowing banks to respond quickly to feedback and regulatory demands. Embracing agility enhances process adaptation and innovation, ultimately impacting return on equity (ROE) positively. The study identified technological adoption barriers but does not sufficiently address the financial performance outcomes, which could be a critical aspect of the current study.

Almustafa et al. (2023) investigated the transformative potential of artificial intelligence (AI) in Jordanian commercial banks, focusing on credit risk management. Employing a

systematic research design, they surveyed 143 employees from major banks in Amman, Jordan. Results suggest AI integration could revolutionize banking by improving credit assessment accuracy, market risk analysis, financial forecasting, risk model validation, and creditworthiness evaluation. The study advocates strategic AI use for financial innovation and credit risk management enhancement. While it discusses the benefits of these services, it falls short in connecting customer satisfaction directly to financial performance metrics, indicating a potential gap for investigation. It also lacks detailed challenges during AI integration and suggestions for future research areas. Despite this, it offers valuable insights into AI's role in enhancing financial services in Jordanian commercial banks.

Zhao et al. (2022) did a study that investigates the influence of financial technology innovation on Chinese banks' performance, utilizing patent data and FinTech development indexes and utilizing a moment model to address potential indigeneity. The study reveals that FinTech innovation can reduce banks' profitability and asset quality, particularly for large state-owned commercial banks. However, it can improve capital adequacy and management efficiency, though to a lesser extent for policy banks and state-owned commercial banks. Banks' specific FinTech capabilities also impact performance. The study suggests that banks should focus on the rising capabilities of FinTech technology rather than its challenges and competition. The study focuses on Chinese banks and doesn't explore the generalizability of the findings to other countries like Kenya and also lacks sample size used. However, they may overlook the regional differences and specific challenges faced by banks in Kenya, suggesting a need for localized research.

YuSheng and Ibrahim (2020) investigated innovation capabilities, types, and firm performance in major commercial banks in Ghana's Kumasi metropolitan area. Using a survey with 500 respondents from 10 branches, findings revealed positive relationships

between product, marketing, and organizational innovations and bank performance. Analyzed via SmartPLS 3 and SPSS V.22, the study emphasizes the significance of selecting appropriate innovation types to enhance bank performance and meet customer needs. It extends literature on innovation adoption and organizational performance in financial services, particularly in emerging markets. While the study lacks explicit recommendations, it highlights the importance of process and product innovations, leaving out exploration of other innovation types. The findings highlight a positive correlation but may not address the unique socio-economic factors influencing Kenyan banks, presenting an opportunity for further study.

A study done by Jin and Cedrolla (2019) explored process innovation's significance in the global fashion industry, focusing on product development, production, order fulfillment, store operations, and service levels in Uganda. They highlight the role of information systems, digital technologies, robotics, and AI in enhancing supply chain efficiency. Whether incremental or radical, with or without technology, process innovation is crucial for fashion firms' success. While technology facilitates innovation, management practices also play a pivotal role. Fashion firms must continuously identify areas for improvement and implement process innovations to remain competitive and successful. The study underscores the importance of a multifaceted approach to innovation, integrating both technological advancements and managerial strategies. However, the study lacks a detailed exploration of the barriers to implementation in specific regional contexts like Kenya, suggesting an area for future research.

In Africa,a study done by Msamba et al., (2022) on: Examining the Roles of Automatic Teller Machines in Banking Services Delivery in Tanzania: A Case of Commercial Banks in Mwanza City, Tanzania Exploratory research design. Conducted in commercial banks

in Ilemela and Nyamagana administrative districts of Mwanza region. Utilized convenient and purposive sampling methods with sample size 215 bank customers, 52 bank employees, and 2 representatives from regulatory bodies. Data collected through observation, interviews, and questionnaires. Found that the automated delivery techniques accepted by many commercial banks worldwide were RTGS, mobile, and internet banking. It was clear that the uptake of financial innovation had an effect on the financial results of commercial banks. The study suggests that further research should be conducted in all commercial banks to investigate the effects of financial innovation strategies on other aspects of the bank's competitive edge. However, the study did not delve into effect of specific digital innovations on financial performance.

Sub-Saharan Africa faces low infrastructure investment, with only 29% paved roads, a quarter with electricity access, and three landlines per 100 people (ITU, 2009; World Bank, 2009a & b). This infrastructure deficit underscores challenges in delivering banking services and inhibits overall economic development. Alshehhi et al. (2018) argue that access to and use of mobile telephony in sub-Saharan Africa have increased dramatically over the past decade. In Sub-Saharan Africa, there are ten times as many mobile phones as landlines, and mobile phone coverage is available to 60% of the population (ITU, 2019). Between 2002 and 2007, mobile phone subscriptions increased by 49% per year, compared to 17% per year in Europe (ITU, 2019), which alone gave rise to a better return on equity (ROE).

Arungai (2015) highlights the link between mobile phone coverage, service types, prices, and firm performance. Amidjaya and Widagdo (2020) suggest mobile banking can benefit unbanked individuals with virtual accounts, yet Angola poor infrastructure hinders real-time transactions. Sarkar (2016) notes organizational processes, management, and beliefs

enhance employee performance and bank effectiveness. In their study, Ozurumba and Onyeiwu (2019) attempt to find out if mobile phone technology extends banking services to the unbanked by using empirical lessons from selected sub-Saharan African countries. The study notes that low-income households in Sub-Saharan African (SSA) countries lacked access to bank accounts and also faced high costs for performing basic financial transactions. While Arungai (2015) study provides a foundational understanding of digital innovations, it may not fully incorporate the latest digital innovations, suggesting a need for an updated analysis in the current study.

Kiplangat and Tibbs (2018) conducted a study on financial innovations and performance of commercial banks in Kenya, utilizing a causal research design to establish relationships among various variables. Their target population included 215 employees from 43 banks, with a sample size of 170 respondents selected through stratified sampling. Data analysis involved inferential statistics, guided by theories such as innovation diffusion, agency, and transaction cost innovation theories. Although specific findings are not provided, hypotheses related to online, electronic, mobile, and agency banking likely underpin the study's focus. Recommendations are inferred to include suggestions for enhancing the adoption and implementation of these banking innovations to improve financial performance. Future research could explore the impact of process innovations on bank efficiency and effectiveness, potentially enhancing profitability ratios or return on equity. While the study addresses financial innovations, it overlooks process innovations' potential role in streamlining banking operations and service delivery. The study identifies benefits but does not comprehensively analyze how these innovations affect overall financial performance, creating a potential gap for exploration in the current research.

Process innovation, as indicated by Lynch (2018) demands thorough planning and management backing due to its radical nature, necessitating cultural shifts and posing higher risks. Naqshbandi and Singh (2015) stress its broad organizational impact compared to incremental changes, focusing on return on equity (ROE). Sarkar (2016) underscores understanding various process innovation types to maximize ROE benefits across customer experience, product functionality, and corporate culture. Nandwa (2016) highlights its value addition internally and externally, improving delivery metrics and impacting ROE. Ndung'u (2019) notes banks' technological adoption to enhance service quality and ROE. Ultimately, process innovators target significant improvements in key performance indicators for organizational success.

The studies collectively emphasize the significance of digital innovations in enhancing operational efficiency, customer satisfaction, and financial performance in the banking sector. However, most studies either lack a specific focus on the Kenyan context or do not deeply analyze the quantitative impacts on financial performance metrics. The current study can bridge these gaps by focusing specifically on how the uptake of digital innovations affects the financial performance of commercial banks in Kenya, taking into account the unique challenges and opportunities in the region. This approach would have contributed valuable insights to the literature and help in formulating strategies for banks aiming to improve their financial performance through digital innovation.

2.3.2 Product Innovation Strategy on Performance of Commercial Banks

Product innovation refers to new financial products or modifications of existing products and can further be classified under types, functions, or characteristics (Johne, 2018). These include securitized assets, derivatives, weather derivatives, foreign currency mortgages, hedge funds, exchange-traded funds, private equity, and retail structured products (Tahir

et al. 2018; Klus et al. 2019). According to Johne (2018) and Rikap (2021), product innovation refers to changes that improve design, materials, feel, look, capacity, functionality, and overall user experience, hence having a ripple effect on the firm's performance or, generally, return on equity (ROE).

Qamruzzaman and Jianguo (2017) define product innovation in commercial banks as the development of new financial products, services, or solutions to meet evolving customer needs, enhance competitiveness, and drive business growth. This entails creating novel offerings or improving existing products to adapt to market changes, technological advancements, and regulatory demands. Adner and Zemsky (2016) note that banks innovate to introduce entirely new products catering to specific customer segments or addressing market gaps. This could include innovative savings accounts, digital wallets, or customized lending options. Additionally, banks upgrade existing products by adding features, functionalities, or benefits based on customer feedback and market trends. For instance, integrating mobile banking, rewards programs, or enhancing security measures can boost return on equity (ROE). While these innovations aim to improve customer satisfaction and ROE, they also ensure banks remain competitive amidst evolving industry dynamics (Korableva & Kalimullina, 2016; Matar & Eneizan, 2018; Misati et al., 2019).

Ghasemaghaei and Calic (2020) investigated the impact of big data on firm innovation performance. The empirical analysis in the study explored how big data characteristics (volume, variety, and velocity) influence innovation efficacy, efficiency, and firm performance, surveying 239 managers. While specific industries or regions weren't disclosed, the study reveals that data variety and velocity positively affect firm innovation, while volume does not significantly impact it. These challenges prevailing beliefs, emphasizing the importance of timely data processing. The findings suggest prioritizing

strategies for effective data utilization, urging policymakers and business leaders to invest in technologies enabling diverse data management for enhanced innovation and firm performance. In this study a gap lies in the limited focus on how these innovations specifically impact financial performance in banking, which the current study could address.

Bustinza et al. (2019) investigated the relationship between product-service innovation (servitization) and performance, focusing on strategic partnerships, R&D intensity, and servitization literature. Surveying executives from 370 large manufacturing firms globally, the study employed qualitative and quantitative methods. Results highlight the critical role of strategic partnerships with Knowledge-Intensive Business Service (KIBS) firms in enhancing product-service innovation and performance. Emphasizing concentric strategic partnerships, especially in high R&D industries, the study recommends manufacturing firms prioritize alliances with KIBS entities to drive innovation and performance. Additionally, firms in R&D-intensive sectors should explore service provision implementation opportunities to capitalize on market dynamics. Policymakers are urged to support collaborative initiatives between manufacturing firms and KIBS entities to foster innovation and competitiveness in high R&D sectors. The study is more generalized across industries and lacks a specific focus on the banking sector in Kenya, which the current study has explored in detail.

In Eastern Europe, Ramadani et al. (2019) examine the link between product innovation and firm performance in transition economies (TEs), utilizing multistage empirical analysis with data from Business Environment Enterprise Performance Surveys (BEEPS). Employing the Crepon-Duguet-Mairesse (CDM) model, the study identifies a positive association between product innovation and firm performance in TEs, indicating improved financial outcomes for firms introducing new products. Furthermore, it identifies firm size

and capital investment as positive factors and firm age and competition from the informal sector as negative influences on performance. The research underscores the importance of prioritizing product innovation, considering firm size and capital investment, and addressing challenges posed by firm age and informal competition in TEs. While the study addresses how innovation can enhance business performance, it doesn't deeply analyze the banking sector or the financial performance implications, presenting a gap the current study fill.

A study done by Raymond, Uwizeyemungu, and Fabi (2018) analyzed IT capabilities' role in product innovation within Canadian industrial SMEs using a configurational method grounded in resource-based view and contingency theory. They emphasize IT capability alignment and specific configurations' formation for fostering innovation. Data from 588 SMEs categorized as IT Defenders, Analyzers, and Prospectors reveals three distinct IT capability configurations, with tighter alignment configurations linked to heightened product innovation performance. The study recommends SMEs prioritize aligning IT capabilities, particularly with configurations like Analyzers or Prospectors, to enhance innovation. Managers should invest in IT capabilities aligned with organizational goals. Policymakers should recognize IT capability alignment's importance in SME innovation and competitiveness, fostering growth and sustainability. This study found a positive correlation between IT capabilities and product innovation, however, the link between specific digital innovations and financial performance in the banking sector is underexplored, especially in the Kenyan context.

Liu and Atuahene-Gima's (2018) study in China delve into how competitive strategies and market-based assets bolster product innovation amidst dysfunctional competition. Initially surveying 600 firms from a pool of 2500 high-tech entities, the research scrutinizes

innovation returns in emerging economies grappling with challenges like IP violations. Analyzing responses from 282 Chinese high-tech managers, the study highlights the efficacy of cost leadership, customer focus, and creative marketing in fostering innovation, whereas differentiation and competitor focus yield lesser impact. It advises prioritizing cost leadership, customer-centricity, and innovative marketing to combat dysfunctional competition. However, the study's industry-specific focus on China may limit broader applicability, lacking details on specific violations or exploring collaborative innovation avenues. This study examines the relationship between product innovation orientation and performance in firms. While it explores innovation from a broad perspective, it lacks specific insights into digital innovations in banking and their financial impact, highlighting a gap for further research in the current context.

Olalere et al. (2021) study contrasts Malaysia and Nigeria regarding financial innovation and bank competition's influence on firm value. Utilizing sys-GMM estimation, it scrutinizes these factors' impact, defining financial innovation as novel financial tools, technologies, institutions, and markets. Analyzing data from 26 banks in both nations during 2009–2019, the study identifies divergent effects: in Nigeria, both factors negatively affect firm value, while in Malaysia, they yield positive outcomes. Key variables such as return on assets, bank size, GDP growth, and inflation rate correlate strongly with firm value. Notably, the interaction effect significantly boosts company value in both countries. Policymakers are urged to address financial crisis vulnerabilities, implementing regulatory measures to mitigate risks associated with financial innovation, fostering economic stability and growth. While the study touch on financial performance, it is not specific to the banking sector, leaving room for further investigation into how digital innovations affect commercial banks in Kenya.

In Africa, Aniuga and Ogba (2021) conducted a study in Nigeria on "Product Innovation and Customer Satisfaction in Nigeria Brewery Industry," focusing on Star Lager Beer consumers in the South-East and quality improvement. Employing a survey design, data was gathered from 280 respondents using questionnaires. Descriptive statistics and Pearson's correlation tested hypotheses, while multiple regression analysis examined others with SPSS. Results indicated significant links between product quality and repurchase intent, and product packaging and repurchase intent. However, findings on product brand name's relationship with repurchase intent and product packaging with customer loyalty were inconclusive. The study recommends Nigerian Breweries Plc. to prioritize improving product quality to enhance customer satisfaction. While relevant, the study lacks a focused analysis on financial performance metrics specific to Kenyan commercial banks.

Avenyo et al. (2019) study on the employment impact of product innovations in Sub-Saharan Africa (SSA)utilized the Dose Response Model (DRM) to analyze the employment effects of innovation. Merging data from the Enterprise Survey (ES) and the Innovation Follow-Up Survey (IFS) across five SSA countries, the research assessed product innovation's influence on job creation at varying intensities. While positive impacts on total employment were observed, these effects were contingent on specific innovation levels. The study recommended policy interventions by managers and governments to promote product innovation, particularly in sectors requiring temporary and unskilled employment opportunities, thereby fostering economic growth, sustainability and Return on investment. Sipos and Ionescu (2018) advocate strategic innovation for firm survival, stressing differentiation to enhance performance and return on equity. Although the study provides useful insights into innovation adoption, they do

not extensively address how these innovations translate into financial performance improvements in the banking sector.

Omwanza and Jagongo (2019) conducted a survey exploring financial innovation and performance within microfinance institutions (MFIs) in Uganda. Investigating various forms of innovation like product, marketing, and institutional innovations, they employed a descriptive research design. Their study involved 369 respondents from the Association of Microfinance (AMF-Uganda), revealing a significant impact of financial innovation on MFI performance. However, further empirical research is needed to fully understand this relationship within Kenya's microfinance landscape. The study examines digital banking adoption and its effect on the performance of Kenyan banks. However, the study lack depth in analyzing the financial performance outcomes, which the current research could further investigate.

Millan et al. (2023) focused on mobile banking technology's influence on loan performance in Mombasa County's deposit-taking savings and credit cooperative organizations (DT SACCOs). Utilizing a descriptive approach and regression analysis, they found mobile banking positively affects loan processes, suggesting DT SACCOs should embrace digital innovations to enhance loan performance and competitiveness. While specific to Mombasa County, these findings underscore the broader trend towards digitalization in financial services, urging institutions to adapt to meet evolving customer needs and improve operational efficiency.

CBK (2019) highlights technology innovations like ATMs, smart cards, and digital banking in Kenyan banks, shaping the sector. Annarelli and Nonino (2016) outline various product innovation types, notably new product development (NPD), often incremental and self-sustaining. Radical or disruptive innovations, though less common, pose significant

risks to firms' performance due to their complexity and lower success rates. Driving adoption of these innovations remains a challenge, with only 1 in 7 ideas resulting in successful products (Qamruzzaman & Jianguo, 2017). Another avenue is enhancing existing products, rather than NPD, through incremental changes. Leveraging and refining innovations from others proves most lucrative, addressing unmet consumer needs through successive improvements (Njeri, 2017). Incremental enhancements ensure maximal consumer value from new products.

These studies collectively emphasize the positive relationship between digital innovations and firm performance, including improved efficiency, customer satisfaction, and competitive advantage. However, the gaps are evident in the lack of region-specific research on Kenya, particularly regarding how process innovations impact the financial performance of commercial banks. The current study can bridge this gap by focusing on how process innovations, such as mobile banking, fintech integration, and data analytics, affect the financial performance of Kenyan commercial banks, addressing both challenges and opportunities in the local banking sector.

2.3.3 Marketing Innovation Strategy on Performance of Commercial Banks

A marketing innovation, according to Trott (2017) and Biemans (2018), is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion, or pricing. Tahir et al. (2018) define marketing innovation as an activity that entails the implementation of new marketing techniques with significant changes in production design or packaging coupled with distribution innovation aimed at improving the business or firm’s performance.

Sorum (2020) notes that marketing innovation in commercial banks capitalizes on digital channels, employing strategies like online advertising and social media marketing. This

enables targeted messaging, real-time campaign optimization, and personalized offers (Ferrell et al., 2021). Leveraging data analytics, banks gain insights into customer behavior to develop tailored marketing campaigns and enhance segmentation accuracy (Ihm, 2019). By analyzing transaction histories and demographic information, banks can optimize marketing ROE and improve customer targeting. Data-driven approaches enhance customer engagement and satisfaction, ensuring marketing efforts resonate effectively in the dynamic banking landscape.

A study by Mehdiabadi et al. (2020) explores the readiness of banks for Industry, focusing on Banking and integration. Methodologically, it employs a systematic review of Banking and technologies. Analyzing Fourth Industrial Revolution trends, it identifies readiness indicators for banks. The study, devoid of a specified sample size, encompasses literature reviews and technology trends. Results reveal Banking integration with Industry outlined through six design principles and 14 technology trends. It proposes a crucial roadmap for banks to engage with Industry. However, it may not fully address challenges faced by smaller financial institutions. Future research should target these challenges for broader Banking adoption. The study found a positive impact of marketing innovation on competitive advantage and organizational performance, emphasizing the adoption of new marketing strategies. However, it does not specifically address financial performance in the banking sector, particularly in Kenya, highlighting a potential gap for this current study.

Nejad (2022) conducted a systematic review of academic research on financial innovations, comprising two phases. The first involves quantitatively reviewing 546 journal articles published from 1990 to 2018, while the second synthesizes findings into five research areas. Although the second phase lacks a specified sample size, it

systematically analyzes literature across various domains, offering insights into trends and gaps. The analysis reveals variations in methodologies and geographic focuses, primarily on the USA and Europe. Despite providing a comprehensive overview, the study faces limitations in capturing the evolving financial landscape. Future research should explore emerging market developments while staying relevant to industry dynamics, offering avenues for studying financial innovations. While the study offers insights into the importance of marketing innovation, it lacks an in-depth analysis of its direct impact on financial performance in commercial banks, especially in a Kenyan context which the current study dwelt on.

Matar and Eneizan (2018), study discovered that marketing innovation extends beyond customer acquisition to encompass the entire customer journey. Commercial banks prioritize customer satisfaction, loyalty, and advocacy by innovating marketing strategies. This entails optimizing digital touchpoints, enhancing website usability, and delivering personalized communications throughout the customer lifecycle. Content marketing is central to this innovation, with banks creating informative articles, engaging videos, and educational webinars to showcase expertise and build credibility. They experiment with various formats and storytelling techniques to capture audience attention, foster engagement, and strengthen brand affinity. The study highlights a positive relationship between marketing innovation and firm performance. However, it primarily focuses on general industries and does not specifically address the banking sector in Kenya, indicating a gap the current study could fill by focusing on financial performance in this sector.

Medrano and Olarte-Pascual (2016) examined the impact of the crisis on marketing innovation in Spain. Using data from the Technological Innovation Panel, the study analyzed two subsamples of 9,415 enterprises each. Employing binomial logit models and

various tests, they find significant differences between 2008 and 2010. Enterprises in Spain were less inclined to innovate in marketing in 2010 compared to 2008, with the effect of enterprise size decreasing notably. Interestingly, firms pursuing organizational innovations were more likely to innovate in marketing. While insightful, the study might overlook other contextual factors affecting marketing innovation trends. Future research should explore additional influences on marketing innovation over time. While the study establishes a strong link between innovation and performance, it does not address financial metrics or provide a detailed analysis of how these innovations affect commercial banks' financial performance, especially in developing countries like Kenya.

While in Asia, Musawa and Ahmad's (2019) study constructs a conceptual framework to investigate how entrepreneurial orientation (EO) influences marketing innovation performance in small and medium enterprises (SMEs). By synthesizing literature on entrepreneurial orientation (EO), marketing innovation, and SME performance, the study proposes a theoretical framework. This framework establishes links between EO dimensions (autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness) and marketing innovation performance, with environmental dynamism moderating these connections. As a conceptual and theoretical study, it does not involve empirical data collection or sampling, rendering sample size irrelevant. The study suggests that SMEs with higher levels of EO are more inclined to engage in innovative marketing practices. It offers actionable recommendations for SMEs, advocating for embracing EO, adapting to environmental changes, and investing in marketing innovation to attain a competitive edge and sustainable growth, though it does not delve deeply into how these innovations translate into financial performance outcomes in the banking sector, creating a gap for further research in Kenya.

Wang et al. (2020) investigated marketing innovations amidst the COVID-19 crisis in China. Employing qualitative methods like in-depth interviews and literature review, the study uncovers four strategies: responsive, collective, proactive, and partnership. Strategies varied based on firms' motivations and collaboration levels. The study, lacking a specified sample size, provides examples of firms implementing each strategy, along with their characteristics. It offers managerial insights, indicating that Chinese firms can overcome challenges during the pandemic by embracing effective marketing innovation strategies. Wang et al. (2020 study highlights the role of digital marketing innovations in driving organizational growth and profitability. While it provides useful insights, it does not focus specifically on the banking sector or financial performance, leaving room for further investigation in the Kenyan context.

In Indonesia, Suandi et al. (2023) exploration of Islamic banking and marketing ethics sheds light on marketing innovations. Their survey-based study probes the impact of Islamic marketing ethics and convergence marketing on competitive advantage and bank performance in Indonesia. Analyzing data from 204 branch managers, they employ the partial least squares (PLS) approach. Results show Islamic marketing ethics and convergence marketing significantly affect competitive advantage, with the latter acting as a mediator. However, organizational digital literacy doesn't moderate these relationships. Practical insights suggest emphasizing Islamic marketing ethics and implementing transparent services, brand building, and quality standards to enhance competitive advantage. Although convergence marketing touches on fintech innovation aspects, the paper doesn't explicitly delve into this connection. The study examines the role of marketing innovation in enhancing organizational performance. However, the study does not comprehensively explore financial performance metrics, especially within the commercial banking sector in Kenya.

Zouari and Abdelmalek's (2020) study in Tunisia explores financial innovation, risk management, and bank performance. Using a mediation approach, it investigates how risk management mediates the relationship between financial innovation and bank performance, employing Baron and Kenny's (1986) method. Panel data from Tunis Stock Exchange-listed banks from 2009 to 2017 provides a comprehensive analysis. The study unveils a positive link between financial innovation, risk management, and bank performance, highlighting the role of effective risk management in enhancing stock market valuation. It underscores the importance of human capital development and operational risk management in fostering financial innovation, advocating for training programs for managers involved in innovation implementation. However, they focus on general firm performance without deeply analyzing financial performance metrics, particularly in the Kenyan banking sector, leaving a gap for the current study to explore.

Studies done by Morgan et al. (2019) agree that marketing has a very comprehensive role. These include the famous 4Ps (product, pricing, policy, and promotion), market research, and strategic tasks. Market research entails the identification of customer needs as well as current and future market needs and the exploration of potential market opportunities. Ferrell et al. (2021) point out that marketing also plays a strategic role. Based on the corporate strategy, marketing plans are drawn up. Ferrell et al. (2021) point out that one quality that unites the marketing strategies of all of these brands is innovation. Effective digital marketing requires that brands have the ability to adapt to change and grasp new opportunities. Being able to innovate allows brands to conceptualize new ideas and put them into practice. While innovation has been acknowledged as a fundamental quality for product and tech teams for some time now, innovative practices are also increasingly being applied to marketing in various firms, including commercial banks, based on positive performance.

Karabulut (2015) study explores ethical marketing practices and innovation in financial services. It underscores the importance of marketing attribution, demonstrating teams' contributions to the bottom line, irrespective of the creative process. The study emphasizes the pivotal role of marketing in introducing new products or services, a process integrated with product lifecycle management. Internal marketing precedes external promotion, ensuring staff buy-in before market launch. External marketing encompasses the entire marketing mix, from product positioning and pricing to communication and sales channels. Networks and partnerships among competing firms drive innovation in high-tech sectors. The study recommended further studies in other regions and countries It provides a useful perspective but does not deeply analyze the financial outcomes of marketing innovation in banks, particularly in a Kenyan context.

Mothersbaugh et al. (2020) suggest that leveraging technology to improvise, modify, augment, or transform existing trade channels can decrease transaction costs and enhance return on equity (ROE). However, Gartenberg et al. (2019) note the benefits of innovation without pinpointing the conditions conducive to collaborative innovative marketing in an international context. Rupa (2017) contends banks must articulate and measure expected benefits from winning strategies, hinging on value delivered to customers. These include customer segmentation, co-creation, CRM, alternative channels, and cross- and upsell effectiveness. Kenya's recent digitalization policy, spurred by COVID-19, drives towards a cashless society, promoting convenience and efficiency in banking services (FinAccess, 2016).

Mwangi et al. (2018) assert that marketing and innovation are the core functions of business, emphasizing customer-centricity for optimal return on equity. The study adopts a descriptive research design to explore the impact of market culture on the performance

of listed banks in Kenya. Utilizing the Competing Values Framework (CVF), they define organizational culture, with market culture as the independent variable. Performance is gauged through qualitative and quantitative measures like return on assets, customer experience, and staff satisfaction. Strategic leadership is seen as a moderating factor. Findings show that market culture significantly affects bank performance, with strategic leadership enhancing this relationship. Embracing market dynamics, proactivity, and market intelligence are emphasized for tailored strategies. However, the study's focus on listed banks in Kenya limits generalizability to other bank types or regions, warranting further research. Also, study lacks a detailed analysis of the mechanisms through which specific marketing innovations impact profitability and growth, suggesting an opportunity for further exploration.

The studies emphasize the importance of marketing innovation in improving organizational performance and customer engagement. However, there is a gap in specific research on the direct impact of marketing innovation on financial performance metrics in the commercial banking sector, especially in Kenya. Many studies either focus on general firm performance or do not adequately explore financial outcomes such as profitability, return on assets (ROA), or growth. The study filled these gaps by focusing on how marketing innovations, including digital marketing, customer relationship management (CRM) strategies, and product marketing techniques, influence the financial performance of commercial banks in Kenya. This research provided insights specific to the Kenyan banking sector and the role of marketing innovation in driving financial success.

2.3.4 Organizational Innovation Strategy on Performance of Commercial Banks

Organizational innovation involves the development and application of new management practices, processes, and methods to improve firm performance (Nandram, 2016),

including recruitment strategies, resource allocation, and managerial incentives (Moreno et al., 2015). Annarelli and Nonino (2016) describe it as reshaping business practices, workplace organization, and external relations. In commercial banks, this innovation entails adopting fresh structures, processes, and practices to enhance efficiency and agility, responding to market shifts, customer demands, regulations, and technological advancements, ultimately enhancing return on equity (ROE).

Simao and Franco (2020) observe that embracing agile methodologies promotes flexibility, collaboration, and innovation in this sector. Agile principles facilitate iterative development, cross-functional teams, and swift decision-making, aiding banks in responding adeptly to market shifts, customer feedback, and competitive pressures. Embracing agile practices enables banks to hasten project delivery, enhance productivity, and cultivate a culture of continual enhancement and learning. Nandram (2016) notes a shift from traditional hierarchical structures to flatter, decentralized ones in commercial banks, empowering employees and expediting decision-making. This organizational innovation involves delegating decision-making to frontline staff, fostering autonomy, accountability, and empowerment. Flat hierarchies enable banks to swiftly adapt to market changes, capitalize on opportunities, and meet customer needs for improved returns on equity (ROE).

Globally, Anand and Mantrala's (2019) study on "Responding to Disruptive Business Model Innovations: The Case of Traditional Banks Facing Fintech Entrants" The methodology involves a review of the evolution of the fintech challenge in the financial services sector, integrating key marketing concepts with an understanding of millennial lifestyles. The study, a conceptual article, lacks a specified sample size, relying instead on extensive prior research, theories, and case studies to shape its propositions. It

highlights how Fintech newcomers are reshaping financial services, disrupting traditional banks. While offering a systematic response framework for incumbents, it may oversimplify the competitive landscape's complexity. It advises banks to thoroughly evaluate Fintech threats and adapt strategic responses accordingly. Also, it does not focus on the specific impact of these innovations on financial performance in the banking sector, especially in Kenya, highlighting a gap for further research.

Weerakkody et al. (2021) conducted a qualitative case study on business process re-engineering (BPR) in two European local authorities, revealing both positive and negative outcomes. Nine interviews were conducted over five months, revealing insights into BPR implementation. While BPR led to efficiency gains and process integration, it also resulted in the formation of institutional silos, potentially hindering service delivery effectiveness. Recommendations include fostering collaboration, continuous evaluation, and adaptation of BPR initiatives to align with organizational goals and citizen needs. Future research should explore long-term impacts and strategies to maximize benefits while minimizing unintended consequences. The study highlights the importance of methodological rigor in analyzing BPR's influence on public sector transformation however the study lacks a direct focus on the banking sector or financial outcomes, suggesting a need for research on how similar innovations affect commercial banks' financial performance.

Truong et al. (2021) did a study on Data-Driven Approach to Enterprise Re-engineering: A Framework for Process Optimization. The study employs a data-driven methodology integrating enterprise strategy and data mining rules extracted from the enterprise's data warehouse. The sample size includes the operational history of business processes within a retailer of low-cost domestic flights. The scholarly focus on enterprise re-engineering often overlooks algorithmic techniques for proactive process improvement, despite their

potential to enhance process-intensive enterprise architecture. The research proposes redesign algorithms to optimize business processes by eliminating redundancies and reordering tasks. Effectiveness is evaluated using business intelligence indicators. Implement the proposed approach to enhance competitiveness by proactively optimizing enterprise processes, aligning with high-level strategies, and leveraging insights from data analysis. The study does not delve into the specific context of commercial banks in Kenya, presenting a gap that the current study could fill.

Prange and Pinho (2017) examined the impact of personal and organizational drivers on the international performance of SMEs in Portugal's oil and gas industry, employing a quantitative methodology. Drawing on the resource-based view (RBV), the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze data from 120 exporting SMEs primarily in the business-to-business (B2B) sector. Results indicate that personal and organizational capabilities positively affect SME/firms international performance. Despite shedding light on these drivers and the mediating role of organizational innovation, the study may overlook the nuanced dynamics of internationalization. SMEs should focus on both personal and organizational drivers, prioritizing investments in innovation to bolster international performance. This research offers actionable insights for managers and practitioners aiming to cultivate an innovative culture supportive of international expansion.

Rahmah et al. (2020) investigated the impact of organizational innovation (OI) – including product, process, and administrative innovation – on organizational learning (OL) at developed World, a key player in the UAE's maritime sector. Utilizing a quantitative approach, data was gathered through surveys administered to developed World employees, resulting in 372 valid responses. Findings demonstrate a positive relationship between OI

and OL. The study stress that organizational innovation necessitates cultural shifts towards openness, adaptability, and risk-taking. Commercial banks foster innovation by promoting curiosity, embracing diverse perspectives, rewarding experimentation, and learning from failures. It also emphasizes the importance of customer-centricity and design thinking in bank innovation, aligning product development and services with customer needs, thus fostering loyalty and improving returns on equity (ROE). However, the study's focus on a single organization may limit generalizability, urging organizations to invest in diverse innovation domains to nurture adaptive cultures.

Shahul Hameed et al. (2022) did a study on examining Business Process Reengineering's Impact on Organizational Performance Amid the COVID-19 Pandemic: The Role of Strategic Thinking in Malaysia. The study employs partial least squares structural equation modeling to analyze data gathered from 103 samples via a survey of electronics manufacturing companies listed in the Federation of Malaysia Manufacturers' directory. While business process reengineering dimensions exhibit significant positive impacts on organizational performance, their effects are amplified when strategic thinking is present within the organization, emphasizing the importance of strategic alignment during crises like the coronavirus pandemic. Key dimensions of business process reengineering, including top management commitment, organizational readiness for change, information technology capabilities, and people management, positively influence organizational performance. Managers in the Malaysian electronics manufacturing industry should focus on dimensions of business process reengineering that positively impact organizational performance. The study does not explicitly address the financial performance of commercial banks, particularly in Kenya, highlighting a potential gap for the current study.

Mardani et al. (2018) conducted a study in Iran to explore the relationship between knowledge management (KM), innovation, and organizational performance. Using data from 120 firms, they confirmed a positive correlation between KM, performance, and innovation through Structural Equation Modeling (SEM). The findings revealed that KM activities directly influence innovation and performance, with notable effects on innovation speed, quality, and quantity. Recommendations include policymakers monitoring technological innovations' impact on the banking industry and fostering collaboration between academia, industry, and regulators. Further research could delve into the interaction between different types of innovations and external finance, enhancing understanding of innovation dynamics in SMEs and strategic establishment. However, the study lacked a focus on process innovations, and specific KM practices were not detailed.

In Indonesia, Zulkifli et al. (2023) study employed a quantitative approach, utilizing structural equation modeling (SEM) with AMOS software, to investigate the mediation of organizational innovation in complex relationships on Islamic Banks. Drawing data from 273 employees out of 941 in Pekanbaru, Indonesia, their study unveiled significant links between competency, Islamic organizational culture, and organizational innovation. The study suggests Islamic banks prioritize competency development and cultivate an Islamic organizational culture aligned with their values. Encouraging organizational innovation can enhance employee performance, warranting resource allocation. Specific organizational innovations fostering Islamic culture, such as leadership, HR practices, and collaborative work design, could further be explored to enhance performance. This recent study investigates the impact of organizational innovation on firm performance, with a focus on developing economies. However, the study was only carried out on Islamic banks, highlighting a potential gap warranting further investigations.

Seifollahi and Hamidzadeh (2021) explored the relationship between knowledge management, market orientation, open innovation, and market performance at Tejarat Bank in Tehran. Using a descriptive-correlational approach with a sample of 242 employees, experts, and managers, they found that knowledge management, market orientation, and open innovation positively influence market performance, with open innovation mediating this relationship. The study underscores the significance of knowledge management and market orientation in enhancing market performance, recommending banks invest in knowledge management for competitive advantage and focus on market orientation to meet customer needs. Cultivating a culture of open innovation fosters collaboration and innovative solutions, while personalized services and continuous communication enhance customer satisfaction. Regular monitoring and evaluation are vital for ongoing improvement efforts. While it is relevant to the current study, it does not specifically analyze the financial performance outcomes in commercial banks, suggesting a gap that the current study can address.

In Egypt, Abdo and Edgar (2021) explored the role of bricoleurs in achieving organizational innovations during the COVID-19 pandemic in Egypt's banking sector. Through qualitative research with six general managers from multinational banks, they identified improvisation as a key competency within Senge's learning organization framework. Improvisation, rooted in creativity, experience, and intuition, emerged as essential amid resource constraints. Despite qualitative research limitations, the study underscores the importance of leveraging improvisation as a vital innovation competence. General managers are urged to adopt strategies that embrace improvisation to effectively navigate challenges posed by the pandemic in the Egyptian banking sector. The study examines the role of organizational innovation in increasing productivity and performance.

However, the study does not focus on the banking sector or financial performance metrics, creating a gap for the current study which was explored.

Medase and Abdul-Basit (2020) emphasized external knowledge sources' significance in predicting firms' innovative capabilities, highlighting consultants, new employees, and workshops' roles. While the study focused on 11 sub-Saharan African firms, it examined the relationship between financial innovation, specifically mobile banking, and economic variables in the region. This study employs a partial linear regression model to examine financial innovation, mobile banking, covering the period from 2011 to 2017. The study found a negative correlation between mobile banking and economic growth. Although insightful, it lacks a specific focus on financial performance in commercial banks, especially in Kenya, indicating a potential gap for further research.

Muigai and Gitau (2018) conducted a descriptive survey to assess innovation strategies' impact on Kenyan banking firms' financial performance. Analyzing data from 153 managers across 51 Nairobi-based financial institutions, the study found both product and organizational innovations positively influence financial performance. Recommendations include introducing new products, leveraging technological innovations like e-customer databases and call centers, and centralizing loan application systems. However, the study lacked depth in exploring how these innovations contribute to overall organizational performance, particularly regarding technology integration, organizational culture, and organization innovation.

Mwai et al. (2019) investigated the moderating effects of bank size on financial innovation adoption's relationship with financial deepening in Kenya's banking sector. Using the Technology Acceptance Model, they examined perceptions and usage of technology among all listed commercial banks over five years. Results indicated a significant

relationship between financial innovation adoption and financial deepening, with bank size moderating this association. The study underscores the importance of supporting financial innovation initiatives, emphasizing policymakers and regulators' role in promoting integration. However, it lacks exploration of organizational innovations influencing financial innovation adoption, such as culture and leadership styles.

Dida and Buba (2023) did a study on: "Impact of Process Re-engineering on NHIF Organizational Performance: A Study in Northern Kenya" The research employs a descriptive survey design, collecting data from both primary and secondary sources. Structured questionnaires were used to gather primary data from 64 NHIF workers in selected county offices in Northern Kenya. The sample size comprised the entire target group, determined through a census approach. Despite the imperative for strategic innovation due to business environment complexity, there's a gap in understanding the impact of process re-engineering on NHIF's organizational performance. The study reveals a moderate positive relationship between process re-engineering and organizational performance, indicating its potential significance in enhancing NHIF's effectiveness. The government is advised to implement policies fostering NHIF's development and innovation while safeguarding member interests. The study did not focus on the banking sector specifically influence on financial performance hence warranting further investigation.

Henry (2021) stresses the importance of change management, highlighting the pivotal role of managerial attitudes towards change and decision-making processes in fostering innovation. Dubey et al. (2017) affirm the influence of top managers in shaping organizational culture and capacity for change. Simao and Franco (2020) emphasize the significance of strategy in sustainable business development, particularly in navigating

uncertain environments. Moreno et al. (2015) assert that employee-related strategies predict firm performance, impacting return on equity (ROE). Nandram (2016) underscores innovation's role in improving organizational performance and alignment with corporate goals. Campanella et al. (2017) challenge the notion of economic equilibrium, advocating for disruptive innovation despite its potential for market chaos. Simao and Franco (2020) discuss change management and measurement systems, process-oriented organizational culture, and business process orientation as factors influencing return on equity (ROE).

Mowery et al. (2019) assert that organizational innovation performance enables organizations to accomplish their goals effectively and efficiently using minimal resources. Campanella et al. (2017) propose a balanced scorecard integrating financial and non-financial metrics like customer satisfaction, financial growth, internal processes, and learning. These measures are pertinent to our study. Nandram (2016) emphasizes the necessity of strategic foresight for company survival amid re-engineering, citing Nokia and Kodak as cautionary examples. Conversely, Rossignoli et al. (2016) suggest that companies embracing sustainability strategies may excel in the future, influencing return on equity (ROE). The current study bridges these gaps by focusing on how the uptake of organizational innovations directly influences financial performance specifically ROE of commercial banks in Kenya, providing a localized analysis and addressing the unique challenges faced by banks in the region.

2.3.5 Joint Effect of Digital Innovation Strategy on Performance of Commercial Banks in Kenya.

The joint effect of digital innovation and government policy according to Reddy and Jha, (2021) within the realm of commercial banks pertains to the synergistic impact of technological advancements and regulatory measures established by government bodies

on the operations and performance of the banking sector. Gichuhi (2023) adds that digital innovation in banking encompasses the application of technology to create new or improved financial products, services, and processes. This includes internet banking, payment systems for mobile devices, the use of blockchain technology, artificial intelligence (AI) for assistance with clients, and data mining for customized banking solutions. (Njoroge & Mukulu, 2023).

Globally, a study conducted by Reddy and Jha (2022) explored the impact of digital innovation and regulatory frameworks on the performance of commercial banks, specifically in emerging markets. The primary objective of their research was to examine how the interplay between technological advancements and supportive government policies influences the operational efficiency and overall effectiveness of banks in these regions. Employing a mixed-methods approach, Reddy and Jha analyzed quantitative data from 100 commercial banks across five emerging economies over a five-year period (2017-2021). They utilized multiple regression analysis to assess the relationship between digital innovation, government policies, and key performance indicators, such as profitability, customer satisfaction, and operational efficiency. In addition to the quantitative analysis, the researchers conducted qualitative interviews with bank managers to gain deeper insights into the practical implications of digital innovations and regulatory measures. The findings of Reddy and Jha (2022)'s study revealed a significant positive correlation between digital innovation and the performance of commercial banks. Moreover, the authors demonstrated that regulatory frameworks that support digital banking initiatives amplify this positive effect, resulting in improvements in both profitability and customer satisfaction. Banks that actively engaged in digital transformation strategies were more likely to experience enhanced operational efficiencies. Reddy and Jha underscored the importance of aligning government policies

with technological advancements to create a conducive environment for banking innovation. Despite these valuable insights, Reddy and Jha (2022) acknowledged certain gaps in their research. Their focus on emerging markets may not fully capture the dynamics present in developed economies, where regulatory environments and the pace of technological adoption differ. Additionally, the reliance on self-reported data from bank managers may introduce biases, potentially limiting the objectivity of qualitative insights. Reddy and Jha suggested that further research could investigate the long-term impacts of digital innovation and regulatory changes on bank performance, including the risks associated with rapid digitalization.

In the United States, a notable study conducted by Smith and Jones (2023) examined the joint effect of digital innovation and government policy on the banking sector. The primary purpose of their research was to investigate how advancements in digital technology, combined with regulatory frameworks, influence the operational performance and strategic direction of commercial banks in a rapidly evolving financial landscape. The researchers employed a quantitative methodology, utilizing data from 150 commercial banks across the United States over a three-year period (2019-2022). They applied a longitudinal analysis to assess the relationship between digital innovation initiatives—such as mobile banking applications, artificial intelligence (AI), and blockchain technology—and key performance indicators, including profitability, market share, and customer retention. Additionally, the study included a survey of bank executives to gather insights on the perceptions of government policies and their impact on digital transformation strategies. The findings of Smith and Jones (2023) indicated a significant positive relationship between digital innovation and the overall performance of commercial banks. The study revealed that banks that actively adopted innovative digital solutions experienced higher profitability and improved customer retention rates.

Moreover, the authors found that government policies designed to encourage technological adoption, such as regulatory sandboxes and incentives for digital investment, significantly enhanced the effectiveness of these innovations. One notable limitation was the focus on established commercial banks, which may not fully reflect the experiences of smaller or community banks that face different challenges in adopting digital technologies. Additionally, the study did not explore the potential risks associated with rapid digitalization, such as cybersecurity threats and data privacy concerns. Smith and Jones suggested that future research could examine the long-term effects of digital innovation and regulatory policies on smaller financial institutions and address the emerging challenges related to digital security.

Müller and Fischer (2021) examined how digital innovation and regulatory policies interact to influence the performance of banks across Europe. The primary objective was to analyze the effects of digital transformation initiatives and corresponding regulatory frameworks on operational efficiency and profitability in the banking sector. The researchers adopted a quantitative methodology, utilizing panel data from 200 European banks over a four-year period (2017-2020). The findings indicated that banks embracing digital innovations, such as mobile banking and AI-driven services, experienced significant improvements in profitability. However, a gap exists, particularly the lack of consideration for the challenges smaller banks face in adopting these technologies due to limited resources.

Chen and Gupta (2023) conducted a study exploring the synergy between digital innovation and government policy in the Asian banking sector. The purpose was to investigate how government regulations and support mechanisms affect the implementation of digital technologies by banks. The researchers used a mixed-methods

approach, analyzing quantitative data from 120 banks in Asia and conducting interviews with bank executives. The findings revealed that supportive government policies, including tax incentives and regulatory frameworks, significantly enhanced the adoption of digital innovations, leading to improved customer engagement and market competitiveness. Nonetheless, the study highlighted gaps related to the varying impacts of policies across different Asian countries, suggesting a need for region-specific analyses.

Ndung'u and Akinyi (2022) studied the joint impact of digital innovation and government regulation on banking performance across several African countries. Their research aimed to assess how digital banking solutions and regulatory policies contribute to enhancing financial performance and service delivery in the banking sector. Utilizing a quantitative methodology, they analyzed data from 100 banks in Africa over a three-year period (2019-2021). The findings demonstrated that banks that effectively integrated digital innovations into their services saw marked improvements in performance indicators such as profitability and customer satisfaction. However, the authors recognized a gap in understanding the long-term sustainability of such innovations in the face of potential regulatory changes.

Mwangi and Otieno (2023) explored the relationship between digital innovation and government policy in the East African banking sector. The purpose of their study was to analyze how government initiatives and digital transformation efforts influence the performance of banks in the region. Employing a qualitative approach, they conducted interviews with stakeholders in 30 banks across East Africa and analyzed policy documents. The findings revealed that government support, such as regulatory frameworks for mobile banking, significantly boosts digital adoption among banks, resulting in enhanced service delivery and customer reach. However, the study identified gaps in

understanding the barriers to digital adoption faced by smaller banks and the impact of socio-economic factors on digital banking success.

Otieno and Juma (2024) investigated the influence of government policy on digital banking innovation in Kenya. The primary aim was to examine how regulatory frameworks affect the adoption and success of digital banking solutions among Kenyan commercial banks. The researchers employed a mixed-methods approach, combining quantitative surveys from 39 banks with qualitative interviews of policymakers and bank executives. The findings indicated a strong positive relationship between supportive government policies—such as the Central Bank of Kenya's regulatory guidelines—and the successful implementation of digital banking innovations. Nevertheless, the authors noted gaps in understanding the long-term implications of such policies on financial inclusion and the adaptability of smaller banks to digital transformations.

2.3.6 Moderating Effect of Government Policies on Performance of Commercial Banks

Government policies, as highlighted by Cherotich et al. (2015), regulate commercial banks' operations, enforced by bodies like central banks. Prudential regulations and capital requirements ensure banking system stability. Such regulations moderate risk-taking, lending practices, and bank performance. Mwangi (2018) submit that monetary policies set by central banks impact interest rates, money supply, and inflation. Changes, like interest rate adjustments, influence banks' cost of funds, profitability, and lending. Lower rates spur borrowing and investment, boosting bank revenue, while tighter policies constrain credit expansion and profitability (Musau et al., 2018).

The banking sector, has mainly been guided by the following legislation under the auspices of the Central Bank of Kenya: The Constitution of Kenya (2010), the Central Bank of

Kenya Act (2015), the Banking Act (2015), the Microfinance Act (2006), the National Payment System Act (2011), and the Kenya Deposit Insurance Act (2012) (CBK, 2021). According to Alojairi et al. (2019), modernized banks collect customer information through websites, mobile apps, and third-party platforms. Know your customer (KYC) verification is an essential step in the customer onboarding process. Banks have made the KYC process mandatory due to the increase in online fraud and financial terrorism. Customer onboarding must also include anti-money laundering checks. When using manual banking, gathering and verifying customer data from multiple sources can be time-consuming and a blunder (Adner & Zem, 2016).

Fasano and La Rocca (2021) study on the Role of Local versus National Banking Development in European SME Financial Policies: A Cross-Country Study uses data from 6 European countries. The study examines non-financial SMEs from Finland, France, Germany, Italy, Spain, and the United Kingdom. The contradictions are that while the study finds that higher levels of local banking development increase the amount of debt, cash holdings, and trade credit used by SMEs, it also suggests that national banking institutions play a significant role in shaping SME financial decisions. The study reveals that local banking development significantly and positively influences the financial policies of European SMEs. The European Commission and the Governments of the European Union should prioritize improving national banking institutions to alleviate financial constraints faced by SMEs and stimulate their economic growth.

Proença et al. (2020) study explored the Moderating Effect of Gender Diversity on the Relationship between Political Connections and Banking Performance: Evidence from the Eurozone. The study utilizes panel data from sample size of 83 banks supervised by the European Central Bank (ECB) over the period 2013–2017. A generalized moment method-

type estimation methodology is employed to analyze the data. The study finds a U-shaped nonlinear relationship between political connections and banking performance, with gender diversity moderating this relationship. The results indicate that gender diversity plays a significant moderating role in the relationship between political connections and banking performance. The study suggests that policymakers and regulators should consider the benefits and limitations of gender diversity quotas and members' reputations (political connections) in ensuring better banking performance.

Khan et al. (2023) did a study on: "Impact of Monetary Policy on Bank Lending Rates in Asian Developing Economies: The Moderating Role of Financial Sector Development" Panel autoregressive distributed lag/pooled mean group estimation Eight Asian developing economies, spanning the period from 1980 to 2020. The study finds both an inverse link between monetary policy (measured by broad money supply) and bank lending rates, as well as a positive impact of the interactive term of monetary policy and financial sector development on lending rates. The increase in money supply by central banks is associated with lower demand for loans and consequently lower lending rates. Stronger financial sector development is recommended to enhance the efficiency of monetary policy, thereby lowering the cost of loans and fund searching. Increasing money supply is suggested as a means to achieve this.

Sarkar (2016) highlights government policies' role in moderating commercial banks' performance, shaping regulatory, economic, and competitive landscapes. Banks must adapt to policy changes to ensure compliance, manage risks, and optimize performance amid evolving environments. Governments carefully craft policies to address various situations, aiming to improve rather than hinder communities. Ndungu (2016), Ozurumba

and Onyeiwu (2019) asserts that public policy comprises governmental decisions to influence recognized issues, underscoring its significance in societal governance. The study of public policy includes policy analysis or policy science, which identifies effective policy measures; policy instruments, which a government can employ; and the policy process, which analyzes how a government comes to take a decision (Roseline et al., 2021). Oaiyum et al. (2018) observe that in the 19th century, government finance was primarily concerned with the allocative function.

Ahmed (2021) investigates the Moderating Effect of Industry Concentration on the Effect of CAMELS Financial Indicators on Financial Performance of Deposit Money Banks in Nigeria. Using secondary data from 15 out of 22 licensed banks in Nigeria over nine years (2010-2018), the study employs multiple regression techniques to analyze the relationship between Return on Assets (ROA) and CAMELS financial indicators. It finds that the interaction between industry concentration and CAMELS indicators significantly impacts Deposit Money Banks' (DMBs) financial performance. Recommendations include promoting industry concentration strategies to enhance deposit mobilization, cost-cutting, and financial intermediation services for increased profitability.

Government policies wield influence over social behavior within the business realm. Soewarno and Tjahjadi (2020) advocate for policies such as carbon taxes and renewable energy subsidies to promote environmentally conscious practices. Similarly, targeted tax exemptions can stimulate investment and economic expansion. However, Forgor and Julie (2020) warn against high import taxes stifling local production, while fiscal instability, as identified by Awino et al. (2018), may hamper sustainable economic development. For instance, abrupt changes in tax regulations, like excise duties and value-added taxes

(VAT), enacted without public input, can disrupt financial operations, impacting multiple sectors, as underscored by Soewarno and Tjahjadi (2020).

According to a study done by Olaleye et al. (2024) on The Moderating Effect of Governance on the Nexus of Tax Policy and Economic Welfare in Sub-Saharan Africa. The study utilized data from 1996 to 2022 for 36 Sub-Saharan African (SSA) countries, obtained from the World Development Indicators (2022) and World Governance Indicators (2022). The data were analyzed using the System-Generalized Method of Moments (GMM). While the study emphasizes the importance of optimizing tax policy to enhance economic welfare in Sub-Saharan Africa (SSA), it also underscores the significance of addressing governance challenges. The study concludes that for the well-being of individuals and communities to be enhanced in Sub-Saharan Africa (SSA), tax policy must be optimized within the legal framework. The study recommends that policymakers focus on addressing governance challenges and promoting good governance practices in Sub-Saharan Africa (SSA) to create an enabling environment for the effective design and implementation of tax policies.

Ong'ong'e and Eddie (2021) investigated the Effects of Financial Repression Policies on the Performance of Selected Commercial Banks in Kenya. The study utilizes a static panel regression model and descriptive statistics to analyze secondary data obtained from published audited financial statements, Central Bank of Kenya (CBK) publications, National Bureau of Statistics, and International Financial Statistics covering the period from 2010 to 2018. The study employs inferential statistics, including Pearson correlation, to explore the relationship between financial repression policies and the performance of commercial banks in Kenya. The study targets 36 licensed commercial banks that have consistently operated from 2010 to 2018 out of the 43 registered ones in Kenya. The study

finds that financial repression policies, such as interest rate controls, government debt, capital controls, and reserve ratios, significantly influence the performance of commercial banks in Kenya. The study recommends that the Central Bank of Kenya develop policies to ensure that interest rate spreads are maintained at their lowest by removing interest rate barriers.

In Kenya, regulatory authorities like the Central Bank of Kenya are charged with coming up with these policies that govern fraud and security, which are reflected in the Cyber Crime Act 2018 and the Data Protection Act 2019. General operations of the banking sector, however, are seen in the CBK Act of 2015. The Communication Authority of Kenya (CAK) also develops telecommunications policies to guide the sector. For instance, the government of Kenya (2016) is actively encouraging growth of the ICT sector and adoption of ICT services through national initiatives such as Kenya's Vision 2030, the ICT Master Plan, and the recent deployment of nationwide fiber-optic network infrastructure, which directly or indirectly influence the utilization of mobile technology services within organizations and across various sectors of the economy (Campanella et al. 2017).

Ndungu and Muturi (2019) stress banks' adherence to regulatory requirements and supervisory standards to manage risk effectively. Regulatory compliance ensures banks operate within legal limits, maintain capital adequacy, and follow prudential regulations on capital, liquidity, and risk management. Many lacks a comprehensive understanding of third-party risks, impacting cybersecurity outcomes (Cherotich et al., 2015). Only 31% conduct formal enterprise-wide assessments, leaving a blind spot in third-party and supply chain risks, while organizations with robust cybersecurity typically grasp these risks more comprehensively. Banks maintain capital buffers to absorb losses, comply with regulatory capital requirements, and ensure solvency and financial stability. Regulatory authorities,

like Basel III, mandate minimum capital adequacy ratios to align capital levels with risk exposures (Sipos & Ionescu, 2018). These measures safeguard depositor confidence and uphold the stability of the banking system, emphasizing the importance of regulatory compliance in risk management.

2.3.7 Financial Performance of Commercial Banks

The accomplishment of a given task, according to Hodge (2018), measured against preset known standards is referred to as performance. According to Madase and AbdulBasit (2020) performance is the result of all of the organization's operations and strategies. This means that performance evaluation systems serve as the basis for developing strategic plans, assessing an organization's achievement of objectives, and compensating managers (Karabulut, 2015). The performance of commercial banks is crucial to their growth, sustainability, and overall contribution to the economy. Commercial banks play a vital role in financial intermediation, mobilizing savings from depositors and channeling them to borrowers in the form of loans and investments. The performance of commercial banks is indicative of their ability to effectively carry out this intermediation function, manage risks, generate profits, and create value for stakeholders.

According to Cvetkoska et al. (2021) study that assess commercial bank efficiency in North Macedonia, Serbia, and Croatia from 2015 to 2019 using Data Envelopment Analysis (DEA). The study, employing an income-based approach and the output-oriented BCC model, examines 170 banks (North Macedonia: 65, Serbia: 25, Croatia: 100). Findings reveal North Macedonian banks as the most efficient (91.1%), followed by Croatian (90.9%) and Serbian (81.9%) banks. The study suggests using DEA targets to enhance inefficient bank operations. However, contradictions arise as some banks deemed

efficient by the BCC model show discrepancies with actual performance, highlighting the need for further investigation.

Commercial banks, as intermediaries between savers and borrowers, significantly influence the economy's fund flow. Their performance impacts credit availability, affecting investment and consumption. Efficient banks allocate capital effectively, supporting entrepreneurship and stimulating economic activity. Profitability signals financial health and sustainability, attracting capital and enabling growth. Strong financial performance builds capital buffers, ensuring resilience in economic downturns. Sustainable profitability is crucial for fulfilling obligations to stakeholders over the long term (Hodge, 2018; Kogabayev & Maziliauskas, 2017; Korableva & Kalimullina, 2016).

Chen (2020) investigates the impact of marketing on US bank holding companies' operations and profitability using a fixed-effects linear model. Analyzing FR Y-9C reports, the study explores the relationship between marketing activities, including advertising and marketing expenses, and banks' deposits, loans, services, and profitability. Though the sample size is unspecified, results indicate a positive association between marketing activities and total loans and service proceeds, indicating improved bank performance. The study advises bank managers to leverage these findings to assess and refine their marketing strategies, enhancing coordination across business areas for optimal performance. Additionally, Karabulut (2015) argues that the performance of commercial banks is closely tied to their liquidity and solvency positions. Liquidity refers to the ability of banks to meet short-term obligations and fund withdrawals by depositors. Solvency, on the other hand, reflects the ability of banks to cover losses and remain solvent over the long term.

Abbas et al. (2019) conduct a comparative study on "The Impact of Bank Capital, Bank Liquidity, and Credit Risk on Profitability in the Post-Crisis Period: A Comparative Study

of US and Asia." Analyzing data from 2011 to 2017 and employing a simultaneous equations model with 174 banks, they find that bank capital and credit risk similarly influence profitability across both regions. However, while liquidity negatively impacts large US commercial banks' profitability, it's positive for Asian counterparts. For instance, a 6% increase in capital corresponds to a 1% profit increase, and a 3.5% rise in liquidity leads to a 1% profit increase. The study underscores the importance of ongoing assessment of risk management, liquidity, and capital allocation strategies to mitigate solvency risks in both US and Asian banks.

Tawfik et al. (2021) examine the impact of sustainability dimensions on financial performance in Oman, UAE, and Jordan from 2007 to 2018. Analyzing data from 215 reports of 32 banks, they found a moderate positive relationship overall, though no significant positive impact on financial performance. In the UAE, the economic dimension positively influenced performance, while in Oman, both economic and environmental dimensions had positive effects. The study advises banks to prioritize GRI sustainability estimates and integrate economic, social, and environmental factors into their strategies to enhance market share and customer engagement in compliance with regulations.

In India, Sarkar, and Rakshit (2023) did study on: Determinants of Commercial Banks' Performance in India: A Dynamic Panel Study. The study investigates the performance determinants of public and private sector commercial banks in India from 2000 to 2017. Panel data from selected banks are analyzed using the first difference generalized method of moments (GMM) method. The study includes data from both public and private sector commercial banks in India from 2000 to 2017. The analysis reveals that macroeconomic factors such as GDP, inflation, and lending interest rate significantly affect the performance of commercial banks in India. These effects persist even after controlling for

other bank-specific and macroeconomic variables. The study's findings are valuable for bankers, planners, and policymakers in formulating effective policy decisions for commercial banks in India. Contradictions is that while the study identifies significant impacts of external macroeconomic variables on commercial banks' performance, it may face contradictions regarding the influence of specific control variables or the stability of the observed relationships over time.

Msomi (2022) did study on Determinants of Non-Performing Loans in West African Commercial Banks. The study employs an explanatory research design, analyzing 47 listed commercial banks across six West African countries (Nigeria, Benin, Burkina Faso, Gambia, Guinea, and Liberia) from 2008 to 2019. Data sourced from Bank Scope, World Development Indicator, and International Financial Statistics are analyzed using fixed effect models. The study covers 47 listed commercial banks over 12 years, totaling 564 observations. The analysis reveals that only liquidity ratio (LIR) and gross domestic product (GDP) negatively affect non-performing loans (NPLs), while other factors exhibit positive and significant effects. Capital adequacy ratio, liquidity, and inflation rate emerge as significant determinants of NPLs in West African commercial banks. The study recommends that banks should ensure strict adherence to capital adequacy ratios and implement rigorous loan management practices to mitigate non-performing loans. Contradictions is that while liquidity and inflation rate positively influence NPLs, they are highlighted as areas requiring attention to mitigate risks associated with excess funds mismanagement and affordability of loan repayments.

A study done by Benkheznadji et al. (2024) delved on The Impact of Capital Adequacy on Profitability: Panel Data Evidence from North Africa and Middle East Commercial Banks (2014-2020). The study employs panel data models to examine the relationship between

the capital adequacy ratio mandated by the Basel Committee and bank profitability, measured by return on equity (ROE). Data is collected from commercial banks operating in Middle East and North African countries from 2014 to 2020. Sample Size consists of commercial banks operating in Middle East and North African countries over the period 2014-2020.The study concludes that the capital adequacy ratio has a significant negative impact on return on equity (ROE). The study recommends that banks should carefully consider the impact of increasing capital adequacy standards on their profitability. Measures to optimize capital-raising procedures and manage profit distribution effectively are recommended to mitigate the negative impact on ROE.

Assfaw (2018) did a study on: Determinants of Financial Performance in Private Commercial Banks: Insights from Ethiopia. The study analyzes the financial performance of 6(sample size) private commercial banks in Ethiopia from 2011 to 2017. It employs descriptive statistics, Pearson Correlation Coefficient, and Multiple Linear Regression to examine the relationship between bank-specific factors (e.g., size, liquidity management, asset quality, management efficiency, and capital adequacy) and financial performance indicators (return on equity, return on assets, and net interest margin). Findings indicates that capital adequacy, management efficiency, and bank size positively and significantly influence the financial performance indicators (ROA and ROE) of private commercial banks in Ethiopia. However, liquidity management negatively impacts ROE. Asset quality does not significantly affect the financial performance. It recommends that private commercial banks in Ethiopia should focus on maintaining adequate capital levels, optimizing liquidity management, improving expense management efficiency, and increasing asset size to enhance performance and profitability. Yet it contradicts; while the study finds significant relationships between certain bank-specific factors and financial

performance indicators, it may encounter contradictions regarding the non-significant impact of asset quality on regulations or on financial performance.

In Kenya, Muhoro and Mungai (2018) did a study on the Impact of Real Time Gross Settlement on Financial Performance of Commercial Banks in Kenya. Methodology: The study investigates the effects of Real Time Gross Settlement (RTGS) on the financial performance of commercial banks in Kenya. Census research was conducted on all banks regulated by the Central Bank of Kenya (CBK). Secondary data from 43 profitable banks operating in Kenya were analyzed using inferential and descriptive statistics. Diagnostic tests were performed to ensure data quality and reliability. Data from 43 profitable banks operating in Kenya were analyzed. The study revealed a significant positive correlation between RTGS and return on assets (ROA) at a significance level of 0.022. A 1% increase in RTGS volumes led to a 0.7985% increase in ROA, indicating that higher transaction volumes on the RTGS platform contribute to increased revenue for banks. Commercial banks in Kenya should leverage RTGS to enhance profitability. Contradictions is that while the study finds a significant positive correlation between RTGS and ROA, it may encounter contradictions regarding the lack of significant results on the financial performance of commercial banks in Kenya. Further research could explore this discrepancy to provide more comprehensive insights.

Ndungu and Muturi (2019) stated that solvency refers to the financial health and ability of a bank to meet its long-term financial obligations and remain financially viable over the long term. It's about having sufficient assets to cover liabilities, including deposits, loans, and other obligations, while maintaining a healthy capital position. Solvency is typically assessed using capital adequacy ratios, such as the common equity tier 1 ratio, Tier 1 capital ratio, and total capital ratio, which measure the bank's capital adequacy relative to

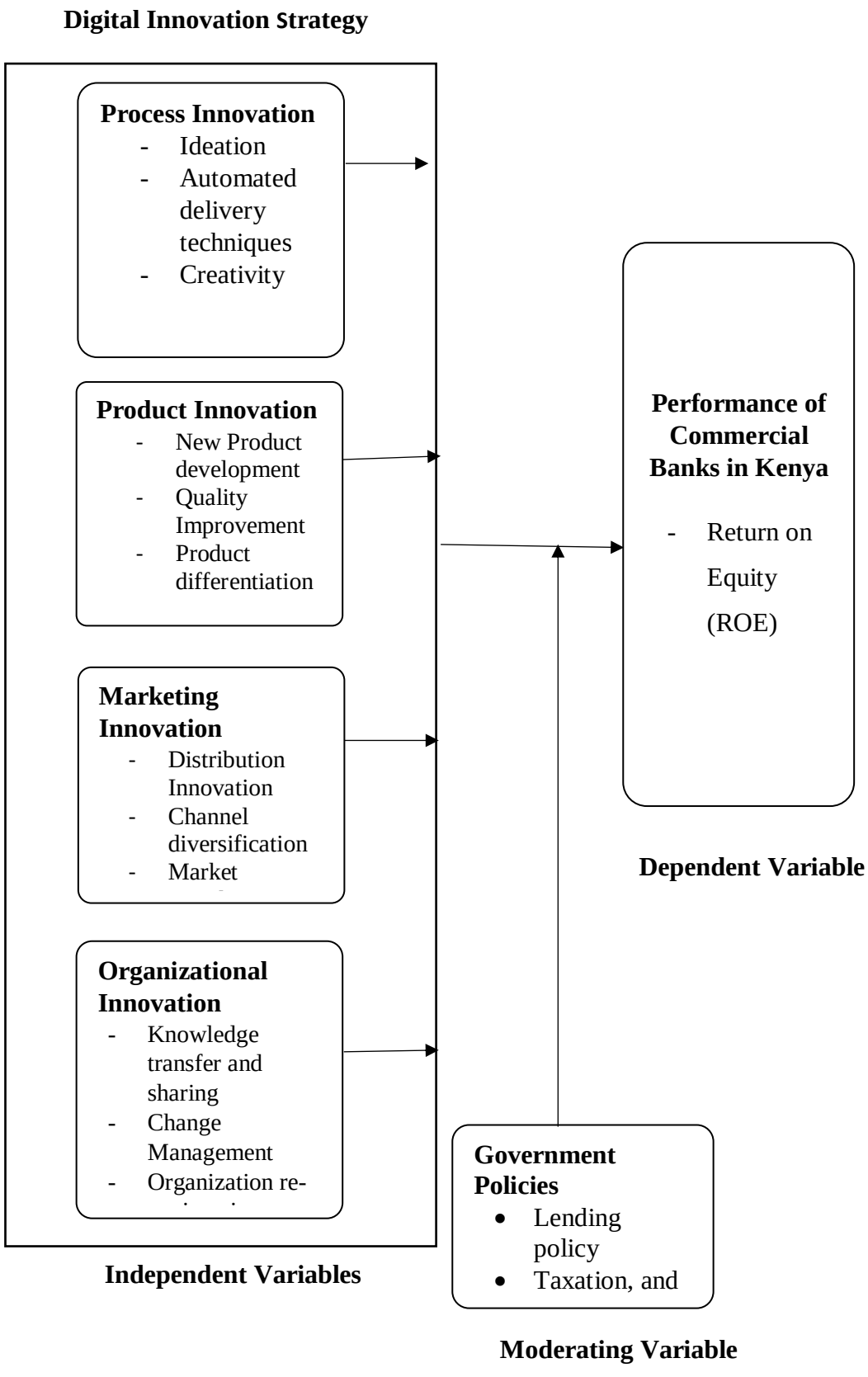
its risk-weighted assets. These ratios provide insights into the bank's ability to absorb losses and maintain a strong capital position. Effective risk management is vital for commercial banks' performance and stability (Ndungu & Muturi, 2019). In the study, the performance of commercial banks has been measured using return on equity (ROE)whose secondary data was obtained from CBK audited financial reports on commercial banks in Kenya spanning from year 2018-2022. The link between the need for any innovation has been meticulously seen in the glass of ROE, since with every innovation of a bank there is a need to know what the bank is gaining.

2.4 Conceptual Framework

A conceptual framework, McGaghie et al. (2015), illustrates researchers' understanding of variables and relationships graphically. Derived from theories and literature, it organizes concepts, guides research, and aids in hypothesis development, method selection, and findings interpretation. For instance, digital innovation, defined by Misati et al. (2021), employs modern technology to tackle business challenges. This framework systematizes theoretical concepts, defines relationships, and ensures comprehensive exploration of the research problem, as noted by Antwi and Hamza (2015). The study analyzed effects of digital innovations on performance of commercial bank, including moderating effect of government policy. Hypothesized constructs and paths were depicted in Figure 1

Figure 1

Conceptual Framework



2.5 Relationship Between Study Variables

Process innovation strategy such as process automation, digital creativity, and online customer engagement strategies have revolutionized banking operations globally. In Kenya, banks that adopt such innovations witness marked improvements in their financial performance through increased efficiency and the ability to offer more tailored products to their customers. Process innovation in particular—through automating loan approvals or customer service—enhances operational efficiency, thus contributing positively to financial outcomes. The study predicated the need for commercial banks to advance technical and soft skills in creativity by focusing on process of thinking whose outcome is a concept or a vision. Banks can also leverage ideation through understanding how to systemize the ideas, execute and bringing ideas to life consequently develop processes that improve efficiency and product quality. Automated delivery techniques allow employees handle a more manageable workload by eliminating the need to manually match and balance transactions. This can improve efficiency, reduce costs and increase accuracy consequently improving financial performance.

Similarly, product innovation strategy, such as the introduction of new products, quality improvement and product differentiation open new revenue streams, improving overall bank financial performance (Olaleye et al., 2024; Proença et al., 2020). Marketing innovations also play a critical role, as banks leverage digital platforms to reach a broader audience, enabling cost-effective customer acquisition and retention. This aligns with recent findings that innovative digital marketing strategies significantly enhance market share and profitability in financial institutions (Ahmed, 2021). As Sarkar (2016) points out, leveraging digital marketing innovations allows banks to align their services with customer needs, ultimately enhancing their financial outcomes.

Organizational innovation strategy, which entails restructuring a bank's internal processes to support digital transformation, such as change management, organizational re-engineering and knowledge management is crucial for maintaining collaboration, flexibility and responsiveness in an evolving banking landscape. Recent literature highlights the importance of organizational agility in facilitating the effective adoption of new technologies, thus boosting overall financial performance (Khan et al., 2023).

Government policy functioned as the moderating variable, shaping the extent to which digital innovations influenced bank performance. Supportive policies—such as those promoting fintech integration, digital banking regulations, and tax incentives—enhanced the benefits of digital innovations. Research showed that policy environments which supported technological uptake amplified the positive effects of digital innovations on bank performance (Olaleye et al., 2024; Sarkar, 2016). In contrast, restrictive or unclear regulatory frameworks hindered the adoption of digital technologies, thereby weakening the innovations' positive impacts on financial outcomes (Proença et al., 2020). Overly stringent data protection laws or complex licensing procedures created barriers to innovation, limiting banks' ability to fully leverage new technologies (Ndungu & Muturi, 2019).

The direct effect of digital innovation strategy on financial performance in Kenyan commercial banks is straightforward: digitalization leads to better outcomes by improving processes, expanding product offerings, and enhancing customer experiences. As the moderating variable, government policy plays a pivotal role in either amplifying or dampening the impact of digital innovations on performance. Recent studies support this view, indicating that financial institutions in regions with progressive regulatory

environments experience faster growth and innovation uptake compared to those in less favorable environments (Fasano & La Rocca, 2021; Khan et al., 2023).

This study aimed to explore these dynamics further by investigating how different forms of digital innovation—spanning processes, products, marketing, and organizational innovations—interacted with government policies to influence the performance of commercial banks. This approach aligned with contemporary research, which emphasized the joint effect of digital innovations and external moderating factors, such as government interventions, on financial outcomes in the banking sector (Avenyo et al., 2019; Sarkar, 2016).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section provides an overview of the steps used to achieve the researcher's goals and objectives. The section includes the following: research philosophy, research design, target population, sampling technique, sample size, research instruments, pilot study, validity and reliability, data analysis and operationalized study definitions of variables used in this study.

3.2 Research Philosophy

The practice of research is usually influenced by philosophical stances (Adeniran,2019; Kesmodel, 2018). Research philosophy refers to beliefs about how data on a particular phenomenon will be gathered, analyzed, and used. It largely describes the ideas that the researchers believe in and which largely guide every step in the research process (Korableva, 2016).

Research philosophies are broadly categorized into positivism, interpretivism, realism or pragmatism (Pandey and Pandey, 2021). The interpretivist research philosophy, which argues that social world is best understood in a subjective experiences and interests of the researcher. Realistic research philosophy is based on subjective views of human nature (Barnham, 2015), while pragmatist research philosophy is concerned with factual problems while paying special attention to developing practical solutions to address the problem thereof. In this perspective, the researcher is free to choose the methods, techniques and procedure that meet the researchers' objective. Pragmatists are action oriented and they see the world as unified in empirical evidence to address a problem

(Creswell and Poth, 2015). In social science research, two prominent paradigms guide the approach to understanding social phenomena: positivism and phenomenology. These paradigms offer contrasting perspectives, with positivism focusing on objective, observable, and measurable facts, while phenomenology emphasizes the subjective experiences and interpretations of individuals (Creswell & Poth, 2021). According to Amirrudin et al. (2021) positivism, as used in research philosophy, is a philosophical stance that emphasizes the use of empirical observation and the scientific method to acquire knowledge

The study was anchored on positivism philosophy since key features of the philosophy such as empirical observation, formulation of hypotheses, objectivity and neutrality, quantitative data and generalization of findings backed the study (Alita et al.,2019). Empirical observation holds that knowledge should be based on observable facts and phenomena. Researchers gather data through direct observation or measurement, relying on sensory experience to inform their understanding of the world. This emphasis on empirical observation distinguishes positivism from other philosophical approaches that may prioritize intuition, introspection, or subjective experience. Positivism advocates for the application of the scientific method in research. This method involves formulating hypotheses, designing experiments or observational studies to test these hypotheses, collecting data, and analyzing results. Positivists believe that scientific inquiry, characterized by systematic observation, experimentation, and logical reasoning, is the most reliable way to generate valid knowledge about the world (Wang &Cheng, 2020).

Positivism emphasizes objectivity and neutrality in the research process. Researchers strive to maintain a detached and impartial stance, avoiding personal biases or subjective interpretations that could influence their findings (Bayan and Dexter,2021). They aim to produce objective knowledge that is independent of individual perspectives or beliefs.

Additionally, positivism often prioritizes the use of quantitative methods to collect and analyze data. Quantitative research involves numerical measurement and statistical analysis, allowing researchers to identify patterns, relationships, and regularities in the data. Positivists believe that quantitative data provide objective and reliable evidence that can be generalized to broader populations. Positivism seeks to generalize findings from specific observations or experiments to broader populations or phenomena. By identifying patterns and regularities in data, positivist researchers aim to formulate general laws or principles that can explain and predict phenomena across different contexts. This emphasis on generalization and prediction contributes to the cumulative development of scientific knowledge (Shrikant, 2019).

Notably, this study adopted the quantitative and qualitative research approach that is manifested in the descriptive research design. In a quantitative approach, the researcher aims at collecting statistical data and uses quantitative analysis techniques to validate, reject, or refine research questions (Johne, 2018). As noted by Nandram (2017), in the positivism paradigm, research is heavily influenced by the theory or philosophy that underpins it. In this study, five theories were identified and utilized: Roger's diffusion of innovation theory, Evolutionary Theory of Economic Change, disruptive innovation, dynamic capabilities of a firm and institutional theory.These theories were important in guiding the inquiry process and served as reference points when evaluating and interpreting findings and drawing conclusions based on the current study's objectives (Shrikant, 2019)..

3.3 Research Design

Pandey and Pandey (2021) define a research design as a framework used by scientists to simplify the navigation of common study procedures to generate solid evidence with the

fewest mistakes and with purpose. A research design, according to Knief and Forstmeier (2021), is a design or overview of the study that controls the technique of research from detailed testing, investigations, and propositions to documenting the research findings or discoveries. According to Creswell and Poth (2015) a research design is the elaborate set of conditions for gathering and analyzing data in a method that aims to attach relevance to the research effort with a low-cost procedure.

In this research, a descriptive research design was used. A descriptive study, is defined by Barnham (2015) as a type of observational research that analyzes data of variables collected at one given point in time across a sample population or a pre-defined subset. Use the descriptive design, provided basic information on the variables chosen and linking them on banking sector. This allowed the researcher to reach a conclusive conclusion that could be supported by the prevailing findings. This was facilitated by examining how the collected data was related, hence termed a correlation. The amount of association among the variables was articulated as a correlation coefficient (Wang & Cheng, 2020). The correlation distinguished relations between variables and estimated the importance of a variable score compared to an alternative variable.

3.4 Target Population

A population is a collection of people, objects, or things from whom samples are taken for measurement (Shrikant, 2019). It encompasses the full group of people that are of interest to the researcher. It is the broad group to which a researcher wishes to generalize his or her sample's findings (Pandey & Pandey, 2021). The unit of analysis was 38 commercial banks in Kenya at the head offices in Nairobi of each bank. The unit of observation was commercial bank employees with a targeted population of 1,470 employees from three

management levels consisting of 341 Senior Managements,410 Middle Level Management and 719 First line Management. This is outlined in the table 1.

Table 1

Target Population

Target Group	Target Population	Percentage
Senior Management	341	23
Middle Level Management	410	28
First line Management	719	49
Total	**1,470**	**100**

Source: (CBK,2022)

3.6 Sampling Procedure and Sample Size

3.6.1 Sampling Frame

A sampling unit describes the catalog of all resident elements and specifies which framework is used (Cai et al. 2021). The basic units may shape the foundation of the sampling procedure in which case they are referred to as sampling units, this list is referred to as sampling frame (Antwi and Hamza, 2015). The sampling frame for the banks comprised the list of 38 commercial banks as obtained from the Central Bank of Kenya report of 2022 except the one used for pilot test. This study targeted 1470 respondents from; Senior Management (Executive management - CEOs, chief finance, General Counsel, Commercial, Chief Human resource, Chief Risk Officer, Chief IT, Cooperate affairs and Credit Director) Middle Level Management (branch managers, operations managers, finance department, IT personnel, marketing department), and First Line Management (tellers, BDOs, Secretaries, and credit officers) unit (CBK,2022).

3.6.2 Sampling Techniques

Sampling is a process of selecting number of individuals or objects from a population such that the selected group contains elements representative of characteristics found in the entire group (Alita et al.,2021). The accuracy of the sampling frame from which a sample is selected determines the degree of generalization of research (Cai et al. 2021).

To ensure equal representation, the study used stratified random sampling technique. According to Kesmodel (2018) stratified random sampling means that when data is collected the randomly sample of respondents belonging to a given homogeneous group (stratum) shall satisfy the selection and shall answer to the questions given on behalf of the group. Therefore, the respondents were categorized according to their levels of management that is (Senior Management, Middle Level Management and First Line Management) which was used to form a stratum. These strata were then being used to pick randomly their representations based on their office holders and then the required number satisfactorily chosen. According to Knief &Forstmeir(2021) this gave each level an equal chance of being included in the study. As well as allowing better comparison of responses hence, facilitating objective conclusion. Emphasis was put on Senior Management teams as key persons in providing policy information that guides the banks in uptake of the strategies, makes decisions of the bank hence adopted by the other stakeholders in the individual banking institution.

3.6.3 Sample Size

Due to the size of the data, Slovin (1960) formula was found to be the most applicable in coming up with the sample size. McGaghie et al. (2015) asserts that when population is less than or higher than 10,000 target the best formula to get a sample size is Slovins'

formula since it reduces the sample size to a manageable value. The researcher used Slovin (1960) formula to select the number of employees to participate in the study.

The Slovin formula is indicated as follows: -

$$n = \frac{N}{1+Ne^2} \quad \text{.....(i)}$$

Where: -

n = The Required Sample Size

N=Population size

e = margin of error the study is ready to accept ±5%

Thus: - Level of precision at 95% confidence level.

$$n = \frac{1470}{1 + 1470(0.05)^2}$$

n=315 Respondents.

The implementation of this advice resulted in a sample size of 315 respondents as illustrated in Table 2.

Table 2

Sample Size

Target Group	**Target Population**	**Sampling Size**	**Percentage (%)**
Senior Management	341	73	23
Middle Level Management	410	88	28
First line Management	719	154	49
Total	**1,470**	**315**	**100**

As shown in the above table 2 there were 73 Senior Management, 88 Middle Level Management and 154 First line Management who made up a total of 315 sample size for this study.

3.7 Research Instruments

According Mishra, et al. (2019), a research tool is an instrument used to gather data. A device is consequently termed as an instrument intended to measure familiarity, boldness, and abilities. The quality of the data collection tool is commonly actual and aimed at the accomplishment of a study hence after formulating a suitable data collection method, one has to take into interpretation the difficulty of the subject, degree of response, population targeted, and time (Kesmodel,2018).

A questionnaire was the most appropriate for this study. A questionnaire is a research instrument that enables a researcher to gather data over a large area (Cai et al. 2021). Chao and Chen (2020) asserts that questionnaires are commonly used instruments to collect important information about a population. Data was collected using self-administered, structured questionnaires. A research assistant was utilized to drop and pick the questionnaires. Questionnaires were chosen and deemed appropriate in this study because of their potential to reach out many respondents within a short time, ability to give the respondents adequate time to respond to the items; the fact that they offer a sense of confidentiality to the respondents, and consideration that researcher is able to minimize subjective biasness resulting from the respondents' personal characteristics(Antwi and Hamza,2015).Respondents were allowed two weeks to fill in the questionnaires after which they were picked for analysis.

The questionnaire was divided into four sections. Section one has questions on demographic information of the respondents, while the section 2, 3 and 4 contains

inquisitive questions on the specific independent variables. Majority of questions were closed-ended with few open-ended questions which were meant to provide quantitative data and explanatory information on given phenomena. Most closed-ended questions are in a five-point Likert scale. Triangulation of qualitative data was also done and secondary data on ROE was collected from published audited accounts for the 38 banks for the period 2018-2022, from CBK annual supervisory reports.

3.7.1 Data Transformation

In this study, a five-point Likert scale was used to collect responses on various dimensions of digital innovations and their influence on the performance of commercial banks. The scale ranged from 1 = "Strongly Disagree" to 5 = "Strongly Agree." Although Likert scale responses are ordinal in nature, they were treated as interval data to facilitate the use of parametric statistical tests. This approach is supported in research where Likert scales with five or more points are often considered to approximate interval-level measurement (Norman, 2019). This allowed for the use of regression analysis and correlation coefficients in assessing the relationship between digital innovations and bank performance. Composite Scores was utilized to measure each dimension of digital innovation (process, product, marketing, and organizational innovation), multiple Likert-scale items were used. For each respondent, a composite score was calculated by taking the mean of their responses for each dimension. For example, if a respondent rated five items related to process innovation, the average of these five ratings was used to represent the respondent's overall score for process innovation.

Normalizing Responses was important and applied in order to compare variables measured on different scales, responses were normalized. This was done by rescaling the Likert scale data to a range of 0 to 1. For instance, a response of "1" on the original Likert

scale (indicating "Strongly Disagree") was transformed to 0, while a "5" (indicating "Strongly Agree") was transformed to 1. This ensured consistency across variables and facilitated the interpretation of regression coefficients. By transforming the Likert scale data using these steps, the study ensured that the assumptions for parametric statistical techniques were met, thus allowing for robust conclusions to be drawn regarding the relationship between digital innovations and the performance of commercial banks.

3.8 Pilot Test

Piloting, according to Shrikant (2019), is the practice of testing research tools on respondents who will not be utilized in the main study. Piloting guarantees that the research instrument is properly defined and that it is interpreted the same way by different respondents. To reduce the shortcomings in the contents and in the design, and in order to ensure effectiveness of the research instruments, a pre-test was conducted on a different sample but of similar characteristics to the target population (Cai et al., 2021). According to George and Mallery (2019) the number of cases in the pre-test should range from 1% to 10%. The study then settled for the upper range of the sample size for pre-testing.

In this current study, a pilot study was carried out at Kingdom Bank which was randomly selected from 39 commercial banks. The bank had a target population of 24 and their unit include; 9 senior managers, 9 supervisors and 10 clerical officers. Stratified random sampling was employed to get a sample size and questionnaires were used to collect data. Questionnaires were dropped and picked after two weeks for analysis. The pilot study clarifies on the reliability and validity of the research instruments. It helps to clarify that the questions to be administered are correctly structured, suitable language was used and contents developed that could be measured, verifiable and consistent. This led to adjustments to ensure they solicited the needed information.

3.8.1 Reliability of the Research Instruments

Mishra et al. (2019) defines reliability or dependability as the measuring process or gadget producing the same findings on continual tests. It is with this in mind that reliability in this current study was exploited by correctly built apparatuses, suitable information gathering actions and specimen methods that mark the correct population (Kahn et al.,2018). It further proposed to engage specialist like lecturer and supervisors who assessed the reliability of the used variables. It measures dependability using a test-retest approach by computing the correlation coefficient (r), which reflects the strength of the relationship between the variables. A data collection instrument that produces the same data at each time point would thus yield a perfect linear correlation of r = 1.

Shrestha (2020) indicates that a Cronbach Alpha is the most accepted guideline in testing reliability of the questions and the 93 rule of thumb for Cronbach Alpha is that the closer the Alpha to 1, the higher the reliability and a value of at least 0.7 is recommended. The Cronbach's Alpha Coefficient was used to evaluate convergent reliability in this investigation. According to (Bryman, 2012; Kumar, 2014; Bell et al. 2019), the Cronbach's Alpha test result utilized in a study should not be less than 0.7. That is, the allowable correlation coefficient alpha value is r =0.7. Amirrudin et al. (2021) concurred, as did Adeniran (2019) who said that a coefficient of 0.7 is widely recognized globally.

3.8.2 Validity of Measuring Instruments

According to Adeniran (2019) validity of instrument will lead to accuracy and consistency from one measurement to the next. However, Saunders et al. (2019) argued that the purpose why all individuals don’t have the identical assessment cut is that they fluctuate in relationship to both the characteristic and the test measures. Accordingly, Adeniran (2019) adds that validity communicates to one on how truthfully a scheme process

something. If a technique processes what it entails to quantify and the outcomes thoroughly agree to actual tenets, then it can be deliberated as effective. There are 4 main types of validity: face, content, criterion, and constructs validity. In defense of construct validity, Barnham (2015) and Braidotti (2019) pointed out that one of the strengths of content validation is the simple and intuitive nature of its basic idea, which holds that what a test seeks to measure constitutes a content area and the items on the test should sample from that field in a way that makes the test items representative of the entire realm.

Drost (2011) contends that content validity is about safeguarding the technique of measurement that ties to the concept you want to quantify. The questionnaire must consist of only pertinent queries that measure recognized pointers of the subject. If approximately facets are absent from the measurement the validity is endangered. Nevertheless, construct validity is the unit to which a trial gauges what it asserts, or rationales, to be gauging. According to Gunst and Mason (2018) face validity aims at checking on face value what the questions in the questionnaire appears to mean or if they are suitable in the research being carried out. However, criterion validity measures if the result corresponds to an unrelated examination of the identical object. If the outcomes are precisely forecast this shows that the investigation has extraordinary criterion validity. The current study used the measure of content validity and face validity in its validation process due to their easy of application and relevancy to the research topic. Hernandez (2021) agrees that information and expertise enclosed by the test objects ought to be carried out to the superior sphere of information and ability. Nonetheless, the cases in the examination should vary by one to ten percent (%), recommended Bell, Bryman, and Harley (2019).

3.9 Data Processing and Analysis

Saunders et al. (2019) exemplify data analysis as the dispensation of facts and figures to create articulate information that is understandable. In the same breath, Drost (2011) describes the same as machinery for comprehending and establishing facts and figures to yield answers that necessitate understanding by the scholar. In this study, completed questionnaires were processed for completeness and consistency. The process of data analysis involved data coding, data cleaning and analysis. Responses in the questionnaires were tabulated, coded and processed by use of Statistical Package for Social Sciences (SPPS) version 26.00. The responses from the open-ended questions were listed to obtain proportions appropriately, and then reported using descriptive statistics which include mean and standard deviation to quantify data. In areas were comparison and more of display of the findings is needed, the researcher used graphical illustrations for easy and faster understating of the results by all.

The analysis of variance (ANOVA), Pearson moment of correlation was used to test whether there was correlation between the independent variables and dependent variable, Pearson's product-moment coefficient of correlation(r) was calculated, while the chi-square(X^2) test was used to test the hypotheses. Analysis of Variance (ANOVA), according to George and Mallery (2019), is a statistical method used to compare means between two or more groups to determine whether there are statistically significant differences among them. ANOVA assesses the variation between groups relative to the variation within groups, allowing researchers to determine whether any observed differences are likely due to true group differences or random chance.

These analyses assisted in the determination of the significance of the findings. Otherwise without them the hypothesis cannot be justified. Pearson correlation constant has two features, path, and line. The line of association is designated by how the association is to

a number like 1, the extreme charge conceivable. When the Pearson correlation (P-value) coefficient is equal to +1 it shows there is the perfect optimistic connection among the variables on the other hand if the Pearson association coefficient is equal to -1 it shows there is a faultless undesirable association amongst the variables (Gunst &Mason 2018). Tables, means, standard deviation, frequencies and percentages were used to summarize the data by the researcher.

3.9.1 Diagnostic Tests

3.9.1.1 Test for Heteroscedasticity

Heteroscedasticity is the measure of the extent to which the variances of the data set is unequal throughout the data distribution (Marshall et al. 2022). When data has unequal variances, it means the data has behaved differently. Regression analysis of such data may have problems because the data behaves differently in its various stages making the model inconsistent (Hernandez,2021). Levene's test of homogeneity, also known as homoscedasticity of variances, was used to test whether the variance in scores is the same for each of the four groups or variables under study, i.e., process, product, marketing, and organizational innovations.

3.9.1.2 Testing for Normality

Normality tests are employed to establish whether the data is normally distributed around a normal curve (Wanga & Cheng, 2020). Normality is important for the researcher to determine whether to apply either parametric or non-parametric statistics to analyze the data (Hernandez, 2021). Normality was tested by analyzing the skewness and kurtosis statistics, and Q-Q Plots for testing normality in a statistically significant so that the data does not take a large range of different values because it is from Likert Scale type of data (Hammersley (Ed.), 1993). When conducting Q-Q test, the resulting plot should show an

approximately straight line with a positive slope of normality which will be used and tested.

3.9.1.4 Test of Linearity

According to Creswell and Poth (2015), linear regression speaks to the straightforward relationship between the independent and dependent variables. Spread plots are the greatest way to test the linearity presupposition. All variables must be multivariate mutual for the linear regression tests to be performed. The study utilized linearity test by examining the residuals (the differences between the observed values and the values predicted by the regression model) to determine whether they exhibit a random pattern around zero across the range of the independent variable(s). If the relationship between the variables is truly linear, the residuals should be randomly distributed around zero with no discernible pattern.

3.9.1.5 Test of Multicollinearity

The study analyzed the multicollinearity of a connection matrix using the tolerance and variance inflation factor (VIF). High multicollinearity indicates minimal tolerance among indicators, while extremely high tolerance and VIF indicate high multicollinearity. Alita, Putra, and Darwis (2021) suggested a tolerance value of less than 0.10 or a VIF value of more than 4, but the study found a tolerance above 0.10 and a VIF less than 10, indicating the data's credibility and meeting multicollinearity assumptions for correlation and VIF analysis.

3.9.2 Regression Model

Gunst and Mason (2018) denotes that there are various types of regression analysis, among them being simple linear regression, in which there is only one independent variable. The relationship between the independent and dependent variables is assumed to be linear,

which means it can be represented by a straight line. The formula for simple linear regression is given as $= \beta_0 + \beta_1 X_, + \varepsilon$, where β_0 and β_1 are the intercept and slope coefficients, respectively, $X_,$ is the independent variable, Y is the dependent variable, and ε represents the error term. Chao and Chen (2019) add that there is a panel linear regression that involves more than one independent variable. The relationship between the dependent variable and multiple independent variables is still assumed to be linear, but the formula becomes $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n + M + \varepsilon$, where β_0, $\beta_1, \beta_2 \ldots . \beta_n$ are the coefficients for the independent variables, $(X_1, X_2, X_3, \ldots X_n)$, and ε, represents the error term . The model was chosen because the coefficients in linear regression directly represent the predicted change in the dependent variable (ROE) for a one-unit increase in the independent variable (innovation), holding all others constant.

The ordinary least squares (OLS) for linear regression was used as a method to fit the model, which is shown as $= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n + M + \varepsilon$. OLS aimed to find the line that best fits the data points by minimizing the sum of the squared errors between the predicted values (Y based on the equation) and the actual ROE values (Y) in the dataset. The software calculated the coefficients β_0, the intercept, and β_1 to β_4 for each independent variable and the coefficient for the moderating variable M) that minimized this sum of squared errors. This involved mathematical optimization techniques. The resulting equation with the estimated coefficients represented the line of best fit for the data. This line tried to capture the overall trend of how the independent variables (innovation and government policies) relate to the dependent variable (ROE).

The study utilized a panel linear regression where a simple linear model was used for each variable with the model analysis discussed, then a joint model was done to determine the joint effect.

The simple model took the form

$Y_1 = \beta_{0i} + \beta_1 X1 + \varepsilon_i$ ……(ii)

Where:

$\boldsymbol{\beta_{0i}}$ is the Constant relating to the variable

$\boldsymbol{X_i}$ $\boldsymbol{i}$=1, 2, 3, 4

$\boldsymbol{X_1}$, representing the independent variable digital process innovations

$\boldsymbol{X_2}$, representing the independent variable digital product innovations

$\boldsymbol{X_3}$, representing the independent variable digital marketing innovations

$\boldsymbol{X_4}$, representing the independent variable digital organizational innovations

$\boldsymbol{\varepsilon}_i$ is the error term for the $_i^{th}$ model.

In each variable, $\boldsymbol{X_i}$, the score for the indicators was averaged for each respondent.

To determine the joint effect, a multiple model was fitted.

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \varepsilon$ ……(iii)

$\boldsymbol{X_i}$ $\boldsymbol{i}$=1, 2, 3, 4,5

are as 3.9.2 above.

$\boldsymbol{M}$ representing the moderating variable; government policy

$\boldsymbol{\beta_0}$is the Constant

$\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$,$\boldsymbol{\beta_4}$, are regression coefficients corresponding to the independent variables.

ε is the error term.

3.9.3 Operationalization of Study Variables

The table 3 was used to indicate the operationalization of the study variables in order to understand the relationship between independent variable and dependent variable and how they were all be measured.

Table 3

Operationalization of Study Variables

Type of Variable	Variables	Operationalizing Indicators/Parameters of Variables	Tool of Measurement	Measurement
Independent Variables	Process Innovations Strategy (X_1)	• Ideation • Automated delivery techniques • Creativity	Questionnaire	5-point ordinal Likert scale, Open ended, content analysis
	Product Innovations Strategy(X_2)	• NPD • Quality improvement • Product differentiation	Questionnaire	5-point ordinal Likert scale, Open ended, content analysis
	Marketing Innovations Strategy(X_3)	• Distribution innovation • Channel Diversification • Market development	Questionnaire	5-point ordinal Likert scale, Open ended, content analysis
	Organizational Innovations Strategy(X_4)	• Knowledge transfer and sharing • Change management • Organization re-engineering	Questionnaire	5-point ordinal Likert scale, Open ended, content analysis
	Joint effect of Digital innovations Strategy(X_5)	• Process, product, marketing, and organizational innovations	Questionnaire	5-point ordinal Likert scale, Open ended, content analysis
	Government Policy(M)	• Lending policy • Taxation, and • Data protection	Questionnaire	5-point ordinal Likert scale,

Moderating Variable			Open ended, content analysis
Dependent Variable	Performance of Commercial Banks (Y)	• Return on Equity	Secondary data

3.10 Logical and Ethical Issues

Prior to starting the research, the respondents' permission was sought so that each one of them participated in the research voluntarily. The participants were given an opportunity to opt out of the exercise at any time they wished. This meant that the exercise was not forced on them at all and was meant for academics only and not victimization, or coercion of any kind. The proposal went through ethics committee of the Meru Science and Technical University (MUST)'s ethical committee. Passing research through MUST's ethical committee is essential for safeguarding the rights of participants, ensuring ethical compliance, minimizing risks, and promoting the credibility of the research. Ethical oversight also strengthens the quality and impact of research conducted at the university, maintaining the integrity of the academic institution and contributing to responsible knowledge generation. The researcher sought permission to collect data from National Commission for Science Technology and Innovation (NACOSTI). Permission was granted and a copy attached to questionnaires.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATIONS AND DISCUSSIONS

4.1 Introduction

This chapter provides the findings and discussions presented in line with the research objectives of the study. The study aimed to examine the effect of the uptake of digital innovations on the financial performance of commercial banks in Kenya, with a view to suggesting actionable recommendations and strategies that can pave the way for a more accelerated and successful digital transformation in the Kenyan banking system. For each construct, descriptive results as well as the skewness and factor loading of different components were first presented and discussed accordingly. The adequacy and dependability of the loading of each indicator were determined using Kaiser-Meyer-Olkin (KMO) and Bartlett's tests of sphericity. Inferential statistical results are then presented, including the testing of hypotheses. This was done to achieve a good flow of discussion and testing of underlying assumptions.

The chapter starts by presenting information on pilot study result including, validity, reliability, then descriptive analysis data and results based on the variables are presented and discussed. This is followed by the results of the diagnostic tests that were carried out and finally inferential statistics to show findings based on each variable, are then presented and discussed accordingly.

4.2 Pilot Study Results

4.2.1 Validity of Research Instruments

The validity of the model constructs was tested by subjecting the parameter responses to the items from the questionnaire to factor analysis. Content validity, or the degree to which test questions or variables accurately represent the conceptual area of interest, was investigated. The exploratory factor analysis (EFA) identifies the fewest number of factors

that may explain the shared variance of a set of variables. This approach lowered the number of items that fell below the 0.4 limit, hence improving the content validity of the items in the factors. In the study, every factor loading was greater than 0.4, indicating that the variables met validity criteria for content.

The study adopted content validity, whereby the researcher evaluated whether the test items assessed defined content. To achieve this, factor analysis was required, which was enabled by the use of Kaiser-Mayor-Oklin and Barlett's Test of Sphericity to measure adequacy, which is a standard way of checking variables therein. The majority of scholars in data analysis have accepted that a measure of 0.5 is adequate, while KMO and Bartlett's consider a measure of 0 to 1. Bartlett's Test of Sphericity looks at how validly the respondents responded to the issue at hand in the current study. Bartlett's test determines whether or not the correlation matrix is an identity matrix, which would indicate that the variables are uncorrelated and therefore unsuitable for factor analysis. The null hypothesis for this test is that the variables are uncorrelated. The test statistic is an approximate chi-square value, which is 6961.425 in this case. It has an associated degree of freedom (df) of 45. The recommendation is that when using factor analysis, the Bartlett's Test of Sphericity must be less than 0.05 in order to view the result as suitable. With this knowledge, therefore, the current study opted to use KMO and Bartlett's test to get a measure of how suitable the data is for factor analysis.

The table below was used to summarize the factors in which the KMO measure of sampling adequacy was.935 and was greater than 0.5; hence, this was a generally acceptable point and adequate. On the other hand, Bartlett's Test of Sphericity is based on significance at 0.000 but less than 0.05 as an acceptable index. In conclusion, the study established through this significance and record that there was a high likelihood of data provided that was adequate hence dependable for processing through factor analysis.

Table 4

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
Bartlett's Test of Sphericity	Approx. Chi-Square	6961.425
	Df	45
	Sig.	.000

Subsequently, the researcher used subject matter experts to evaluate whether test items assessed defined content. Specifically, experts from the School of Business and Economics at Meru University provided constructive critique, explicit comments, and recommendations for the research instruments of the study. Generally, the experts established whether the questionnaires could help in assessing the influence of the uptake of digital innovations and the performance of commercial banks in Kenya. In perfecting the research questions, the experts recommended reframing a few selected open-ended questionnaires to be more meaningful to the study and also more understandable to the respondents for them to provide adequate responses. This corresponds with Drost (2011), who opined that the erratic, vague, and perplexing statements ought to be discarded in the research study. In relation to the suggestions from the university experts, the researcher formulated coherent, open-ended questions for all the variables in the study.

Factor Loading Analysis of Variables.

Table 5

Communalities

	Initial	**Extraction**
Process Innovation	1.000	.980

	Initial	Extraction
Product Innovation	1.000	.976
Marketing Innovation	1.000	.939
Organization Innovation	1.000	.981
Moderating effect of government policy	1.000	.930
Performance of Commercial Banks	1.000	.961
Average	**1**	**0.961**

Extraction Method: Principal Component Analysis.

The high extraction values in the communalities table 5 demonstrate that the variables related to innovation (process, product, marketing, and organization innovation) and the moderating effect of government policy are well represented by the extracted factors. These results indicate a strong relationship between innovation and bank performance, and emphasize the significant role of government policy in shaping these dynamics.

The finding that Process Innovation (98.0%), explain a substantial portion of the variance indicates that innovations in these areas are critical to commercial bank performance. Process innovation, is essential for maintaining competitiveness and improving operational efficiency. This aligns with recent studies, such as Gupta et al. (2023), which found that process innovation positively affects banks' cost efficiency and customer satisfaction, leading to higher performance.

Product innovation, which explains 97.6% of the variance, also plays a pivotal role in commercial bank success. This is supported by research from Mwangi and Kamau (2022), who noted that product innovation drives customer acquisition and retention in the highly competitive banking sector. Banks that continuously develop new financial products tailored to customer needs experience better financial performance and market share growth.

The marketing innovation variable (93.9%) further underscores the importance of strategic communication and brand positioning in today's banking environment. According to Okofar(2021), innovative marketing techniques, such as digital marketing strategies, enhance customer engagement and loyalty, directly improving profitability. Therefore, commercial bank managers should invest in modern marketing tools and customer-centric approaches.

The moderating role of government policy (93.0% variance explained) highlights the importance of the regulatory environment in shaping the effectiveness of innovation strategies. Government policies on digital transformation, financial inclusion, and competition regulation significantly impact bank performance. Matar and Eneizan(2018) argues that favorable government policies, such as tax incentives for technological investments, enhance the capacity of banks to innovate and achieve better financial outcomes. This finding emphasizes the need for commercial bank managers to actively engage with regulatory bodies to ensure that policy frameworks support innovation-driven growth.

Lastly, the high communal value for Performance of Commercial Banks (Return on Equity) (96.1%) suggests that innovations in process, product, marketing, and organization, when moderated by government policy, have a direct and significant influence on bank performance. This is consistent with the findings of Mehdiabadi et al. (2020), who reported that return on equity is a key indicator of financial health and is highly influenced by innovative practices within commercial banks.

In light of these findings, commercial bank managers should focus on fostering innovation across multiple domains—process, product, marketing, and organizational structures—as these significantly contribute to the banks' financial performance. Additionally, they

should remain responsive to the regulatory environment, recognizing that government policies can enhance or constrain the success of innovation strategies. Investing in innovations while aligning with favorable policy frameworks will position commercial banks for sustained profitability and market leadership.

Table 6

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	5.767	96.110	96.110	5.767	96.110	96.110
2	.108	1.800	97.911			
3	.067	1.117	99.028			
4	.032	.537	99.565			
5	.018	.296	99.861			
6	.008	.139	100.000			

Extraction Method: Principal Component Analysis.

The Total Variance Explained table 6 presents the results of a Principal Component Analysis (PCA), indicating how much variance is explained by each component (factor) extracted from the data. The table provides both the initial eigenvalues and the extraction sums of squared loadings for each component, showing the total variance explained by each component before and after extraction. Key Findings: Component 1: Total Eigenvalue: 5.767 % of Variance: 96.110%, Cumulative %: 96.110%

The first component explains 96.11% of the total variance in the data. This suggests that this component captures the vast majority of the information across all variables in the model (i.e., process innovation, product innovation, marketing innovation, organization innovation, government policy, and performance of commercial banks). Component 2:

Total Eigenvalue: 0.108 % of Variance: 1.800%, Cumulative **%**: 97.911%, The second component adds only 1.80% of the variance, meaning that it contributes very little additional information beyond what is explained by the first component.

Other Components (3-6): Together, these components explain less than 3% of the variance (from 1.117% down to 0.139%), showing that they are negligible and do not significantly contribute to explaining the total variance in the data. The cumulative variance after the first component is already very high (96.11%), indicating that the vast majority of the variables' variance is explained by the first component, and adding more components yields diminishing returns. After extracting the first component, no significant variance remains to be explained by other components.

For commercial bank managers, the results of this factor analysis highlight the importance of a single dominant factor in explaining bank performance as influenced by innovation and government policy. This dominant component, which accounts for 96.11% of the variance, suggests that innovations (process, product, marketing, and organization) and the moderating effect of government policy work together to form a cohesive strategy that drives performance outcomes. Practical Implications: Strategic Focus on Innovation: The finding that one factor explains nearly all the variance indicates that innovation in commercial banks is highly interconnected. This suggests that managers should not treat innovations (e.g., in processes, products, or marketing) in isolation but should consider them as part of a holistic strategy to enhance performance. Musau et al. (2018) supports this view, emphasizing that an integrated approach to innovation across organizational functions yields the most significant performance improvements in financial institutions.

The fact that over 96% of the variance is explained by one component indicates that commercial bank managers can simplify their decision-making by focusing on the core

elements of innovation and regulatory compliance. Research by Mensah and Yeboah (2020) demonstrates that when banks prioritize innovation alongside strategic government policies, they are better able to streamline operations, reduce costs, and improve customer satisfaction, leading to enhanced financial outcomes.

The factor analysis reveals that one principal component, which integrates innovations across various dimensions (process, product, marketing, and organization) and the moderating effect of government policy, explains the vast majority of the variance in bank performance. For commercial bank managers, this means that focusing on a unified innovation strategy, supported by favorable government policies, is likely to yield the most significant improvements in financial outcomes. Simplifying decision-making by concentrating on this dominant factor can help managers enhance their strategic planning and resource allocation for optimal performance.

4.2.2 Reliability of Research Instruments

In this current study, reliability was tested using Cronbach's alpha coefficient. It should be understood that reliability as a coefficient is measured as a measure of 0 to 1. Scholars emphasize that the higher the coefficient, the more reliable the result is. In the case of Cronbach, an index of 0.7 or higher is accepted. Reliability is expressed as a coefficient between 0 and 1.00. The higher the coefficient, the more reliable the test. A threshold of a Cronbach alpha of 0.7 and above is acceptable (Shrikant, 2019).

Table 5 therefore shows that process innovation had a measure of 0.790 (79%), product innovation had 0.865 (86%), market innovation had 0.768 (76%), organization innovation had.892, government policies had 0.789 (78%), and the performance of commercial banks had.751 (75%). The construct being tested here for reliability shows that they were all above the minimum coefficient level of 0.7; hence, the study established that they were all reliable and accepted. This study therefore concludes that the items in the questionnaire

for each of the constructs of the main variables were significantly reliable and valid for further research.

Table 7

Reliability Test

Scale	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items	Comments
Process Innovation (X1)	0.785	0.790	6	Reliable
Product Innovation(X2)	0.780	0.865	6	Reliable
Market Innovation(X3)	0.763	0.768	6	Reliable
Organizational Innovation(X4)	0.870	0.892	8	Reliable
Government Policies(M)	0.766	0.789	5	Reliable
Performance of Commercial Banks(Y)	0.740	0.751	3	Reliable
Average	**0.784**	**0.809**		

The examination of the independent variables' reliability ratings indicated that all of them scored higher than 0.7. Cronbach's alpha was used to assess dependability. For example, the Process Innovation (X1) scale has a Cronbach's alpha of 0.785, indicating good internal consistency and reliability. On the part about product innovation (X2), the Cronbach's alpha for this scale is 0.780, which is also considered acceptable. However, the alternative calculation yields a substantially higher value of 0.865, suggesting even greater reliability when considering standardized items. Market innovation (X3), with a Cronbach's alpha of 0.763, also demonstrates acceptable reliability. The alternative calculation produces a slightly higher value of 0.768. The organizational innovation (X4) scale exhibits high

reliability, with a Cronbach's alpha of 0.870. The alternative calculation reinforces this finding, yielding an even higher value of 0.892.

Government Policies (M), which is the moderating variable, shows the reliability of this scale is acceptable, with a Cronbach's alpha of 0.766. The alternative calculation produces a slightly higher value of 0.789. The dependent variable, performance of commercial banks (Y), measures the performance of commercial banks and has a Cronbach's alpha of 0.740, indicating acceptable reliability. The alternative calculation yields a slightly higher value of 0.751. On average, Cronbach's alpha for all scales is 0.784, indicating good overall reliability. The average of the alternative calculations based on standardized items is even higher at 0.809, suggesting that considering standardized items improves the overall reliability estimate. The alternative calculation based on standardized items yields a slightly higher value of 0.790.

The findings were satisfactory, reflecting on the instrument's validity. This is corroborated by Mehdiabadi et al. (2020) who contends that the frequently accepted Cronbach alpha value must be significantly higher than 0.70. Similarly, Hayes and Coutts (2020) proposed that Cronbach's alpha values larger than 0.60 be deemed credible. This direction was also endorsed by Adeniran (2019), who said that Cronbach's alpha values between 0.60 and 0.90 are appropriate.

4.2.3 Description of Research Data

For independent variables, the responses from questionnaires were tabulated and the mean responses for each one of them was entered in SPSS V.26 data set. For every variable, the standard deviation was also calculated and used to describe the variability in each variable as shown in successive sections. For the dependent variable, the secondary data for ROE was calculated from the banks and the mean calculated and tabulated as Appendix 1V. The

mean ROE was also entered in SPSS V.26 and used as entries for dependent variables in regression models as explained in section 4.4.

4.2.4 Demographic Characteristics

Table 8

Response Rate

Responses	Frequency	Percentage
Returned Questionnaires	260	83
Non-Returned Questionnaires	55	17
Total	**315**	**100**

Table 8 shows outputted results on response rate gathered. The study targeted a sample size of 315 employees from 39 commercial banks in Kenya's whose main offices are situated in Nairobi out of which 260 of the questionnaires were returned. This represented a response rate of 82.5%, which was considered adequate for research as recommended by Morton et al. (2019).

Table 9

Position Held in Commercial Bank

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Senior Management	88	33.8	33.8	33.8
Middle Level Management	81	31.2	31.2	65.0
First line Management	91	35.0	35.0	100.0
Total	**260**	**100.0**	**100.0**	

According to the above table 9, First line Management accounted for 35% of all the respondents; Middle Level Management accounted for 31.2%; and 33.8% were senior

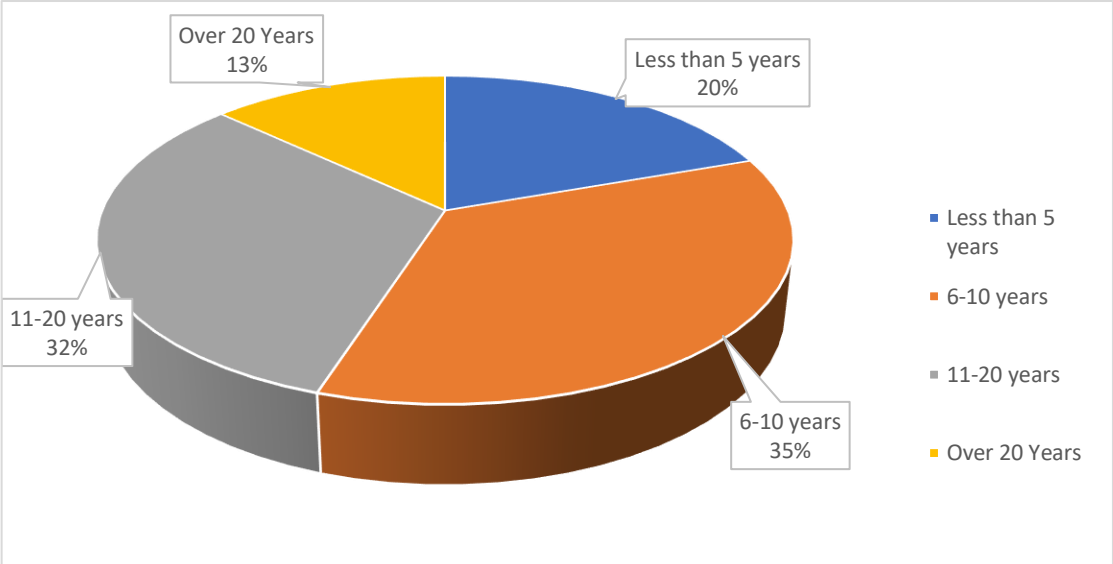
Management. The results show that First line Management at 35.0% was a great representation since this level of management is better placed to disseminate information on the effect of uptake of digital innovations in the commercial banks since they use the innovations on daily basis.

4.2.4.1 Working Experience

Figure 2 below indicates how long the respondents have worked at the bank under investigation. The majority of the respondents have worked in the bank for 6–10 years, at 35%; those who have worked for 11–20 years' account for 32%; followed by those who have worked less than 5 years at 20%; and lastly, at 13%, those who have worked for over 20 years. These findings indicated that those who have worked for 6–10 years were the majority at 35%; this is a good indication since the research still got the required information from the age bracket of less than 5 years, and those who have worked for over 20 years, if they are combined, give a total of 67% between them. This is an indication that a higher number of the respondents have much experience that assisted in achieving the goal of the study by providing tangible information or data. According to Muaza and Alagidede (2018), in terms of personal growth and development, experiences provide opportunities to learn new things, gain information, and develop new talents. As a result, they are well versed in the digital innovations implemented in commercial banks and the challenges being faced during implementation.

Figure 2

Working Experience



4.3 Descriptive Analysis

4.3.1 Process Innovation Strategy on Financial Performance of Commercial banks

Table 10

Test of Hypothesis on Uptake of Digital Process Innovation Strategy

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	35	13.5	13.5	13.5
Strongly Agree	40	15.4	15.4	28.8
Neutral	0	0	0	0
Disagree	95	36.5	36.5	65.4
Strongly Disagree	90	34.6	34.6	100.0
Total	260	100.0	100.0	

The tabulation above shows the outputted results on the extent to which uptake of process digital innovations influence financial performance of commercial Banks. Those who agreed and strongly agreed were at 13.5% and 15.4%, respectively, while those who disagreed and strongly disagreed were at 36.5% and 34.6%, respectively. The study therefore established that majority of the respondents indeed disagreed with the statement

in question on whether process innovation has no significant influence on the performance of commercial banks. This implies that the respondents agreed that process innovation greatly influences the performance of commercial banks.

This is in agreement with that of Nandwa (2016) who asserts that process innovation can generate value for either internal customers, including employees or the actual organization itself, or external customers, including business partners, end users, actual consumers, or the general performance of the bank. Kahn (2018) did a study on innovation, and the research methodology used appears to be a conceptual analysis based on existing literature and frameworks on innovation. Recommendations include fostering a culture that supports innovation at all levels, encouraging the internalization of innovative thinking among employees, and establishing structured processes for innovation management. By understanding innovation as an outcome, a process, and a mindset, organizations can better harness its potential and achieve sustainable success. To bank managers, this means that embracing innovation requires a holistic approach that addresses both organizational processes and individual attitudes and behaviors.

Table 11

Descriptive Statistics on Process Innovation

Category	Mean	Std. Deviation	N
This firm communicate innovative ideas with an aim of increasing their operational capacity	3.58	1.380	260
The bank has the capabilities to evaluate, execute or develop marketing strategies	2.57	1.358	260
The firm uptake current technology and regulations to increase productivity.	2.55	1.365	260
The firm supports technological creativity through offering technical support.	2.86	1.302	260

The firm ensures new ideas undergo trial before they are implemented.	3.42	1.369	260
Which method does your organization use to identify the most promising digital idea for application?	1.95	.811	260
What affects the idea generation process of this organization	2.67	1.071	260
Which one of the following automation delivery techniques have been developed in your organization?	3.18	1.737	260
Which of the following have the greatest impact on creativity in your organization	2.75	1.056	260
Average Score	**2.87**	**1.272**	**260**

The result in table 11 shows the level of existence of process innovation aggregate (Mean = 2.87 and SD = 1.27). The average score of items ranged between 1.95 to 3.58 (range = 1.63). The perception that firm communicate innovative idea with an aim of increasing their operational capacity rated the highest (Mean score = 3.85 and SD = 1.380). This was followed by on whether the new ideas undergo trial before implementation the mean was at 3.42 which indicates that the firm ensures new ideas undergo trial before they are implemented is part and parcel of process innovation required for performance of commercial banks.

The study also established that majority chose that the firm supports technological creativity through offering technical support at mean of 2.86 and standard deviation (SD) of 1.302 index. On whether the firm uptake current technology and regulations to increase productivity had a mean of 2.55 and SD= 1.365. Marshall, et al. (2022) advises that means greater than 1 and less than 1.5 implied the score can be accepted as showing proper index of measure with all other factors remaining constant. On the other hand, a means greater than 2.5 and less than 3.5 implied that the issue at hand is in effect affecting the

performance of the dependent variable or simply put the variable is good and can measure what it is intended to measure.

On the statement to which method the organization uses to identify the most promising digital idea for application, the outputted results were; Ideation 92(35.4%), Creativity 89(34.2%), Automatic Delivery Technique 79(30.4%) with a mean of 1.95 and SD = 0.811. Thus, ideation was the commonly used method to identify the most promising digital idea of application. One clear indication that most of the process innovations does not necessarily come from within the work. This concur with a study done by Alojairi et al., (2019) who came to the conclusion that innovation in Africa mostly emanates from two sources; Imitations from foreign country (this is where the mantra is that if is happening in USA or France, Germany, South Africa, why not locally here) and from the other local competitor firms (the mantra is – they are doing it let us also do it); in which case the adoption of the same in the local market may not yield same results.

On the statement whether the bank has the capabilities to evaluate, execute or develop marketing strategies (Strongly agreed, agreed, Neutral at 26.9%, 28.8%, and 17.7% respectively, while those who disagree and strongly disagreed were at 13.5% and 13.1% respectively) with mean of 2.57 and SD = 1.358.This implying that the banks had capacities in developing good marketing strategies though different banks have varying capabilities in development of marketing strategies The outputted results for the statement, "The firm uptake current technology and regulations to increase productivity" was a mean of 2.55 and SD = 1.365 in which, those who agreed and strongly agreed were 76(29.2%) and 72(27.7%) while those who didn't agreed/disagreed were 67(26%) while the neutral were 45(17%) of the respondents. This implies that the use of technology was meant for increasing productivity however regulatory complexities can impede successful uptake of current technology. This is in agreement with Ndungu (2019) who in his study reveals the

innovations are susceptible to fraud or cybercrimes related challenges as a result of ever-changing innovations, unclear digital policies, poor mobile network coverage, outdated network infrastructures, cost of smartphone, and the high cost of mobile data in Kenya, which remains a key barrier.

4.3.1.1 Idea Generation

The study also sought to find out what affects the idea generation process in commercial banks that scored a mean of 2.67 and a SD of 1.071, revealed the results in Table 12:

Table 12

Idea Generation in the Organization

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Inexperienced Facilitation/Group Think	50	19.2	19.2	19.2
Unclear Goals/Old Pattern Thinking	55	21.2	21.2	40.4
Egos and Hierarchy/Idea Killers	85	32.7	32.7	73.1
Closed-Mindedness/Cognitive Bias	70	26.9	26.9	100.0
Total	**260**	**100.0**	**100.0**	

Table 12 shows what affects idea generation, which includes egos and hierarchy/idea killers 85 (32.7), closed-mindedness/Cognitive bias 70 (26.9%), unclear goals/old pattern thinking 55 (21.2%), and inexperienced facilitation/group thinking 50 (192.1%). The profound revelation, on this issue is that the causes of idea generation emanated from the egos and hierarchy/idea killers in the bank which mainly emanates from centralized leadership. Bank managers should address issues like egos, hierarchy, closed-

mindedness, unclear goals, and groupthink to foster innovation and creativity. Strategies like training programs, flexible organizational structures, effective change management, and open communication can help overcome these barriers and stimulate creativity within the organization. This is in agreement with Crawford (2021) who advances the idea that poor leaders who are egocentric, hierarchy killers, are always the cause of the downfall of every organization, in which case even communication becomes a problem. Also, Klus et al. (2019) advocate for democratic leadership in which workers are given a chance to air out their views or ideas for the sake of the organization's growth.

4.3.1.2 Automation Delivery Techniques

Table 13

Automation Delivery Techniques

	Frequency	Percent	Valid Percent	Cumulative Percent
Mobile banking	60	23.1	23.1	23.1
Internet banking	58	22.3	22.3	45.4
Agency banking	20	7.7	7.7	53.1
Electronic banking outlets	52	20.0	20.0	73.1
Cyber security	38	14.6	14.6	87.7
RTGS	32	12.3	12.3	100.0
Total	**260**	**100.0**	**100.0**	

In the above table, mobile banking and internet banking are the most popular automation delivery techniques, with 23.1% and 22.3% of respondents selecting them, respectively. This suggests that these channels are widely adopted and in demand among customers. The data shows that the organization has developed a diverse range of automation channels, including agency banking, electronic banking outlets, cyber security measures,

and RTGS (Real Time Gross Settlement). This indicates a comprehensive approach to automation that caters to different customer preferences and needs. This study established that while cyber security is not a traditional automation delivery technique like mobile or internet banking, it is an essential aspect of digital banking operations. The fact that 14.6% of respondents selected cyber security highlights the organization's focus on ensuring the safety and integrity of its digital infrastructure and customer data.

Bank managers can use this data to identify areas where further investment or improvement may be needed. For instance, if certain automation channels have relatively low adoption rates compared to others, it could signal opportunities for enhancement or marketing efforts to increase usage. This is in agreement with Musau et al. (2018) who argues that for this to happen, there should be adequate technological infrastructure, accessible and affordable internet connectivity and mobile phones, cyber security and digital literacy. Also, a study done by Sarkar (2016) says that comparing the organization's adoption of automation delivery techniques with industry benchmarks can help bank managers assess their competitive position and inform strategic decision-making. They can leverage this information to prioritize investments, allocate resources effectively, and stay ahead of market trends.

4.3.1.3 Impact on Creativity

Table 14

Impact on Creativity

	Frequency	Percent	Valid Percent	Cumulative Percent
Education and learning system	45	17.3	17.3	17.3
Labour market structures	50	19.2	19.2	36.5
Organizational culture	90	34.6	34.6	71.2
Costs associated with creativity	75	28.8	28.8	100.0
Total	**260**	**100.0**	**100.0**	

From the above table, the data indicates that organizational culture is perceived as the most significant factor impacting creativity, with 34.6% of respondents selecting it. This suggests that the prevailing attitudes, values, and norms within the organization play a crucial role in fostering or inhibiting creativity among employees. This study has established that while education and learning systems are recognized as important for creativity (17.3% of respondents), they are not as prominently cited as organizational culture. Bank managers may want to consider how they can leverage training programs, educational initiatives, and continuous learning opportunities to further enhance creativity within their organization. Labor market structures, including factors such as employment practices and skills availability, are identified by 19.2% of respondents as influencing creativity. Bank managers should assess how these structures impact their ability to attract, retain, and develop creative talent within the organization.

While not as highly ranked as organizational culture, costs associated with creativity are still considered significant by 28.8% of respondents. This may include expenses related

to research and development, innovation initiatives, or creative projects. Bank managers need to balance the investment in creativity with the potential returns and ensure an efficient allocation of resources. This table highlights the importance of organizational culture as the primary driver of creativity within the banking sector. However, it also underscores the multifaceted nature of creativity, which is influenced by factors ranging from education to labor market dynamics and associated costs. Bank managers can leverage these insights to cultivate a culture of innovation and creativity within their organizations, ultimately driving long-term success and competitiveness.

This study is in agreement with that of Almustafa et al. (2023), who said that understanding the factors that influence creativity can inform strategic decision-making for bank managers. They can use this information to design policies, programs, and initiatives aimed at fostering a creative work environment, attracting and retaining innovative talent, and driving competitive advantage through innovation.

4.3.2 Product Innovation Strategy on Financial Performance of Commercial Banks

4.3.2.1 Uptake of Digital Product Innovation Strategy

Table 15

Test of Hypothesis on Uptake of Digital Product Innovation Strategy

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	40	15.4	15.4	15.4
Strongly Agree	37	14.2	14.2	29.6
Neutral	42	16.2	16.2	45.8
Disagree	81	31.2	31.2	76.9
Strongly Disagree	60	23.1	23.1	100.0
Total	**260**	**100.0**	**100.0**	

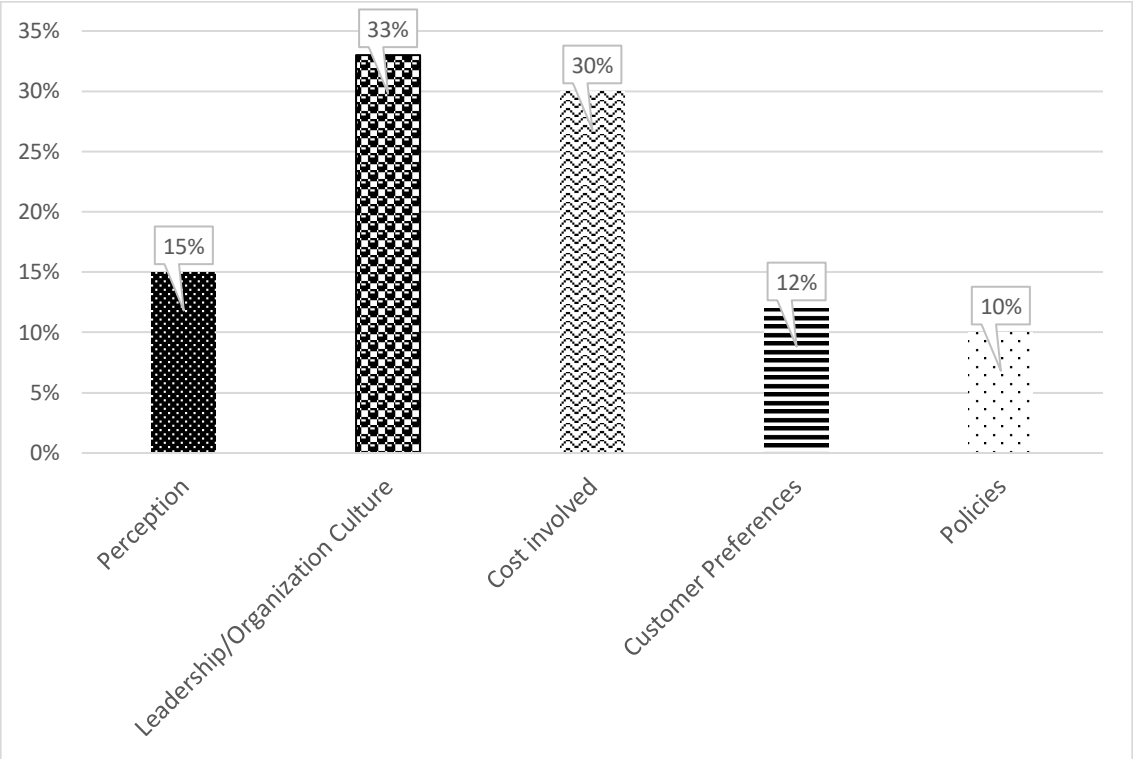
Table 15 shows the results in response to “Uptake of digital product innovations has no significant influence on the performance of commercial banks in Kenya.” Those who agreed or strongly agreed were at 40 (15.4%) and 37 (14.2%) percent, respectively. On the other hand, those who disagreed and strongly disagreed were at 81 (31.2%) and 60 (23.1%), respectively. This study therefore established that the majority of the respondents indeed disagreed with the statement in question about whether product innovation has no significant influence on the performance of commercial banks. To put it another way, the respondent agreed that product innovation great influence on the performance of commercial banks. This categorically means that bank managers should acknowledge the varied opinions on the impact of digital product innovation on bank performance. While some perceive it positively, others hold negative or neutral views. Managers should address these concerns through education, communication, or case studies. By leveraging the positive perception of digital product innovation, managers can drive innovation initiatives within their organizations, potentially improving bank performance.

This revelation is therefore in agreement with that of Proenca et al. (2020) who discovered that product innovation can generate value for either internal customers, including employees or the actual organization itself, or external customers, including business partners, end users, actual consumers, or the general performance of the bank. In conclusion, a study by Zhao, Li, Yu, Chen, and Lee (2022) contributes to the existing literature by providing empirical evidence on the impact of FinTech innovation on bank performance in China. By considering multiple dimensions of FinTech development and employing a comprehensive assessment framework, the research sheds light on the nuanced relationship between FinTech and bank performance.

4.3.2.2 Hindrance on Product Development in Commercial Banks

Figure 3

Hindrance on Product Development



The data in the above figure 4 indicates that leadership and organizational culture are the commonly cited factors hindering new product development, with 32.7% of respondents selecting this option. This suggests that the leadership style, management practices, and cultural norms within the firm may not sufficiently support or prioritize innovation initiatives. Nearly one-third (30.4%) of respondents identified cost as a significant hindrance to new product development. This implies that financial constraints, budget limitations, or concerns about return on investment (ROI) may impede the firm's ability to allocate resources effectively towards developing new products. While not as highly ranked as leadership or cost, customer preferences are still considered a notable obstacle by 12.3% of respondents.

The study agrees with Bustinza et al. (2019) who posits that bank managers should pay attention to customer needs, preferences, and market trends when developing new products to ensure alignment with customer expectations and maximize market acceptance. Perception, representing how the firm or its products are perceived by stakeholders, is identified as a hindrance by 15.0% of respondents. This could include negative perceptions about the firm's innovation capabilities, product quality, or brand reputation, which may deter investment in new product development. Another discovery of this study is that a smaller proportion of respondents (9.6%) cited policies as a barrier to new product development. This may refer to internal policies, regulations, or compliance requirements that impose constraints or bureaucratic hurdles, slowing down the innovation process. The study by Liu and Atuahene-Gima (2018) did in fact agree with this finding and thus argued that bank managers must address obstacles to new product development by fostering a culture of innovation, reallocating resources, conducting market research, improving perceptions, and streamlining policies to enhance innovation and competitiveness in the banking industry.

4.3.2.3 Newly introduced Products in Commercial Banks

Table 16

Newly Introduced products in Commercial Banks

	Frequency	Percent	Valid Percent	Cumulative Percent
Securitized assets	36	13.8	13.8	13.8
Derivatives, and weather derivatives	82	31.5	31.5	45.4
Mortgages and hedge funds	47	18.1	18.1	63.5

	Frequency	Percent	Valid Percent	Cumulative Percent
Exchange-traded funds	75	28.8	28.8	92.3
None of the Above	20	7.7	7.7	100.0
Total	**260**	**100.0**	**100.0**	

From the table above, 31.5% of respondents chose derivatives, including weather derivatives, as the most often introduced product. This shows that by producing financial products meant to manage risk or present speculative opportunities, the bank has been actively broadening its product line. According to 28.8% of respondents, exchange-traded funds represent another noteworthy product area that the bank has introduced. Due to their low cost, liquidity, and benefits for diversification, exchange-traded funds (ETFs) have become more and more popular among investors. This shows how responsive a bank is to changing market trends and investor preferences. Moreover, 18.1% of respondents named mortgages and hedge funds as recently introduced goods. This suggests that the bank might be increasing the wealth management and investment services that it provides in order to better serve

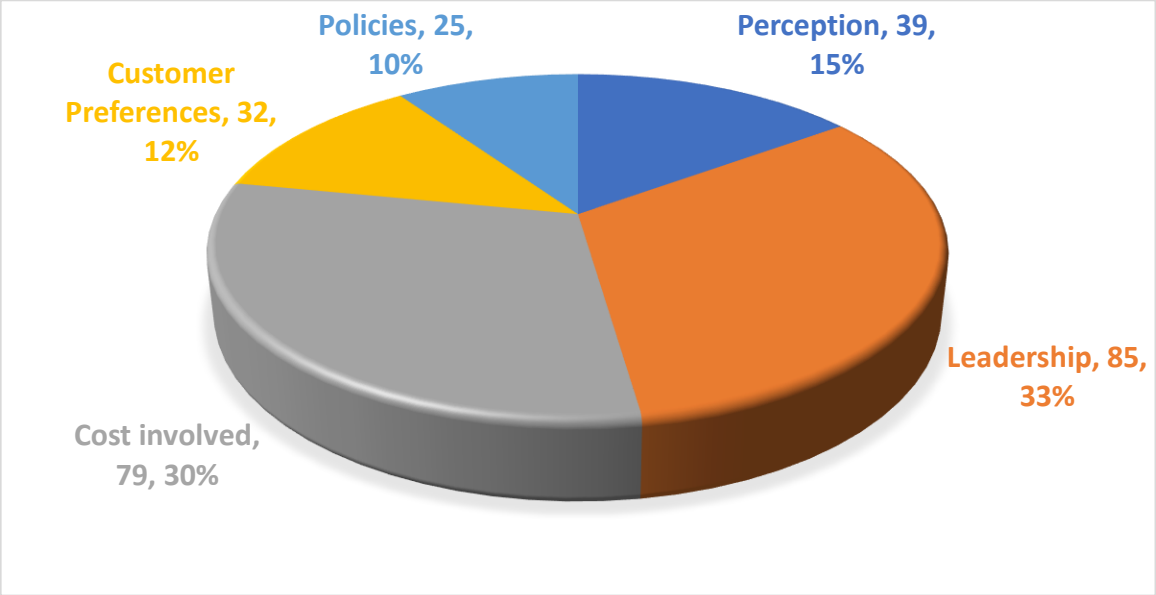
Despite being mentioned less frequently than derivatives or exchange-traded funds (ETFs), 13.8% of respondents still mention securitized assets. Securitization is combining different kinds of financial assets into one pool and turning them into securities that can be traded, which can help with risk control and increase liquidity. Only 7.7% of those surveyed said the bank had not launched any new products in the previous five years out of all those on the list. Managers of banks should carefully consider whether this response is the result of a lack of innovation or product development initiatives within the bank or if other reasons, including market conditions or regulatory restrictions, are at work.

Uwizeyemungu, and Fabi (2018) concur with the findings by saying that management must make use of this data to evaluate the effects and performance of recently launched goods, comprehend consumer preferences and market dynamics, and guide the creation of new products in the future. While Zuklifi et al. (2023) add that in a changing financial world, banks may increase their competitiveness, draw in new business, and spur revenue development by consistently innovating and broadening their product offerings.

4.3.2.4 Challenges of Products Innovations in Commercial Banks

Figure 4

Challenges of Product Innovation



The data in the figure above indicates that leadership-related challenges are the most commonly cited obstacles, with 32.7% of respondents selecting this option. This suggests that effective leadership, including vision, strategy, and decision-making, is critical for successfully navigating the complexities of product innovation initiatives within the firm. This study also found that nearly one-third (30.4%) of respondents identified cost as a significant challenge in undertaking product innovations. This implies that financial

constraints, budget limitations, or concerns about return on investment (ROI) may impede the firm's ability to invest resources in innovation efforts and bring new products to market.

The study also established that perception-related challenges, such as how the firm or its products are perceived by stakeholders, are cited by 15.0% of respondents. Negative perceptions about the firm's innovation capabilities, brand reputation, or market positioning may hinder the acceptance or adoption of innovative products by customers or other key stakeholders. On the other hand, the study did find out that, while not as highly ranked as leadership or cost, customer preferences are still considered a notable challenge by 12.3% of respondents. This indicates that understanding and responding to customer needs, preferences, and market trends is essential for successful product innovation efforts, as aligning new products with customer expectations is crucial for market acceptance and adoption. A smaller proportion of respondents (9.6%) cited policies as a barrier to product innovation. This may refer to internal policies, regulations, or compliance requirements that impose constraints or bureaucratic hurdles, slowing down the innovation process or limiting the firm's ability to experiment and take risks.

This study is in agreement with that done by Odhiambo and Ngaba (2019) and recommends that bank managers need to carefully analyze these findings and take appropriate actions to address the identified challenges in product innovation. This may involve fostering a culture of innovation, aligning leadership vision and strategy with innovation objectives, optimizing resource allocation, enhancing stakeholder perceptions through effective communication and branding strategies, and streamlining policies and procedures to facilitate innovation efforts. In addition, Olalere et al. (2021) advances that by overcoming these challenges, bank managers can foster a more innovative and competitive organization capable of driving sustained growth and success in the marketplace.

4.3.2.5 Milestones of Products Innovations in Commercial Banks

Table 17

Milestones of Products Innovations

	Frequency	Percent	Valid Percent	Cumulative Percent
Execute your marketing Strategy	65	25.0	25.0	25.0
Outsource skills	60	23.1	23.1	48.1
Repeat customer	67	25.8	25.8	73.8
Grow your brand	40	15.4	15.4	89.2
Not sure	28	10.8	10.8	100.0
None of the Above	0	0	0	0
Total	**260**	**100.0**	**100.0**	

The data in the table above shows that establishing execute your marketing strategy is considered a significant milestone, with 25.0% of respondents selecting this option. This suggests that the company has been successful in attracting and retaining customers who repeatedly engage with its new products, indicating customer satisfaction and loyalty. On the other hand, this study found out that achieving repeat customers is another notable milestone, with 25.8% of respondents identifying this accomplishment. This implies that the company's new products have gain much of repeat customers providing unique value propositions that resonate with customers and contribute to market success. Developing outsourcing skills is cited by 23.1% of respondents as a milestone. This indicates that the company has effectively marketed its new products, reaching target audiences, generating awareness, and driving customer acquisition and engagement through strategic marketing initiatives. The study also established that a portion of respondents (15.4%) indicated grow your brand as part of the milestone while 10.8% were not sure. Bank administrators need

clear communication about new product projects to avoid confusion. Only 10.8% of respondents are not sure that the banks have not reached milestones, indicating a need for improvement in marketing, competitive positioning, and customer acquisition and retention.

This is why the study is in agreement with Coetzee (2018) who argued that bank managers should use this information to assess the success and impact of new product initiatives, identify areas of strength and areas needing improvement, and inform future strategies and decision-making. By leveraging successful milestones and addressing areas of concern, bank managers can maximize the value and effectiveness of new product implementations, driving sustainable growth and competitive advantage in the marketplace.

4.3.2.6 Extent of Uptake of Products Innovations in Commercial Banks

The table below was answering statements that needed the respondents to state their level of agreement or lack of it based on the scale 1 = Strongly Disagree. 2 = disagree, 3 = neutral 4 = agree 5= strongly agree, and later on the measure was analyzed based on the mean and standard deviation.

Table 18

Descriptive Statistics on Product Innovation

Category	Mean	Std. Deviation	N
The firm offers wide range of products to its customers	2.46	1.301	260
The bank uptake development of new products to cater for changing and evolving needs of customers	2.47	1.365	260
The bank undertakes market survey to identify the needs of its customers	2.65	1.245	260

Category	Mean	Std. Deviation	N
The banks ensure quality management in the products and services provided.	2.65	1.245	260
Product differentiation in this bank has not been identified.	2.46	1.301	260
Average Score	**2.538**	**1.291**	

Table 18 depicts the result analysis of all items based on product innovation and measured through the use of means and standard deviation. The outputted result shows that the means score of all the items ranges from 2.46 to 2.65 and the SD from 1.245 to 1.365. Consequently, the researcher established that the firm offers a wide range of products to its customers with a mean of 2.46, and product differentiation in this bank has not been identified with a mean of 2.46. This means that even if the firm offers a range of products to its customers, the product differentiation strategy has not been well established. Bank managers should pay attention to this disparity between the perception of product range and product differentiation. Offering a wide range of products is beneficial, but without effective differentiation, it may be challenging to stand out in the market and meet customer needs effectively. Bank managers should address any discrepancies between the perception of product range and product differentiation, develop strategies to enhance product differentiation, and address resistance to digital innovations to ensure the diverse range of products effectively meets customer needs and stands out in the competitive market.

The findings consent with Cai et al. (2021) who asserts that a score greater than 1 and less than 1.5 indicates a correct index of measure when all other elements are held constant. A mean greater than 2.5 but less than 3.5, on the other hand, indicated that the issue at hand

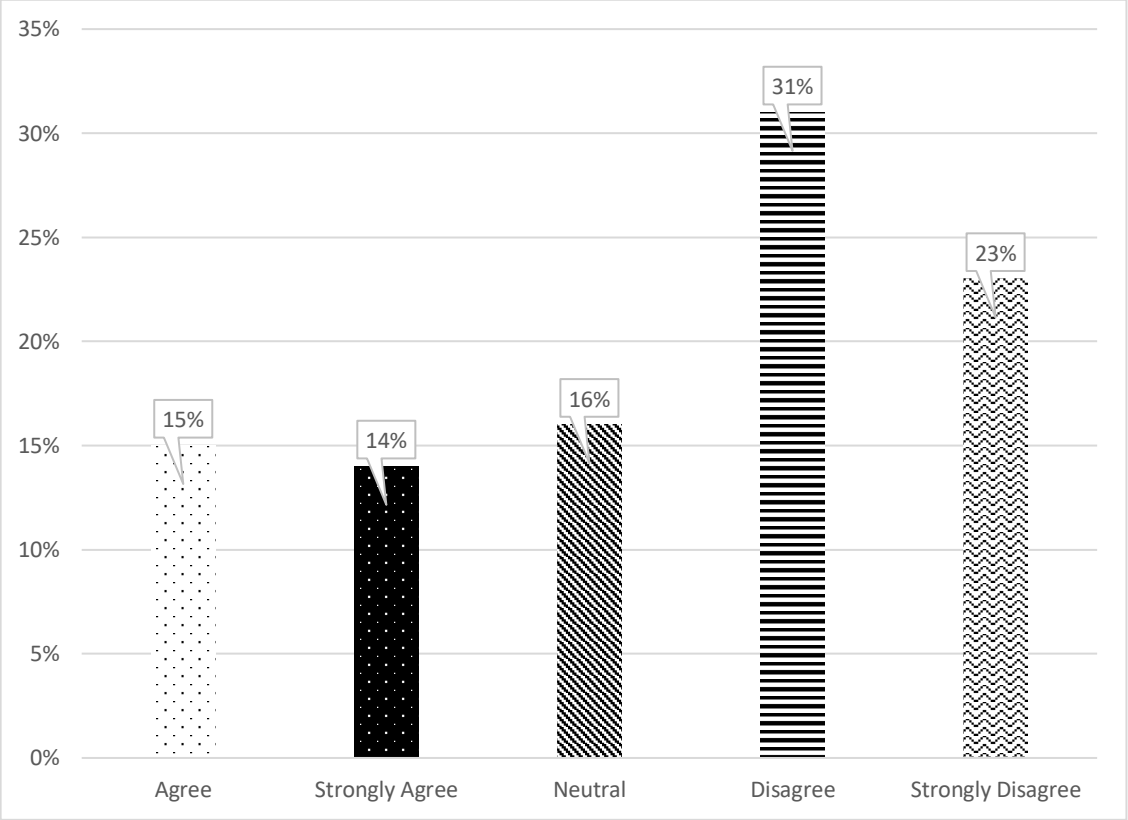
was impacting the performance of the dependent variable or that the variable was excellent and capable of measuring what it was designed to measure.

4.3.3 Marketing Innovation Strategy on Performance of Commercial Banks

4.3.3.1: Test of Hypothesis on Uptake of Digital Marketing innovation Strategy

Figure 5

Test of Hypothesis on Uptake of Digital Marketing Innovation Strategy



The above figure was answering the question: Uptake of digital marketing innovations has no significant influence on the performance of commercial banks in Kenya, in which case the respondents were required to agree or disagree with it in order to reach the conclusion of this research. Therefore, the figures showed that those who agreed and strongly agreed were 40 (15.4%) and 37 (14.2%), respectively; those who were neutral were 42 (16.2%), while those who disagreed and strongly disagreed were 60 (23.1%) and 81 (31.2%), respectively. The study thus established that the majority of the respondents disagreed with

the statement or question, meaning that they agreed that the uptake of digital marketing innovations has a great and significant influence on the performance of commercial banks in Kenya.

The study suggests that Kenyan bank managers should focus on digital marketing innovations to improve performance. Respondents believe that these strategies can enhance customer acquisition, retention, and competitiveness. To capitalize on these benefits, managers should invest in online presence enhancement, optimize digital channels, personalize marketing, and use data analytics. They should also align organizational resources with digital marketing implementation, such as training staff, upgrading technology infrastructure, and fostering a culture of innovation. Monitoring and evaluating the effectiveness of digital marketing initiatives is crucial, and bank managers should establish metrics and key performance indicators to assess the impact of digital marketing on various aspects of bank performance.

This study is in agreement with those of Millan et al. (2023) whose findings indicated that financial process innovation and financial market innovation also had a significant effect on the financial performance of commercial banks in Mombasa County. The study findings revealed that financial institution innovation had a significant positive effect on the financial performance of commercial banks in Mombasa County. Additionally, financial product innovation had a significant positive effect on the financial performance of commercial banks in Mombasa County.

4.3.3.2: Application of Marketing Innovation

The table below was answering statements that needed the respondents to state the extent to which marketing innovations have been applied in the organization on the scale 1 =

Strongly Disagree 2= Disagree, 3= Neutral 4 = Agree 5=Strongly Agree, which later on the measure was analyzed based on mean and standard deviation.

Table 19

Descriptive Statistics on Marketing Innovation

Statement	Mean	Std. Deviation	N
Uptake of digital marketing innovations has no significant influence on performance of commercial banks in Kenya.	3.32	1.377	260
The firm uses of various media channels to market its products	2.43	1.306	260
The firm creates value through pricing	2.56	1.420	260
The firm introduces new marketing approaches	2.65	1.245	260
The firm does environmental analysis and responses to changes in the environment.	2.65	1.245	260
The firm deal with customers suggestion or complaints urgently and with utmost care	2.46	1.301	260
What form of market innovation strategies does your firm employ?	2.80	1.419	260
Outline ways products in your organization reach its intended individuals	2.12	1.033	260
Which new products has your bank developed or introduced into the market in the last five (5) years	2.22	1.014	260
Average Score	**2.58**	**1.262**	**260**

Table 19 depicts the result analysis of all items based on marketing innovation and measured through the use of means and standard deviation. The outputted result shows that the mean score of all the items ranges from 2.12 to 3.32 and the SD from 1.033to 1.377. This is depicted by the question requiring respondents to outline ways products in the organization reach their intended individuals and by the responses to the question on

whether the uptake of digital marketing innovations has any significant influence on the performance of commercial banks in Kenya.

Responses on ways in which products reach the intended individuals, indicated that various ways were used by commercial banks to reach their customers, including channel diversification (90.6%), distribution innovations (85.7%), market development (50.2%), and those who don't know (35.5%). Bank managers should take note of the diverse marketing innovation practices employed by commercial banks in Kenya, as indicated by the responses. They should assess the effectiveness of these strategies and identify areas for further improvement and optimization. The findings highlight the importance of embracing marketing innovation, particularly in the digital realm, and leveraging these innovations to drive business growth and competitiveness in the banking sector.

On the statement which required respondents to react to if the firm dealt with customers' suggestions or complaints urgently and with the utmost care, the mean of 2.46 and the SD of 1.301 show that most of the respondents did not agree with this statement in that a total of 76 (29.2%) disagreed strongly, 8.1% agreed strongly, and at the same time, 24.2% were neutral. According to Supriyanto et al. (2021), the five consequences of not dealing with customers urgently are defections. Revenue loss, increased costs, loss of brand reputation, and increased stress levels among employees.

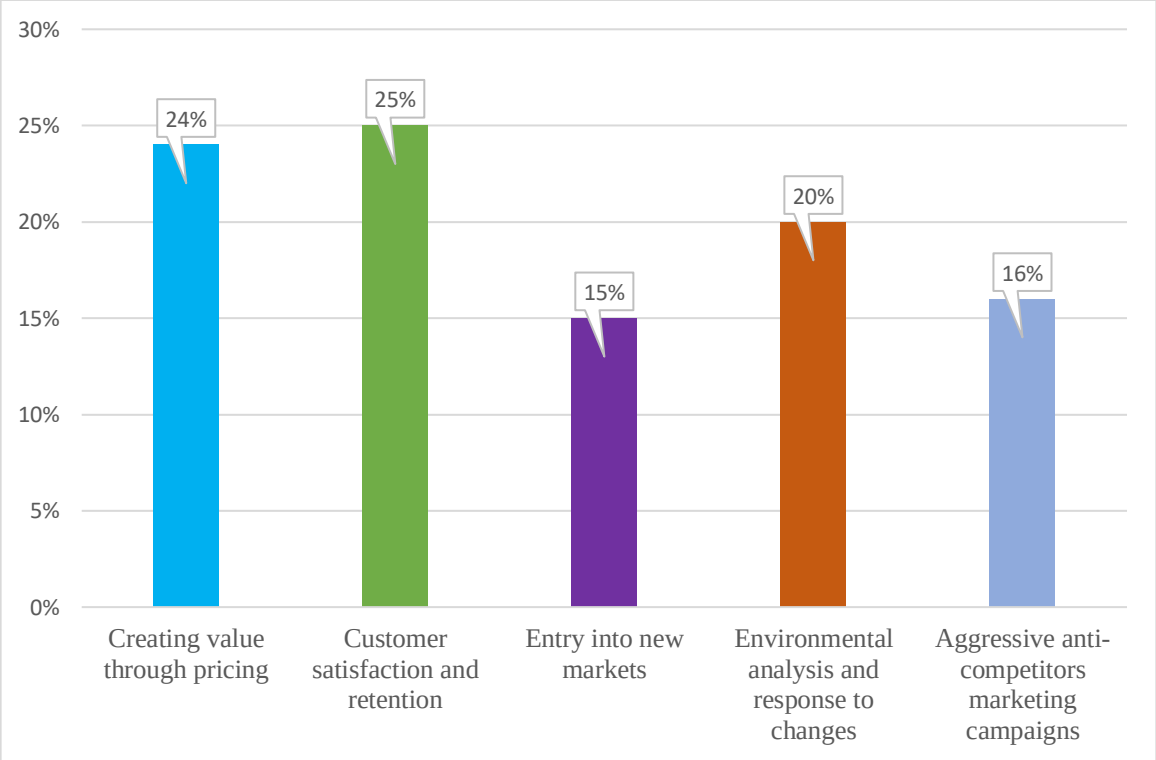
This study also revealed that the firm uses various media channels to market its products, with a mean of 2.43 and a SD of 1.306. The choices given as per this statement were: agree 30.8%, strongly agree 26.9%, neutral 21.2%, and disagree 10.8%. b) The firm creates value through pricing, with the same mean score of 2.56 and a SD of 1.420. This study therefore revealed that commercial banks use various ways to market products, thereby creating value through the pricing of their products, and this affected the commercial banks'

performance in a positive way. The findings underscore the importance of prioritizing customer service excellence and effective marketing practices in driving commercial bank performance. By addressing areas for improvement and building on existing strengths, bank managers can position their institutions for sustained success in a competitive market landscape.

4.3.3.3: Innovative Strategies Employed by Commercial banks in Marketing Innovation

Figure 6

Strategies Employed by Commercial banks in Marketing Innovation



The data in the figure above indicates that creating value through pricing is among commonly employed market innovation strategy, with 24% of respondents selecting this option. This suggests that the firm seeks to differentiate itself in the market by offering competitive pricing strategies that provide added value to customers. It also shows that nearly a quarter (25%) of respondents identified customer satisfaction and retention as a

key market innovation strategy. This implies that the firm places a strong emphasis on building and maintaining positive relationships with customers, focusing on delivering high-quality products and services to enhance satisfaction and loyalty. Entry into new markets is cited by 15% of respondents as a market innovation strategy employed by the firm. This suggests that the firm is actively seeking growth opportunities by expanding its geographic reach or diversifying its product offerings to target new customer segments or market niches. Environmental analysis and response to changes in the market are identified by 20 % of respondents as a market innovation strategy.

This indicates that the firm monitors market trends, competitive dynamics, and external factors closely, allowing it to adapt quickly and proactively to emerging opportunities or threats. Aggressive anti-competitor marketing campaigns: A smaller proportion (16%) of respondents indicated employing aggressive anti-competitor marketing campaigns as a market innovation strategy. This suggests that the firm may engage in assertive marketing tactics aimed at gaining market share, attracting customers from competitors, or defending its position against competitive threats. Liu and Atuahene-Gima (2018) agree with these findings and add that managers should use this information to evaluate the effectiveness of the market innovation strategies employed by the firm and identify areas for improvement or refinement. They should also ensure alignment between these strategies and the firm's overall business objectives, customer needs, and competitive positioning. By continuously refining and adapting market innovation strategies, bank managers can enhance the firm's competitiveness, drive growth, and capitalize on market opportunities effectively.

4.3.3.4: Marketing Ways Used by Commercial Banks

Table 20

Marketing Ways Used by Commercial Banks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distribution Channel	90	34.6	34.6	34.6
	Ask for Referrals	85	32.7	32.7	67.3
	Build Partnership/Networking	50	19.2	19.2	86.5
	Offer Free Sample	35	13.5	13.5	100.0
	Total	**260**	**100.0**	**100.0**	

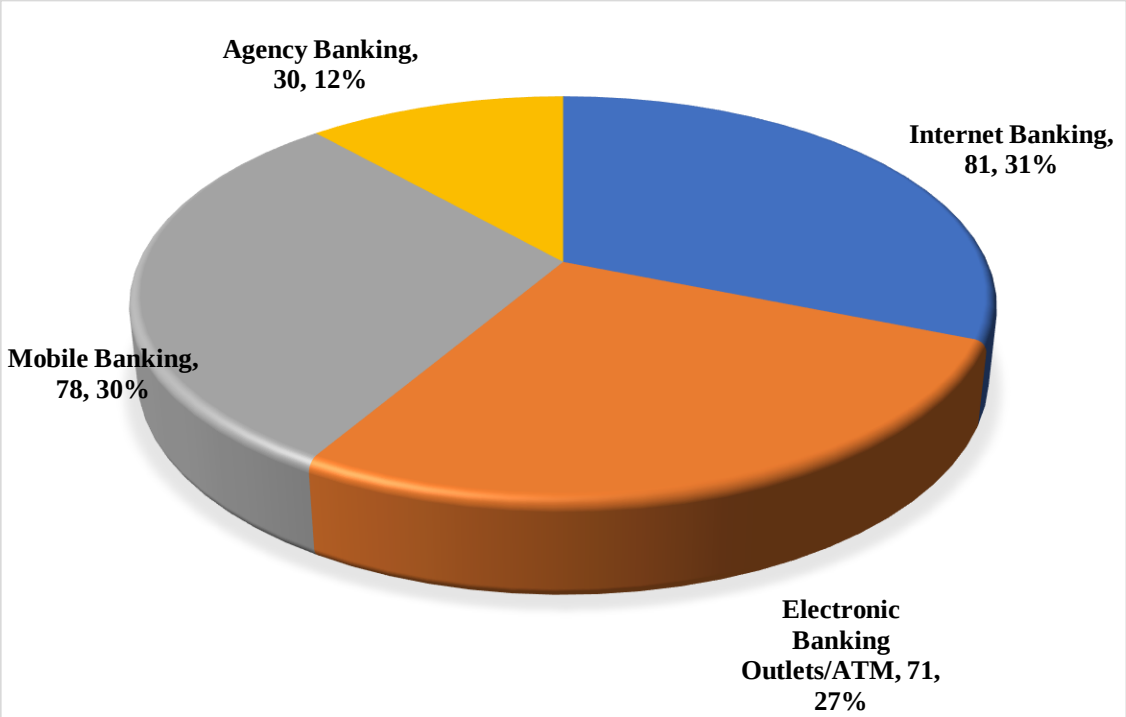
The data indicates that distribution channel is the most commonly employed strategy, with 34.6% of respondents selecting this option. This suggests that the organization utilizes multiple channels, such as online platforms, physical branches, mobile apps, and third-party partnerships, to reach a diverse range of customers and cater to their preferences. Ask for referrals: Nearly one-third (31.7%) of respondents identified distribution innovations as a key approach for reaching intended individuals. This implies that the organization explores innovative distribution methods or partnerships to optimize the delivery of products to customers, ensuring convenience, accessibility, and efficiency. Build partnerships/networking is cited by 19.2% of respondents as a strategy employed by the organization. This suggests that the organization focuses on expanding its market reach and penetration by targeting new geographic regions, customer segments, or market niches with its products. Offering free samples is selected by 13.5% of respondents as a way to reach intended individuals. This implies that the organization utilizes promotional tactics, such as providing free trials or samples of its products, to attract potential customers, generate interest, and encourage trial and adoption.

A study done by Weerakkody et al., (2021) agrees with these findings and argues that bank managers should use this information to assess the effectiveness of the strategies employed for reaching intended individuals and identify opportunities for optimization or enhancement. They should also ensure alignment between these strategies and the organization's marketing objectives, target audience preferences, and competitive positioning. By continuously refining and adapting their approach to product distribution and marketing, bank managers can enhance customer engagement, drive sales growth, and strengthen the organization's market presence.

4.3.3.5: New Digital products Developed by Commercial Banks

Figure 7

New Digital products Developed by Commercial Banks



The study reveals that internet banking is the most popular new product introduced by the bank, with 31.2% of respondents choosing this option. Electronic banking outlets, including ATMs, are identified by 27.3% of respondents, indicating an investment in expanding their network. Mobile banking, with 30.0% of respondents choosing this option,

offers convenience through mobile apps and SMS services. Agency banking, with 11.5% of respondents citing this, involves third-party agents providing basic banking services, reaching underserved or remote areas. Bustinza et al. (2019) suggested that in the finding above, bank managers should assess the success of new products, identify opportunities for innovation, align with customer needs, and implement marketing and training to promote adoption. This continuous innovation can enhance customer satisfaction, drive revenue growth, and maintain a competitive edge.

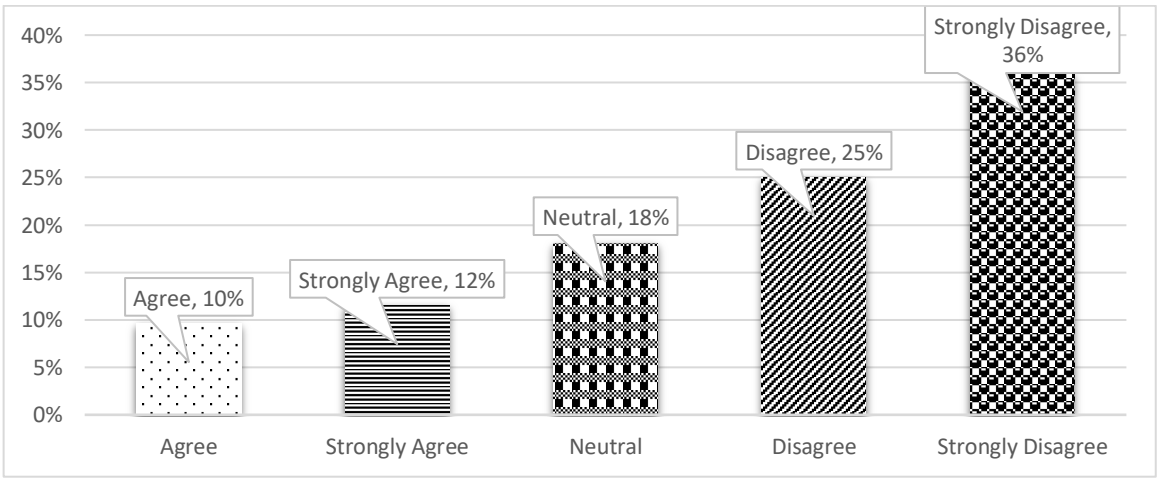
Gupta et al. (2023) agree with these findings that many banks have developed mobile and internet products to serve customer needs, though this is highly dependent on third-party service providers who provide internet and mobile banking connectivity. Additionally, Kogo and Kimenchu (2018), posits that the availability of resources and capabilities brings about benefits including: making planning marketing campaigns easier; creating a smooth workflow (and reducing busy work); helping with monitoring and tracking campaigns; and increasing branding consistency.

4.3.4 Organization Innovation Strategy on Performance of Commercial Banks

4.3.4.1: Test of Hypothesis on Uptake of Digital Organization Innovation Strategy

Figure 8

Test of Hypothesis on Uptake of Digital Organization Innovation Strategy



The above figure was resultant output to the question: uptake of digital organization innovations has no significant influence on the performance of commercial banks in Kenya, in which case the respondents were required to agree or disagree with it in order to reach the conclusion of this research. Therefore, the figures showed that those who disagreed and strongly disagreed were 93 (35.7%) and 65 (25%), respectively; those who were neutral were 47 (18%), while those who agreed and strongly agreed were 30 (11.5%) and 25 (9.6%), respectively. The study thus established that the majority of the respondents disagreed with the statement, meaning that the uptake of digital organizational innovations has a great and significant influence on the performance of commercial banks in Kenya.

This study is in agreement with those of Millan et al. (2023) whose findings indicated that financial process innovation and financial organization innovation also had a significant effect on the financial performance of commercial banks in Mombasa County. The study findings revealed that financial institution innovation had a significant positive effect on the financial performance of commercial banks in Mombasa County. Additionally, financial product innovation had a significant positive effect on the financial performance of commercial banks in Mombasa County.

4.3.4.2: Knowledge Transfer

Table 21

Knowledge Transfer

Category	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	42	16.2	16.2	16.2
No	76	29.2	29.2	45.4
Not aware	142	54.6	54.6	100
Total	**260**	**100**	**100**	

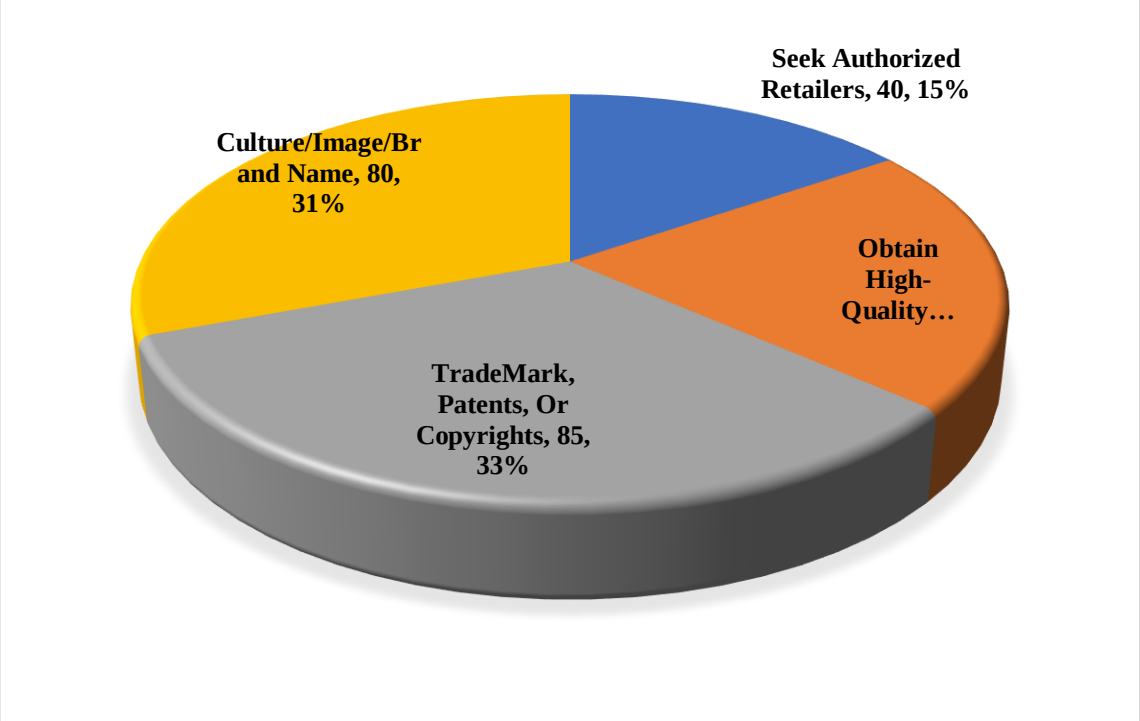
Table 21 shows the outcome of the respondent's awareness of any knowledge transfer between their banks; 54.6% of the respondents said they were not aware, 29.2 percent said no, and 16.2% said yes. The findings of this study therefore reveal that the majority of the workforce was not aware if there was any knowledge transfer, implying that commercial banks rarely share knowledge or transfer knowledge from one bank to the other unless there are routine business operations regulated by CBK such as clearing of cheques. This contributes to varying levels of digital literacy among employees, which negatively affects the implementation of organizational innovations, consequently impacting returns on equity.

The study is in agreement with a study conducted by Musawa and Ahmad (2019) whose findings underscore the significant impact of knowledge management activities on both innovation and organizational performance. Their research indicates a direct influence of knowledge management on innovation and performance, as well as an indirect enhancement of performance through the augmentation of innovation capability. Specifically, the activities of knowledge creation, integration, and application are identified as key drivers of innovation and performance improvement. Notably, knowledge creation emerges as particularly influential, exerting substantial effects on the speed, quality, and quantity of innovation within organizations. Additionally, Matar and Eneizan (2018) who denotes that knowledge transfer is an important part of knowledge management because it enables the integration of knowledge across the boundaries of specialized knowledge domains.

4.3.4.3: Safeguarding Imitation and Knowledge Transfer

Figure 9

Safeguarding Imitation and Knowledge Transfer



This data shows that 33% of respondents indicated that the three most frequently used strategies are trademark, patent, or copyright. This validate that the banks are indeed attempting legal measures of property rights protection, which may include unique production processes or even content promotion. The study showed that almost half of the respondents cited culture, image, or brand name as among the firm's strategies. Accordingly, the organization accomplishes its target through the culture of its organization, the reputation of its brand, and its identity, all aimed at having a distinct identity in the market. Acquiring good-quality inputs is regarded by 21% of respondents as one of the approaches. This indicates that the firm emphasizes taking premium digital resources such as AI, robots, people, or modern software for its knowledge transfer process, which further helps the banks deliver superior outcomes, and it would be difficult for the other players to copy this.

The study is in agreement with Chipeta and Muthinja (2018) who opines that bank managers should evaluate the effectiveness of strategies protecting knowledge transfers and intellectual property, ensure legal protections, leverage culture, image, and brand name to gain a competitive advantage, and continually monitor the market for changes. In conclusion, managers should develop a strong brand identity and company culture that foster knowledge sharing. Consider patents, trademarks, or copyrights for specific knowledge transfer processes, if applicable. and Evaluate how much knowledge transfer happens through external partners and prioritize internal. Forgor and Julie (2020) say that by understanding these points, bank managers can influence the firm's successful strategy to protect their own unique knowledge transfer methods.

4.3.4.4: Organization opportunities in Knowledge Management

Table 22

Organization opportunities in Knowledge Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Promotes Learning and Development	70	26.9	26.9	26.9
	Empowering Employees	55	21.2	21.2	48.1
	Positive Work Culture	65	25.0	25.0	73.1
	Ignite Innovative Thinking	70	26.9	26.9	100.0
	Total	**260**	**100.0**	**100.0**	

From table 22, Promoting Learning and Development at 26.9% indicates that knowledge sharing fosters a culture of continuous learning within the bank. This can improve employee skills and expertise. Empowering employees (21.2%) suggests that knowledge sharing can lead to a more capable workforce. Employees who feel trusted with knowledge are more likely to take ownership and make better decisions. Positive Work Culture

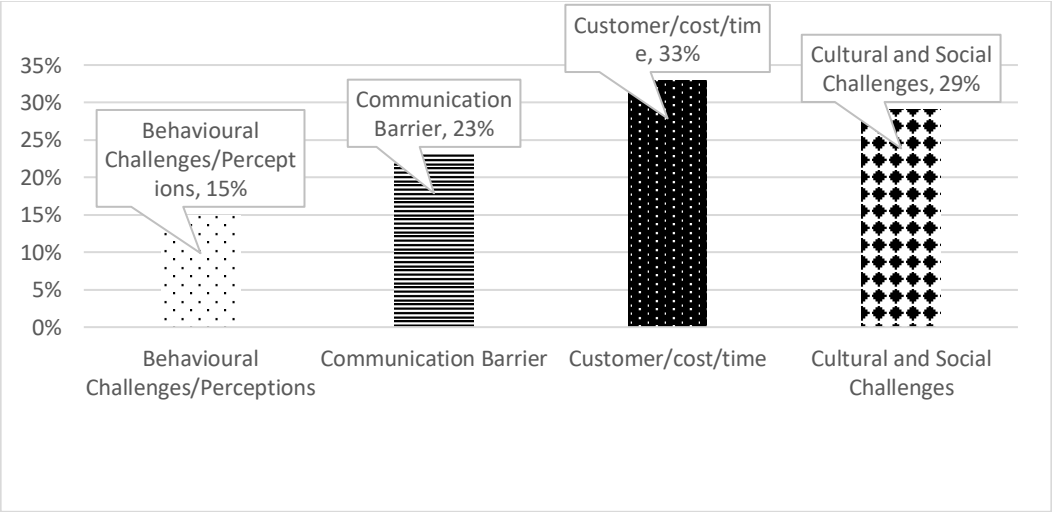
(25.0%) indicates that knowledge sharing can create a more collaborative and positive work environment. This can lead to increased employee satisfaction and productivity. Ignite Innovative Thinking (26.9%) highlights that sharing knowledge can spark new ideas and innovation. By sharing diverse perspectives, employees can come up with creative solutions to problems.

The study is in agreement with Anand and Mantrala (2019) who advise that bank managers need to create a plan to encourage and facilitate knowledge sharing across the bank, this could include mentorship programs, knowledge repositories, or brown bag lunch sessions. Acknowledge and reward employees who actively share their knowledge with others. This will incentivize others to participate. Foster a collaborative work environment where employees feel comfortable sharing ideas and asking questions. While Mardani et al. (2018) add that by implementing these strategies, bank managers can leverage the many benefits of knowledge transfer and sharing to improve the overall performance of the bank,

4.3.4.5: Challenges of Knowledge Management Transfer

Figure 10

Challenges of Knowledge Management Transfer



The figure above indicates the results of the challenges of knowledge transfer faced by commercial banks in Kenya. This study established that the most significant challenge (behavioral challenges/perceptions, 15%) indicates that some employees may be resistant to sharing knowledge. This could be due to a fear of losing their job security or a lack of understanding of the benefits of knowledge sharing. The communication barrier (23%) suggests that information may not be flowing freely within the bank. This could be due to a lack of clear communication channels or a culture that discourages open communication. Customer/cost/time (33%) is the biggest challenge, likely because effective knowledge transfer can be resource-intensive. It takes time and money to develop and implement knowledge-sharing programs. Cultural and social challenges (29%) indicate that the bank's culture may not be conducive to knowledge sharing. This could be due to a hierarchical structure or a lack of trust among employees.

Abdo and edgar (2021) in agreement to this study, argues that programs should educate employees about the benefits of knowledge sharing and address any concerns they may have. Ensure clear and open communication channels exist throughout the bank. This could involve using online collaboration tools or holding regular meetings. Allocate sufficient resources to develop and implement knowledge-sharing programs. This could include funding for training, technology, or hiring a knowledge management specialist. Promote a culture of collaboration and trust where employees feel comfortable sharing knowledge and asking questions. This could involve recognizing and rewarding knowledge-sharing behaviors. Additionally, Seifollahi and Hamidzadeh (2021), add that by addressing these challenges, bank managers can create an environment that encourages knowledge transfer and sharing, ultimately leading to a more innovative and successful bank.

4.3.4.6: Effects of Change Management

The following table was meant to address the issue of the effects of change management. They were required to use 1: Not at all. 2: little extent; 3: moderate extent; 4: great extent; and 5: very great extent.

Table 23

Descriptive Statistics on Organizational Innovation

Statement	Mean	Std. Deviation	N
Change management is communicated effectively with the organization	3.46	1.445	260
There is mutual relationship among the workers which enhances communication in the organization	2.57	1.389	260
Failures in the organization have led to failures in implementation of organization innovation or lack of it	3.43	1.378	260
There is adequate training to enable employees cope with changes in management	2.45	1.324	260
Average Score	**2.11**	**1.384**	**260**

The results in table 23, ranged from a mean score of 3.46 to a mean score of 2.45. On the outputted results on whether change management is communicated effectively with the organization, in which options were: very great extent 31.5%, great extent 26.9%, not at all 15.8%, moderate extent 13.1%, and little extent 12.7%, There is adequate training to enable employees to cope with changes in management at 2.45 and STDV = 1.324. This study found that: there is a mutual relationship among the workers that enhances

communication in the organization at a mean of 2.57; failures in the organization have led to failures in the implementation of organizational innovation or lack thereof at a mean of 3.43; and there is adequate training to enable employees to cope with changes in management at a mean of 2.45. This implies that respondents' opinions vary significantly regarding these statements. For example, while the mean score for the first statement is 3.46, indicating moderate agreement, the standard deviation suggests that some respondents strongly agree while others strongly disagree.

For bank managers, these findings underscore the importance of effective communication, addressing organizational failures, and providing adequate training in facilitating successful internal change management processes within banks. Addressing these aspects can contribute to enhancing organizational resilience and adaptability in the face of evolving management practices and market dynamics. This is in agreement with Schulz-Knappe et al. (2019) whose study objective was to examine the factors influencing employees' attitudes toward organizational change, focusing on the roles of organizational context, individual predispositions, and change communication. Specifically, the study aimed to investigate how these categories impact employees' tendencies to either resist or support organizational changes. The study suggested that in situations where communication is causing issues and there is failure in the implementation of organizational goals, the only viable option is to sell the company to known hands or merge with another to salvage available resources.

This study is consistent with the research conducted by Ahmed (2021) which explores the relationship between knowledge management, knowledge transfer, and organizational performance in the arts and crafts industry. It identifies three main domains: the internal dynamics of knowledge management and transfer, their impact on performance, and the role of craftsmen in shaping these dynamics. Despite challenges in quantifying

performance metrics, the study highlights the significant connection between organizational performance outcomes and tacit knowledge in arts and crafts contexts. The study advocates for the adoption of performance evaluation frameworks that harness craftsmen's expertise to enhance competitiveness in the arts and crafts sector, in which case this can be borrowed into the financial sector industries like commercial banks.

4.3.4.7: Embracing re-engineering initiatives.

Table 24, reacts to readiness of employees to embrace re-engineering initiatives by the banks. In which the respondents were required to rate the level of agreement or disagreement as: 1 = strongly disagree 2 = disagree, 3 = neutral 4 =Agree 5=Strongly Agree.

Table 24

Embracing re-engineering initiatives

Statement	Mean	Std. Deviation	N
Employees resist the implementation of change within the institution.	3.32	1.377	260
Employees tend to refuse new responsibilities brought about by changes in management.	2.43	1.306	260
Poor organizational structure causes resistance among some employees.	2.56	1.420	260
There is adequate training to enable employees to cope with change in the organization.	2.65	1.245	260
Average	**2.74**	**1.337**	**260**

The data shown above indicated that the mean score of the statement ranged from employee resistance to the implementation of change within the institution (mean = 3.32 to 2.43) to employee tendencies to refuse new responsibilities brought about by change in management. Meaning that the challenges faced were: (a) Employees resist implementation of change within the institution; (b) Employees tend to refuse new responsibilities brought about by change in management. (c) Poor organizational structure causes resistance among some employees = 2.56; and (d) There is adequate training to enable employees to cope with change in the organization = 2.65 mean. The study established that most employees resist change, which consequently affects the implementation of digital organizational innovations. Overall, the data highlights the multifaceted nature of the challenges associated with implementing organizational innovation within banks. This is in agreement with Fasano and Rocca (2021), posits that addressing these challenges requires a holistic approach that encompasses effective change management, communication strategies, organizational structure optimization, and

comprehensive training initiatives to foster a culture of innovation and adaptability among employees.

4.3.5 Moderating Effect of Government Policies on Performance of Commercial Banks

This section, explores the extent to which government policies—particularly in lending, taxation, and data protection—affect financial performance of commercial banks by shaping their operations, risk management, and customer relations. These policies influence profitability and operational flexibility, significantly impacting banks' overall effectiveness and growth.

Table 25

Descriptive Statistics on Government Policies

Category	Mean	Std. Deviation	N
(a)Lending Policy	2.73	1.319	260
(b)Taxation	2.59	1.345	260
(c)Data Protection	2.81	1.341	260
Average Score	**2.71**	**1.335**	**260**

Table 25 presents the influence of three government policies—lending policy, taxation, and data protection—on commercial bank performance. The mean scores for these factors reflect a moderate impact on banking operations, ranging from 2.59 for taxation to 2.81 for data protection. The lending policy, with a mean of 2.73 (SD = 1.319), indicates a moderate effect on operational flexibility, as policies on interest rates and credit risk shape demand and financial stability. Taxation policies follow, with a mean of 2.59 (SD = 1.345), suggesting an indirect effect through profitability changes driven by tax regulations. Data protection policies, scoring the highest mean of 2.81, signify substantial influence due to strict standards on data handling and cybersecurity, which enhance customer trust and

influence operational costs. Collectively, these findings imply that regulatory policies moderately shape bank performance, balancing operational constraints and benefits.

Findings are in agreement with the work of Allen, Qian, & Qian (2021) on the moderating role of government policies on the performance of commercial banks, which investigates how credit policies impact bank performance across varying regulatory environments in Africa. This study emphasizes that the diversity in banking development and financial sophistication across African nations makes the role of credit policies particularly significant. In some African countries, effective regulation has improved bank performance by addressing credit risk and enhancing financial infrastructure. However, the study also notes challenges due to weaker regulatory capacities in other regions, which can increase financial risks and reduce overall performance.

Another relevant study by Mohamad Hassan (2019) analyzes how global regulatory frameworks, like those based on Basel Accords, influence banks' productivity and efficiency. This research reveals that stricter regulatory policies, especially regarding capital and market discipline, can positively influence bank productivity, albeit with varying effects depending on the region and economic stability. This finding aligns with the moderate-to-high effect observed in your data, particularly regarding lending policies and taxation. The study findings are in agreement with Ong'ong'e, and Eddie (2021) who did a study on: "Effects of Financial Repression Policies on the Performance of Selected Commercial Banks in Kenya". The study found that financial repression policies, such as interest rate controls, government debt, capital controls, and reserve ratios, significantly influence the performance of commercial banks in Kenya. The study recommends that the Central Bank of Kenya develop policies to ensure that interest rate spreads are maintained at their lowest by removing interest rate barriers.

These studies underscore that while government policies such as lending regulations, taxation, and data protection play a critical role, their impact can vary depending on local economic conditions and the sophistication of the regulatory infrastructure. Thus, these findings support your observation that government policy as a moderator has a distinct impact on banking performance, depending on specific policy areas like lending and data security.

4.3.6 Performance of Commercial Banks

4.3.6.1 Return on Equity

Appendix V and VI provides Return on Equity (ROE) data for Kenyan banking industry spanning from 2018 to 2022.The secondary data was obtained from CBK annual supervisory reports. The banking industry average ROE for the given years stands at 22.6% reflecting the sector's profitability and efficiency during this period. The extent to which commercial banks in Kenya have embraced specific digital innovations and the subsequent effect on their financial performance warranted further investigations. Valuable insights of the current uptake of digital innovations can provide actionable recommendations and strategies that can pave way to a more accelerated and successful digital transformations and subsequently improving financial performance of the banking sector.

4.4 Regression Analysis

The study employed a panel linear regression model where a simple linear model was used for each variable with the model analysis discussed, then a joint model was done to determine the joint effect. A simple linear model took the form of $Y = \beta_0 + \beta_1 X_, + \varepsilon$ while the panel linear regression model was depicted in the form of as $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n + M + \varepsilon$. This model, has the Y =dependent variable, which is the financial performance of commercial banks while $(X_1, X_2, X_3, X_4, M,)$ refer to the

independent variables used in the model which are process, product, marketing, organization innovations, and government policies as moderating variable. The ordinary least squares (OLS) for linear regression was used as a method to fit the model, which is shown as $= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_n X_n + M + \varepsilon$. OLS aimed to find the line that best fits the data points by minimizing the sum of the squared errors between the predicted values (Y based on the equation) and the actual ROE values (Y) in the dataset.

In the current study of cross-validation, residual analysis was used for model validation. This involves examining the residuals (ε), which are the differences between the actual ROE values and the predicted ROE values from the model, and assisting in issues with the model's assumptions or missing factors. In this section too, the data was exposed on goodness-of-fit tests, which included: R-squared: This represents the proportion of variance in the dependent variable (ROE) explained by the model. Adjusted R-squared: A penalty on R-squared that adjusts for the number of independent variables to avoid overfitting. F-statistic: Tests the overall significance of the model, meaning whether all the independent variables together have a statistically significant effect on ROE. By employing this technique, it was easier for the researchers to evaluate the model's performance, identify potential issues, and determine if the model is reliable for making predictions about ROE based on innovation and government policies.

The predictors in this study were process, product, marketing, and organizational innovations. The reason for this was that process innovation can streamline operations, reduce costs, and potentially lead to higher profits. Product innovation can lead to new or improved products that attract customers and increase market share, boosting ROE. Marketing innovation can improve brand awareness, customer acquisition, and retention, potentially leading to higher sales and ROE. Organizational innovation can create a more flexible and adaptable company culture, allowing it to respond effectively to market

changes and maintain profitability, impacting ROE positively, which was the main focus of this study. The underlying concept is understanding how these innovations have been adopted, challenges, and recommendations on what to do.

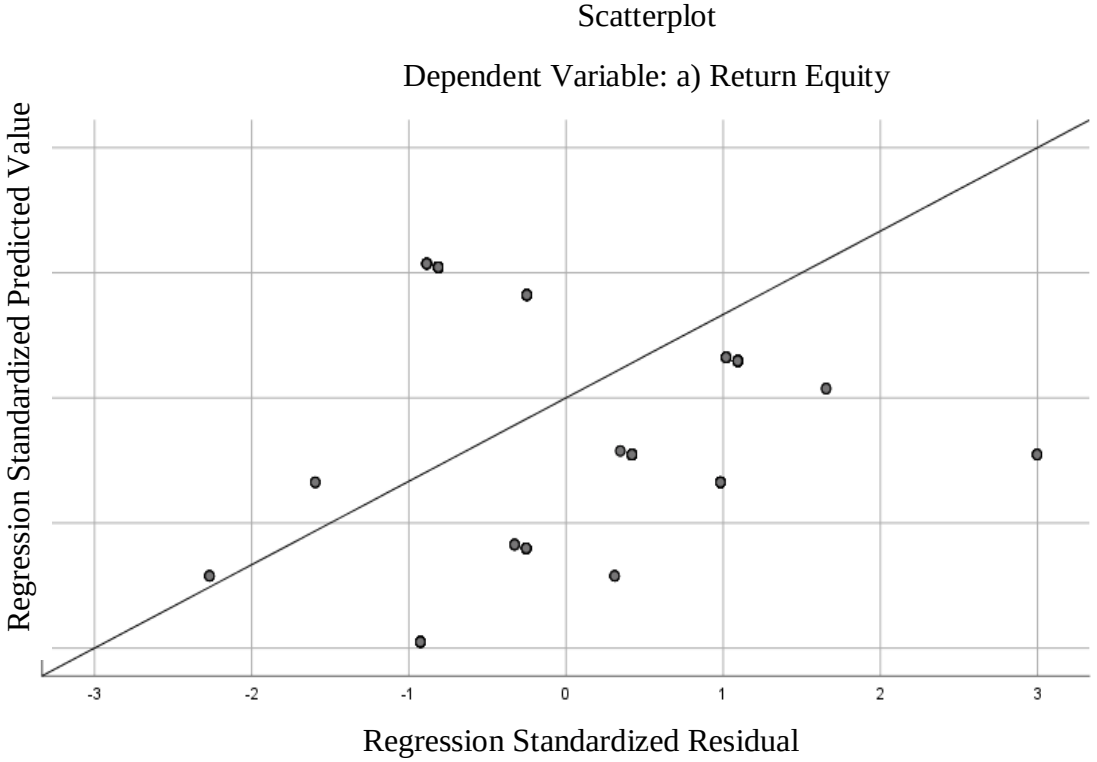
4.4.1 Diagnostic Tests

4.4.1.1 Linearity Test

The current study sought to do a linearity test in order to ensure that the relationship between independent variables (process, product, marketing, organizational innovation, and commercial performance) has linearity. This task was carried out, and the result is shown in the below figure:

Figure 11

Linearity Test



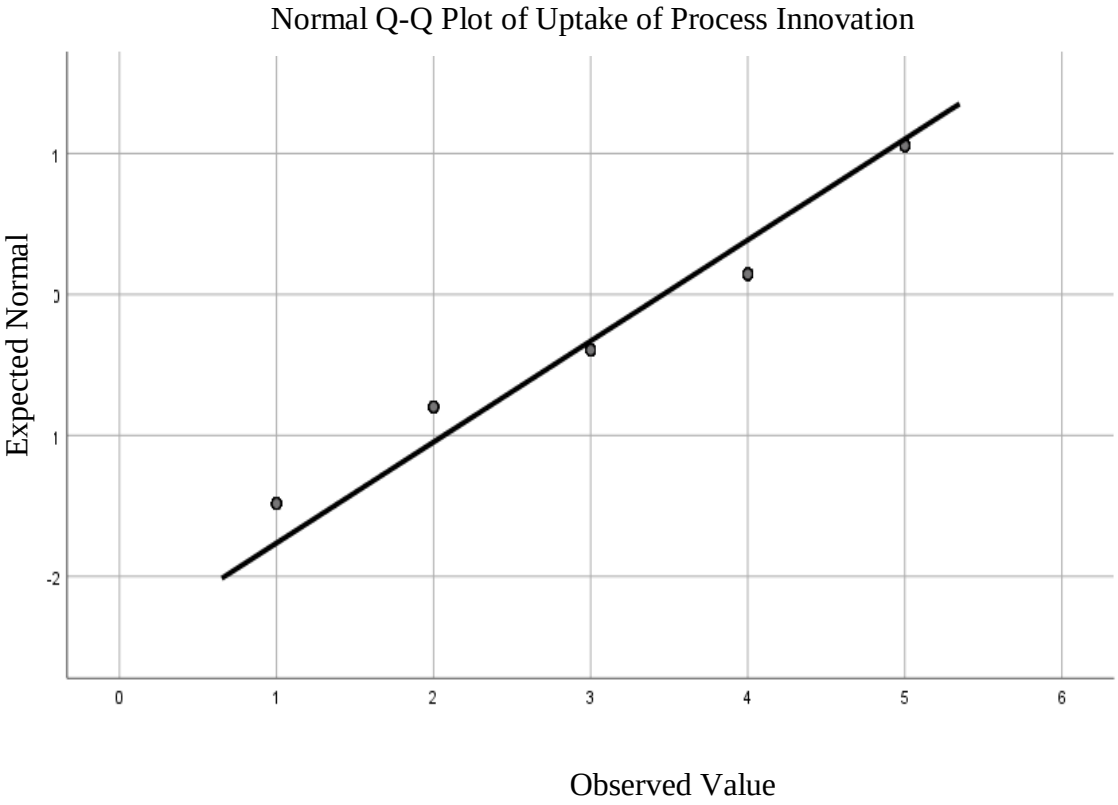
The scatterplot above indicates that the data is randomly scattered around the straight line. This shows that when data is scattered randomly both above and below the straight line in a linear regression analysis, it suggests that the model may be adequately capturing the

relationship between the variables, and the residuals (the differences between observed and predicted values) are distributed randomly around zero. This is in agreement with Marshall et al. (2022) who opines that random scattering of data points above and below the straight line indicates that the linear regression model is reasonably fitting the data. This suggests that the model is capturing the overall trend or pattern in the data, and the observed variability is likely due to random noise rather than systematic bias.

4.4.1.2 Test for Normality

Figure 12

Test of Normality Q-Q using Scatter Plot



The figure above is a normal Q-Q plot diagram that shows data points fall approximately along a straight diagonal line. This suggests that the distribution of the observed uptake of processes, products, marketing, and organizational innovation is similar to a normal distribution. The closer the data points are to the diagonal line, the stronger the evidence

that the two distributions being compared are similar. If the data points fall consistently above or below the diagonal line, this suggests that the two distributions being compared are different. Based on the normal Q-Q plot, the study finds that the observed uptake of digital innovation follows a normal distribution. This means that most companies are likely to adopt around the average number of innovations, with fewer companies adopting very high or very low numbers of innovations. The study is in agreement with Marshall, et al. (2022) who advances that normality Q-Q is a valuable tool for assessing the fit of a sample to a specified distribution, providing a more stringent test compared to some other goodness-of-fit tests.

4.4.1.3 Heteroscedasticity

Table 26

Heteroscedasticity

Category		Levene Statistic	df1	df2	Sig.
Process Innovation	Based on Mean	8.561	3	16	.001
	Based on trimmed mean	7.459	3	16	.002
Product Innovation	Based on Mean	55.111	3	16	.000
	Based on trimmed mean	44.361	3	16	.000
Marketing Innovation	Based on Mean	7.262	3	16	.003
	Based on trimmed mean	7.628	3	16	.002
Organizational Innovation	Based on Mean	55.111	3	16	.000
	Based on trimmed mean	44.361	3	16	.000

Table 26 shows that process innovation has a p-value of.001, product innovation is at.000, marketing innovation is at.003, and organizational innovation is at.000. This means that

the test of homogeneity is within the required standard p-value of significance of.05. In this case, therefore, Levene's test of homogeneity is the same and below the p-value of.05 and has not violated the assumption of homogeneity of variance or consistency of the variables. For bank managers, these results imply that while there is evidence of heteroscedasticity in the data, the assumption of homogeneity of variance is not violated. Nevertheless, it's essential to be aware of the potential impact of heteroscedasticity on statistical analyses and interpretation of results and to consider appropriate techniques to address or account for it when conducting further analyses or making decisions based on these variables.

4.4.1.4 Test of Multicollinearity

Table 27

Multi-Collinearity Tests

Independent Variable	**F-Statistic**	**Significant**
	Tolerance	**VIF**
Process Innovation	.059	6.905
Product Innovation	.029	4.504
Marketing Innovation	.020	5.023
Organization Innovation	.220	4.536
Government Policies	.028	5.636

The lack of multicollinearity in the data indicates that the link across process, marketing, product, and organization innovations and performance may be credited entirely to the independent variable itself, which is ROE, rather than the interaction between the independent variables themselves and the moderating variable. Lack of multicollinearity will also lower the average errors in the variables, boosting the validity of the study's findings in understanding the link between independent variables and the performance of commercial banks. Bank managers can use the insights from the multicollinearity tests to

refine their understanding of the relationships between different innovation variables and their impact on bank performance. By addressing multicollinearity issues, managers can enhance the accuracy and reliability of regression analyses, enabling more informed decision-making regarding strategic initiatives, resource allocation, and performance optimization.

4.4.2 Correlation Analysis between Variables

In this study, an effort was made to measure the correlation of variables, specifically how they relate to each other. The main measure was based on independent variables (performance of commercial banks—return on equity as an indicator) and independent variables (process innovation, product innovation, marketing innovation, and organizational innovation). Therefore, to measure the correlation accurately, the Pearson bivariate correlation coefficient was used. The study concurs with Gunst and Mason (2018) who advises that Pearson's r varies between +1 and -1, where +1 is a perfect positive correlation and -1 is a perfect negative correlation. 0 means there is no linear correlation at all.

Table 28

Pearson Correlation Tests Analysis

Category		Process Innovation	Product Innovations	Marketing Innovations	Organization Innovations	a) Return on Equity
Process Innovation	Pearson Correlation	1				
	Sig. (2-tailed)					
Product Innovation	Pearson Correlation	.626**	1			
	Sig. (2-tailed)	.000				
Marketing Innovation	Pearson Correlation	.545**	.530**	1		
	Sig. (2-tailed)	.000	.000			

Category		Process Innovation	Product Innovations	Marketing Innovations	Organization Innovations	a) Return on Equity
Organization Innovation	Pearson Correlation	.654**	.515**	.561**	1	
	Sig. (2-tailed)	.000	.000	.000		
a) Return on Equity	Pearson Correlation	.927**	.604**	.904**	.928**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

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

b. Listwise N=260

In table 28, the result shows how the independent variables relate to the dependent variable. A significant of 0.000 < 0.000 as shown a positive relationship was depicted between process innovation and return on equity (performance of commercial banks) at a correlation coefficient of (r = 0.927 (92.7%), P = 0.000 < 0.1 or 0.5) which in essence indicates that process innovation has a higher coloration and leads to positive ROE (performance of commercial banks). Similarly, a positive correlation is witnessed between product innovation and ROE, with a realization of co-efficiency of (r = 0.604 (60.4%), p = 0.000 < 0.1 or 0.5). Another positive relationship was between marketing innovation and ROE, with a coefficient of (r = 0.904 (90.4%), P = 0.000 < 0.1 or 0.5). Yet another positive relationship was between organization innovation and ROE at a co-efficient value of (r = 0.928 (93%), P = 0.000 < 0.1 or 0.5). The 2-tailed significance value, was 0.000 for most of the variables. The usual alpha value is 0.05, indicating that our association is extremely significant and not simply due to random sampling error. The data emphasizes the significance of fostering a culture of innovation within banks, highlighting the positive impact of investments in process improvements, product development, marketing strategies, and organizational practices on financial performance, thus urging managers to prioritize innovation initiatives and allocate resources effectively.

These findings collaborated well with those found by Lin et al. (2019) who used data collected from 163 international automotive firms over the period 2011–2017 from the CSRHub database. The study explores the correlation between green innovation strategy (GIS) and corporate financial performance (CFP) in the automotive sector, examining how firm size influences this relationship and its impact on shareholder wealth. A dynamic panel data system, specifically the Generalized Method of Moment (GMM) method, was used to estimate the relationship. The findings highlight the importance of considering firm characteristics, like size, when evaluating the impact of GIS on financial performance in the automotive industry. Bank managers should take into account the size of firms when evaluating the impact of GIS on financial performance, as it may vary depending on firm characteristics.

4.4.3 Regression of Digital Innovation Strategy on Financial Performance of Commercial Banks.

This study explores the impact of digital innovation on the financial performance of commercial banks, focusing on how advancements in processes, products, marketing, and organizational frameworks drive profitability and competitiveness. By analyzing regression models, it highlights the strategic role of digital innovations in enhancing banks financial performance.

4.4.3.1 Regression Results on Uptake of Digital Process Innovation Strategy to Financial Performance of Commercial Banks

This analysis examines the influence of digital process innovation uptake on the performance of commercial banks. By assessing regression results, the study aims to determine if implementing digital processes significantly enhances bank performance. As such the Hypothesis being tested is $H_0 1$: There is no statistically significant relationship

between uptake of digital process innovations and financial performance of commercial banks in Kenya as shown in tables below:

Table 29(a)

Model Summary for Process Innovation Strategy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.892[a]	.795	.795	.38783	.795	1002.508	1	258	.000	.655

a. Predictors: (Constant), Process

b. Dependent Variable: ROE

Table 29(a) shows that (R^2 = 0.795(79.5%) variation in process innovation causes variations in returns in equity. Findings imply that process innovation scores explain 79.5% if the variation of process innovation

Table 30(b)

Hypothesis Test on Process Innovation Strategy

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	150.793	1	150.793	1002.508	.000[b]
	Residual	38.807	258	.150		
	Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), Process

Table 29(b) shows a one-way ANOVA, where Sig.0.000 is < F-Value = 1002.508, which means that the regression is significant for use in the study. The result shows the fitted model linking the relationship between process innovation and performance of commercial banks are statistically significant (F = 1002.508, P = 0.0001< 0.05). This is implying the suggested model is suitable for prediction purposes

Table 31(c)

Regression Coefficient of Process Innovation Strategy

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B			Correla
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Parti
(Constant)	.298	.053		5.604	.000	.193	.403		
Process	.845	.027	.892	31.662	.000	.793	.898	.892	.8

a. Dependent Variable: ROE

This table 29(c) presents the results of a regression analysis where the dependent variable is "Return on Equity" (ROE) and the independent variable is "Process Innovations. The p<0.0001 indicate that process innovation significantly and positively influences returns on equity. Specifically, for every unit improvement in process innovation (as measured in standard deviations), return on equity is predicted to rise by 0.298 units. The high standardized coefficient (Beta = 0.892) suggests that process innovation is a powerful predictor of return on equity.

The predicted model coefficient for process innovation took the form:

$Y = \beta_0 + \beta_1 X_1 + \varepsilon$ …….(i)

Where:

Y = Performance

β_0 = 0.298

X_1 = Process Innovation = 0.892

Thus

Y = 0.298+ 0.892 X_1

The study findings collaborated well with George and Mallery (2019) who posits that when the sig. value (p-value) is < F-value, the hypothesis is rejected. Therefore, process innovation has positive and significant influence on the performance of commercial banks. Managers may use this information to prioritize investments in ideation, creativity and automation techniques which would improve the bank's return on equity

4.4.3.2 Regression Model Results on Uptake of Digital Product Innovation Strategy to Performance of Commercial Banks

Table 32(a)

Model Summary of Product Innovation Strategy

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.653[a]	.426	.424	.64941	.426	191.579	1	258	.000	.159

a. Predictors: (Constant), Product

b. Dependent Variable: ROE

Table 33(b)

Hypothesis Test on Product Innovation Strategy

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.

Regression	80.794	1	80.794	191.579	.000[b]
Residual	108.806	258	.422		
Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), Product

Table 34(c)

Regression Coefficient of Product Innovation Strategy

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VI
(Constant)	.762	.085		8.948	.000	.594	.929					
Product	.623	.045	.653	13.841	.000	.535	.712	.653	.653	.653	1.000	1.0

a. Dependent Variable: ROE

Table 30(a) shows that (R^2 = 0.426(42.6%) variation in product innovation causes variations in returns in equity. This implies that though product innovations are correlated to ROE, they do not explain much of the variability with ROE. Table 30(b) on one-way ANOVA, shows that the regression is significant for use in the study. Sig.0001 is < F-Value 191.579, which means that the hypothesis is rejected. Therefore, product innovation has moderate and significant influence on the performance of commercial banks.

Table 30(c) presents the results of a regression analysis where the dependent variable is "Return on Equity" (ROE) and the independent variable is "Product Innovations. The p <0.0001 indicate that that product innovation significantly and positively influences returns on equity. Specifically, on average, for every unit increase in product innovations

the return on equity is predicted to rise by 0.762. The standardized coefficient (Beta = 0. 653) suggests that product innovations are predictor of return on equity.

The predicted model coefficient for product innovation took the form:

$Y = \beta_0 + \beta_1 X_2 + \varepsilon$, ……(ii)

Where:

Y = Performance

β_0 = 0.762

X_2 = Product Innovation = 0. 653

Thus

Y = 0.762 + 0.653 X_2

4.4.3.3 Regression Model Results on Uptake of Digital Marketing Innovation Strategy to Performance of Commercial Banks.

Table 31(a) shows the regression coefficient of marketing innovation and is effect on the performance of commercial bank.

Table 35(a)

Model Summary of Marketing Innovation Strategy

				Std. Error of		Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**	**Durbin-Watson**
	.849[a]	.720	.719	.45350	.720	663.917	1	258	.000	.361

a. Predictors: (Constant), Marketing, b. Dependent Variable: ROE

Table 36(b)

Hypothesis Testing on Marketing Innovation Strategy

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	136.540	1	136.540	663.917	.000[b]
	Residual	53.060	258	.206		
	Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), Marketing

Table 37(c)

Regression Coefficient of Marketing Innovation Strategy

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correla	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Part
(Constant)	.188	.069		2.743	.007	.053	.323		
Marketing	.894	.035	.849	25.767	.000	.825	.962	.849	.

a. Dependent Variable: ROE

Table 31(a) shows that R^2 = 0.720(72%) variation in marketing innovation causes variations in returns in equity. Table 31(b) shows a one-way ANOVA, which shows that the regression is significant for the study where Sig.0001 is < F-Value 663.917, which means that the hypothesis is rejected. Therefore, marketing innovation has a positive and significant influence on the performance of commercial banks.

Table 31(c) presents the results of a regression analysis where the dependent variable is "Return on Equity" (ROE) and the independent variable is "Marketing Innovations. The P<0.0001 indicates that marketing innovation significantly and positively influences

returns on equity. Specifically, on average, for every unit increase in marketing innovations the return on equity is predicted to rise by 0.849. The standardized coefficient (Beta = 0.849) suggests that marketing innovations are predictor of return on equity.

The predicted model coefficient for marketing innovation took the form:

$Y = \beta_0 + \beta_1 X_3 + \varepsilon$, ……..(iii)

Where:

Y = Performance

β_0= 0.188

X_3 = Marketing Innovation = 0.849

Thus

Y = 0.188+ 0.849 X_3

4.4.3.4 Regression model results on Uptake of Digital Organizational Innovation Strategy to Performance of Commercial Banks

Table 32(a) show the regression coefficient of Organizational innovation and is effect on the performance of commercial bank.

Table 38(a)

Model Summary of Organizational Innovation Strategy

				Std. Error		Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.873[a]	.761	.760	.41886	.761	822.691	1	258	.000	.401

a. Predictors: (Constant), organization

b. Dependent Variable: ROE

Table 39(b)

Hypothesis Testing on Organizational Innovation Strategy

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	144.336	1	144.336	822.691	.000[b]
	Residual	45.264	258	.175		
	Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), organization

Table 40(c)

Regression Coefficient of Organizational Innovation Strategy

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.409	.055		7.435	.000	.301	.517					
organization	.809	.028	.873	28.683	.000	.754	.865	.873	.873	.873	1.000	1.000

a. Dependent Variable: ROE

Table 32(a) shows that R^2 = 0.761(76%) variation in organizational innovation causes variations in returns in equity. Table 32(b) shows a one-way ANOVA, which shows that regression on organizational innovations is significant for use in the study. With Sig.0001 is < F-Value 822.691 which means that the hypothesis is rejected. Therefore, organizational innovation has a positive and significant influence on the performance of commercial banks.

Table 32(c) presents the results of a regression analysis where the dependent variable is "Return on Equity" (ROE) and the independent variable is "Organizational Innovations.

The p value indicates that organizational innovation significantly and positively influences returns on equity. Specifically, on average, for every unit increase in organizational innovations the return on equity is predicted to rise by 0.873. The standardized coefficient (Beta = 0.873) suggests that marketing innovations are predictor of return on equity.

The predicted model coefficient for organizational innovation took the form:

$Y = \beta_0 + \beta_1 X_4 + \varepsilon$, ……..(iv)

Where:

Y = Performance

β_0 = 0.409

X_4 = Organization Innovation = 0.873

Thus

$Y = 0.409 + 0.873X_4$

4.4.3.5 Regression on Moderating Effect of Government Policies to Financial Performance of Commercial Banks

Table 41(a)

Model Summary of Moderating Effect of Government Policies

						Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.857[a]	.734	.733	.44239	.734	710.789	1	258	.000	.571

a. Predictors: (Constant), Government

b. Dependent Variable: ROE

Table 33(a) shows that R^2 = 0.734(73%) variation in moderating effect of government policies causes variations in returns in equity.

Table 42(b)

Hypothesis Test on Moderating Effect of Government Policies

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	139.107	1	139.107	710.789	.000[b]
	Residual	50.493	258	.196		
	Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), Government

Table 33(b) shows a that the regression on moderating effect of government policy is significant with Sig.0001 is < F-Value 710.789 which means that the hypothesis is rejected. Therefore, moderating effect of government policy has a positive and significant influence on the financial performance of commercial banks.

Table 43(c)

Regression Coefficient of Moderating Effect of Government Policies

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
(Constant)	.394	.059		6.620	.000	.277	.511			
Government	.795	.030	.857	26.661	.000	.736	.854	.857	.857	.857

a. Dependent Variable: ROE

Table 33(c) shows the regression coefficient of moderating effect of government Policies and is effect on the performance of commercial bank. Table 33(c) presents the results of a

regression analysis where the dependent variable is "Return on Equity" (ROE) and the moderating effect of government policy. The p-value indicates that moderating effect of government policy significantly and positively influences returns on equity. Specifically, on average, for every unit increase in the moderating effect of government policy, the return on equity is predicted to rise by 0.857. The standardized coefficient (Beta = 0.857) suggests that moderating effect of government policy are predictors of return on equity.

As a result, bank management should pay attention to government policies and regulations, since they can have a significant influence on the bank's return on equity. Understanding and perhaps utilizing these rules might result in improved financial performance. This research sheds light on the significance of government policy as a driver of bank profitability. However, the predicted model coefficient was predicted in the form:

$Y = \beta_0 + \beta_1 M + \varepsilon$, ……..(v)

Where:

Y = Performance

β_0= 0.394

M = Government Policy = 0.857

Thus

Y = 0.394+ 0.857M

4.4.4 Joint Model

The current study utilized a regression joint model in the form:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \varepsilon$ …….(vi)

4.4.4.1 Joint Model Coefficient without Moderating Variable

Table 44

Regression Coefficient without Moderating Variable

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	.059	.047		1.249	.213	.034	.151		
Process	.370	.041	.390	8.978	.000	.289	.451	.249	4.016
Product	.077	.027	.080	2.813	.005	.023	.131	.574	1.742
Marketing	.241	.042	.229	5.728	.000	.158	.324	.294	3.401
organization	.303	.038	.327	8.014	.000	.229	.378	.282	3.544

a. Dependent Variable: ROE

Table 34 shows the joint regression coefficient model without the moderating effect of government policies on the performance of commercial banks. The Beta column displays the standardized regression coefficients (often denoted as "Beta"). Standardized coefficients allow for direct comparison of the magnitude of the effect of each predictor variable on the dependent variable, as they are expressed in standard deviation units.

Process, product, marketing, and organization innovation has statistically significant a positive linear relationship with performance of commercial banks (regression coefficient = 0.390, .080, .229 and .337, p = 0.000,.005, .000, .000 < 0.05) at 95% confidence level. Process innovation had the highest level of significance followed by organization, then marketing innovation, while product had a beta coefficient of 0.080 and p value of 0. 005. Product innovations had less significance on performance of commercial banks at p=0.005.

According to Rahmah, et al. (2020) is that some possibilities may arise where implementing Product innovations may lead to increase in expenses without balanced gains hence affecting (ROE) or investing in product innovations may divert resources from other areas (process, organization and marketing innovation) that could generate higher returns on equity.

For bank managers, in order to maximize ROE, they can consider focusing their resources and efforts on processes, marketing, and organizational innovations. Though product innovation is less significant, managers can delve into depth understanding on moderating effect of government policy on the influence of product innovations on ROE. Furthermore, the VIF values indicate that multicollinearity is not a major problem in this model, meaning that the observed connections are probably independent of one another.

The predicted model coefficient was in the form of:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \quad \text{.....(vii)}$$

Where:

Y = ROE (Performance of Commercial Banks)

β_0 = Constant

X_1 = Process Innovation

X_2 = Product Innovation

X_3 = Marketing Innovation

X_4= Organizational Innovation

ε is the disturbance term.

Substitution the values as indicated in Table 40; the model becomes:

$$Y = 0.59 + 0.390X_1 + 0.080X_2 + 0.229X_3 + 0.327X_4 \quad \text{..... (viii)}$$

Table 45

Model Summary without Moderating Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
	.938[a]	.880	.878	.29853	.880	468.108	4	255	.000	2.00

a. Predictors: (Constant), organization, Product, Marketing, Process

b. Dependent Variable: ROE

Table 35 shows an R^2 of 0.880 which means 88% variation in organizational innovation, market innovation, product innovation, and process innovation that causes variation in ROE of the commercial banks. The total regression model has a good fit, with a high R^2 (square) value showing that the included variables explain a significant percentage of the variation in ROE. These indicate that 12% could be explained by stochastic variables not included in the study.

Table 46

ANOVA without Moderating Variable

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	166.874	4	41.719	468.108	.000[b]
Residual	22.726	255	.089		
Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), organization, Product, Marketing, Process

Table 36 shows a that the regression on independent variables without the moderating effect of Government policy is significant with Sig.0001 is < F-Value 468.108, which means that the hypothesis is rejected. Therefore, independent variables without the

moderating variable has a positive and significant influence on the performance of commercial banks.

4.4.4.2 Model Coefficient with Moderating Variable

Table 47

Regression Coefficient with Moderating Variable

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	.051	.046		1.111	.268	.039	.141		
Process	.357	.040	.377	8.854	.000	.277	.436	.247	4.045
Product	.082	.027	.086	3.090	.002	.030	.135	.572	1.747
Marketing	.183	.044	.173	4.156	.000	.096	.269	.257	3.891
organization	.203	.046	.219	4.460	.000	.113	.293	.185	5.391
Government	.169	.045	.182	3.762	.000	.081	.258	.190	5.257

a. Dependent Variable: ROE

The results of the regression analysis, as presented in Table 36, include "Government" as the moderating variable alongside the independent variables—Process, Product, Marketing, and Organization—examining their effect on the dependent variable, Return on Equity (ROE). According to the results, the coefficients for Process, Product, Marketing, and Organization are all statistically significant ($p < 0.05$), as indicated in the "Sig." column. This suggests that these variables exert a direct influence on ROE: Process ($B = 0.357$, $p = 0.000$) has a positive and significant impact on ROE. A unit increase in process innovation results in a 0.357-unit increase in ROE. Product ($B = 0.082$, $p = 0.002$) also positively and significantly impacts ROE, albeit with a smaller effect size. Marketing ($B = 0.183$, $p = 0.000$) shows a significant influence on ROE, with a moderate effect. Organization ($B = 0.203$, $p = 0.000$) has a strong and positive effect on ROE.

The variable "Government" functions as the moderator in this model. Its interaction with the independent variables reveals how the relationships between Process, Product, Marketing, and Organization with ROE are influenced by the role of government. Government (B = 0.169, p = 0.000) has a significant positive effect on ROE, indicating that government intervention independently boosts ROE by 0.169 units for each unit of increased involvement.

The significance of the independent variables combined with the moderating variable suggests that the relationships between Process, Product, Marketing, and Organization and ROE are contingent upon the role of the government. In line with Baron and Kenny's framework, moderation is evident since the "Government" variable significantly influences the outcome (Baron & Kenny, 1986). This indicates that the impact of these innovations on ROE is either strengthened or weakened depending on the degree of government involvement. Therefore, the moderating effect demonstrates that the relationship between these variables and ROE is not static but fluctuates according to government policies.

The Tolerance and Variance Inflation Factor (VIF) values are presented to assess multicollinearity. A tolerance value approaching 0 or a VIF exceeding 10 would indicate potential multicollinearity issues. In this model, the tolerance values range between 0.185 and 0.572, while the VIF values range from 1.747 to 5.391, both within acceptable ranges, suggesting no serious multicollinearity concerns.

In summary, Process, Product, Marketing, and Organizational innovations significantly and positively affect ROE. Moreover, the role of government as a moderating factor amplifies these effects, highlighting the importance of strategic alignment with government policies to enhance the impact of these innovations on a bank's financial

performance, particularly in terms of ROE. The findings align with Baron and Kenny's method, confirming that government policy moderates the relationship between innovation efforts and financial outcomes (Baron & Kenny, 1986).

Bank managers should focus on continuous process improvement and organizational innovation to enhance ROE. This could involve streamlining operations, adopting new technologies, or reorganizing departments to improve efficiency. Product Innovation might initially impact ROE negatively, managers should evaluate the long-term benefits and potential profitability of new products. They should ensure that investments in product innovation align with the bank's strategic goals and customer needs.

The model depicts a positive moderating effect of government policy on uptake of process innovations and organizational innovations. On the contrary there is a weak moderating effect of government policy on uptake of product and marketing innovations. Comparison between Table 35 and Table 36, indicates an increased Beta coefficient and P value in product innovations of 0.006 and 0.003 respectively. This implies a strong moderating effect of government policy on product innovations. Consequently, there is a reduction in Beta values for process, organizational and marketing by 0.013,0.108 and 0.056 respectively. This indicates a low moderating effect on the uptake of process, organizational and marketing. Managers should explore innovative marketing approaches tailored to their target market segments to potentially boost profitability. While government policies have a positive significant impact on ROE, it's essential for bank managers to stay informed about regulatory changes and anticipate their potential effects. This proactive approach can help mitigate any adverse impacts on profitability. Given the importance of innovation in driving ROE, allocating resources to research and development initiatives can yield long-term benefits. Encouraging a culture of innovation

within the organization can foster continuous improvement and maintain competitiveness in the market.

The importance of government policy, as reflected in its significant contribution to the dominant component, highlights the critical role of regulatory frameworks in shaping the effectiveness of innovations. This aligns with findings by Mwanzia (2021), who argue that favorable government regulations, such as support for fintech innovations or regulatory sandboxes, allow banks to innovate more effectively and improve their market performance. Commercial bank managers should actively engage with policymakers to ensure that they are aware of regulatory trends that could affect innovation initiatives.

Since the component that explains the majority of the variance includes performance measured through Return on Equity (ROE), managers should recognize that innovation and regulatory alignment have a direct and substantial impact on financial returns. Investing in innovative strategies while aligning with government policies can improve ROE, which is a key indicator of financial health. This finding resonates with Kimani and Njoroge (2023), who emphasize that banks that innovate, particularly in the digital and operational areas, experience stronger financial returns.

The predicted model coefficient was predicted in the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \varepsilon, \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(ix)}$$

The current study utilized regression joint model in the form:

Substitution using table 45: -

$$Y = 0.51 + 0.377X_1 + 0.086X_2 + 0.173X_3 + 0.219X_4 + 0.182M \ldots\ldots\ldots\ldots\ldots\ldots\ldots\textbf{(x)}$$

Where:

Y = ROE (Performance of Commercial Banks)

β_0= Constant

X_1 = Process Innovation

X_2 = Product Innovation

X_3= Marketing Innovation

X_4 = Organization Innovation

M = Government Policies (moderating variables)

ε is the disturbance term.

Table 48

Model Summary with Moderating Variable

Overall Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
	.942[a]	.886	.884	.29112	.886	396.633	5	254	.000	1.921

a. Predictors: (Constant), Government Policy, Process innovation, Product Innovation, Marketing innovation, Organization Innovation,

b. Dependent Variable: a) Return on Equity

Table 38, shows the regression between the predictor and dependent variable. An R^2 of 0.886a (89%) shows variation in organizational innovation, market innovation, product innovation, and process innovation that causes variation in ROE of the commercial banks. The total regression model has a good fit, with a high R^2 (square) value showing that the included variables explain a significant percentage of the variation in ROE. These indicate that 11% could be explained by stochastic variables not included in the study. The study is in agreement with Bayan and Dexter (2021) and Barnham (2015) who stated that Durbin-Watson should be between at least 2.5. In this case, the study here indicates that

the Durbin-Watson value is 1.106, showing that there is no autocorrelation between the variables that are under study. Managers may utilize the data from this model to make educated decisions regarding resource allocation, strategy creation, and policy execution in order to optimize ROE in their institutions. Table 46 implies a good fit of the model variations and shows that it predicts a better outcome of ROE compared to how well the model fit the statistical data on simple linear regression. Adjusted R^2 of 0.884(88.4%) shows that the predictors improved the model by less than expected.

4.4.4.3 Analysis of Variance (ANOVA)

Table 49

Overall Analysis of Variance (ANOVA) with Moderating Variable

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	168.073	5	33.615	396.633	.000[b]
	Residual	21.527	254	.085		
	Total	189.600	259			

a. Dependent Variable: ROE

b. Predictors: (Constant), Government, Product, Process, Marketing, organization innovations.

Table 39 summarizes the results of an analysis of variance for a regression model predicting return on equity (ROE) based on five predictors, including the moderating effect of government policy, marketing innovations, organizational innovations, product innovation, and process innovation. The regression analysis reveals that the ensemble of predictors within the model collectively elucidates a substantial portion of the variability observed in return on equity (ROE). The calculated F statistic of 396.633 attains high levels of significance $p < .0001$, thereby implying the model's substantive significance and its capacity to furnish valuable insights into the determinants of ROE. Conversely, the residual row delineates the residual or unexplained variance in ROE subsequent to the incorporation of predictors within the model.

The sum of squares for the residual stands at 21.527 distributed over 254 degrees of freedom, resulting in a mean square of 0.085. This residual variance encapsulates the stochastic or unexplained variation in ROE not accounted for by the predictors enlisted in the model. The noteworthy significance of the F statistic pertaining to the regression model underscores the collective impact of the predictors on ROE, thus furnishing stakeholders and managerial personnel with indispensable information for informed decision-making processes.

The study findings collaborated well with YuSheng and Ibrahim (2020) study that investigated innovation capabilities, types, and firm performance in major commercial banks in Ghana's Kumasi metropolitan area. Using a survey with 500 respondents from 10 branches, findings revealed positive relationships between product, marketing, and organizational innovations and bank performance. Similarly, Avenyo et al. (2019) study on the employment impact of product innovations in Sub-Saharan Africa (SSA). The research assessed product innovation's influence on job creation at varying intensities. While positive impacts on total employment were observed, these effects were contingent on specific innovation levels. The study collaborates well with the study of Suandi et al. (2023) exploration of Islamic banking and marketing ethics sheds light on marketing innovations. Their survey-based study probes the impact of Islamic marketing ethics and convergence marketing on competitive advantage and bank performance in Indonesia. Analyzing data from 204 branch managers, they employ the partial least squares (PLS) approach. Results show Islamic marketing ethics and convergence marketing significantly affect competitive advantage, with the latter acting as a mediator.

Further, the study is in agreement with Muigai and Gitau (2018), who conducted a descriptive survey to assess innovation strategies' impact on Kenyan banking firms' financial performance. Analyzing data from 153 managers across 51 Nairobi-based

financial institutions, they found both product and organizational innovations positively influence financial performance. Additionally, Ong'ong'e, and Eddie (2021) did a study on: "Effects of Financial Repression Policies on the Performance of Selected Commercial Banks in Kenya" The study utilizes a static panel regression model and descriptive statistics to analyze secondary data obtained from published audited financial statements. The study finds that financial repression policies, such as interest rate controls, government debt, capital controls, and reserve ratios, significantly influence the performance of commercial banks in Kenya

4.5 Optimal Model

From the results in Table 45, the variables that have a substantive significance on the performance of commercial banks when moderating effect of government is put into consideration are process innovation (p=.0001) organization innovation (p=.0001), while marketing innovation (.0001). Therefore, the study suggested an optimal model of:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \varepsilon, \quad \text{(xi)}$$

Where:

Y = ROE (Performance of Commercial Banks)

β_0= Constant

X_1 = Process Innovation

X_3= Marketing Innovation

X_4 = Organization Innovation

M = Government Policies (moderating variables)

ε is the disturbance term.

Managers should evaluate the relative relevance of each aspect in determining bank success. Based on the coefficients, they may determine which factors have the biggest

influence. Bank management should understand that the associations depicted in the regression model may change over time. As a result, regular monitoring of internal processes, market dynamics, and regulatory changes is critical. This allows managers to modify their strategy and operations to maintain or improve bank performance in a changing environment.

CHAPTER FIVE
SUMMARY, CONCLUSION, RECOMMENDATIONS AND PUBLICATION

5.1 Introduction

This chapter provides a summary of the study, conclusions reached, and recommendations. With the rapid advancement of digital technologies, banks worldwide are facing significant pressure to embrace digital transformation to remain competitive and meet evolving customer expectations. In the Kenyan banking sector, characterized by a dynamic market landscape and a growing emphasis on financial inclusion, understanding the impact of digital innovations on bank performance is crucial for strategic decision-making. This study delves to examine the extent to which commercial banks in Kenya have embraced specific digital innovations and the subsequent effect on their financial performance metrics. The study aims to provide valuable insights of the current uptake of digital innovations and provide actionable recommendations and strategies that can pave way to a more accelerated and successful digital transformations in the Kenyan banking sector.

The study was guided by the following objectives; to assess the effect of digital process innovations; to examine the effects of digital product innovations; to establish the effect of digital marketing innovations; to determine the effect of digital organizational innovations; to determine the joint effect of digital innovation and to assess the moderating effect of government policy on the relationship between digital innovation and financial performance of commercial banks in Kenya. The literature was reviewed and organized according to the main constructs of the study. After conducting a detailed analysis of underlying issues on uptake of digital innovations, the reviewed studies indicated knowledge gaps that the present study sought to fill on the uptake of digital innovations in commercial banks in Kenya. Consequently, Rogers' diffusion of innovation theory,

Evolutionary theory of economic change**,** Disruptive innovation theory, Theory of dynamic capabilities and institutional theory guided the study to its conclusion.

The study employed a descriptive research design, where quantitative and qualitative data was analyzed. It targeted a population of 1470 bank employees who included: Senior Management, Middle Level Management and First line Management. Data was collected from a sample size of 73 Senior Managements, 88 Middle Level Managements, and 154 First line Management through a questionnaire. Three hundred and fifteen (315) questionnaires were distributed respondents from all the thirty-nine (39) commercial bank representatives based in their Nairobi office headquarters, of which 260 (82.5%) were successfully filled out and signed by each respondent. Quantitative data were analyzed using SPSS version 26. Descriptive statistics such as factor loading, KMO, and Bartlett's Test, as well as mean and standard deviations, were computed, while inferential statistics (ANOVA and regression analysis) were used to test the hypothesized relationship between variables. Finally, the findings were presented using tables, charts, figures, and narratives.

5.2 Summary of the Major Findings

The study aimed to explore the effect of uptake of digital innovations strategy on the financial performance of commercial banks in Kenya. The respondent positions in the study ranged across various management levels, with 35% from First line management, 31.2% from middle-level management, and 33.8% from senior management. This demographic information was critical in ensuring that the study gathered insights from individuals with significant work experience, as 35% of respondents had worked for 6-10 years. The study's findings focused on the effects of four major types of digital innovations—process, product, marketing, and organizational innovation—on the performance of commercial banks.

The first objective sought to assess the effect of process innovations strategy on the financial performance of commercial banks. The study found that process innovation significantly influenced the performance of commercial banks in Kenya. Respondents' feedback showed that 36.5% agreed and 34.6% strongly agreed that process innovation had a notable effect on performance. Factors such as ideation, creativity, and automated techniques were identified as key drivers of process innovation. However, centralized decision-making structures and reliance on third-party technology providers hindered creativity and innovation. Despite these limitations, banks that integrated ideation and automation techniques showed improved financial performance, with process innovations having a positive and significant influence on Return on Equity (ROE), as indicated by a Beta value of 0.377 at $p < 0.0001$.

The study revealed that product innovation strategy had a substantial impact on the performance of commercial banks, with 54.3% of respondents agreeing that it played a key role. Banks have been developing new products like mobile banking apps, but their efforts are often hampered by leadership challenges, high costs, and organizational culture. Additionally, the study highlighted that while product innovation significantly influenced ROE, the correlation was moderate (Beta = 0.086, $p = 0.002$), suggesting initial costs may temporarily reduce profitability. Over time, however, these innovations are expected to positively affect financial performance once market adjustments are made.

Marketing innovations strategy, particularly digital marketing strategies, were shown to have a positive effect on bank performance, with 31.2% of respondents strongly agreeing on its importance. Social media marketing and customer retention strategies were found to be key tactics used by banks, with customer-centricity identified as the main focus. The study indicated that distribution channels, such as mobile and internet banking, have expanded rapidly. However, issues like digital fraud and cybersecurity risks posed

challenges. Marketing innovations positively influenced ROE ($B = 0.173$, $p < 0.0001$), with banks needing to enhance customer engagement and brand visibility to maintain competitive positioning.

The study showed that digital organizational innovation strategy had a significant effect on bank performance, with 60.8% of respondents agreeing on its importance. However, the lack of industrial collaboration and knowledge-sharing between banks and technology providers was a major challenge. Organizational rigidity, poor communication, and resistance to change hindered innovation uptake. Though some banks have implemented change management processes, re-engineering efforts were limited. Nonetheless, organizations with strong leadership and a culture of innovation exhibited higher chances of successfully adopting digital innovations, with organizational innovation having a positive and significant impact on ROE ($B = 0.219$, $p < 0.0001$).

The study found that government policies, such as lending policies, data protection policy and taxation had a moderating effect on the performance of commercial banks. Regulations regarding cybersecurity and data protection were identified as both necessary and restrictive, with 60% of respondents agreeing that these policies significantly influenced ROE. Banks faced challenges balancing innovation with regulatory compliance, especially in navigating complex legal frameworks. However, government policies exhibited a positive and significant moderating effect on the relationship between digital innovations and bank performance ($B = 0.182$, $p < 0.0001$).

5.3 Conclusion

This research work set out to establish the effect of uptake of digital innovations strategy on financial performance of commercial banks in Kenya and to suggest ways in which commercial banks can leverage emerging technology as a strategic management measure.

These strategic measures are aimed at improving and accommodating those innovations that can be handled by given banks and their capabilities. The results showed, one of the digital innovations taking place in commercial banks was process innovation that has changed the way in which banks do their processes from manual to electronics or digital.

From the findings, process innovations had a positive and significant correlation with financial performance of commercial banks in Kenya. As such the need to identify which process to invent and how was primary concerned of many respondents. The study thus noted that if any process is to be undertaken, or adopted, including; ideation, automated delivery techniques and creativity, results into operational efficiency, cost reduction, revenue growth, customer satisfaction and market competitiveness. However, for any idea to be implemented by those it is meant to work for, the need to get them involved was paramount. The discovery that most of the ideas came from centralized leadership and not necessary the work from employees, was hampering its implementation. The study discovered that most the ideas are either as a result of imitation i.e. copy cut (specifically from foreign countries), technology providers or other online financial providers.

Creativity and idea generation form the biggest part of how process innovation takes place, this study however concluded that what ail ideation and creativity were; egos, traditional hierarchy structures, delivery and to some larger extent idea killers whose main purpose is not accept any idea from any quarters. This was closely followed by closed-mindedness vis-à-vis cognitive biasness of leaders or employees themselves. While the study established those costs, associated with creativity, education and learning system and labour market structures, were some of the cause of poor creativity, the biggest hamper was organizational culture in which leaders have adopted traditional hierarchy kind of leadership where directions emanates from one source (board of directors, chairmen of the banks).The study also found out that the main automated delivery techniques used are

mobile banking and internet banking, though a question lingers on the digital fraud, data security and cyber safety of using these digi strategy tal platforms.

Objective three's finding manifested that marketing innovation has positive correlation and significantly influence financial performance of commercial banks. As such in order to reach customers, this study established the banks uses different tactics in marketing like creating value through pricing, customer satisfaction and retention, entry into new markets (mergers or opening up branches), environmental analysis, response to changes and aggressive anti-competitive marketing efforts. To achieve value in marketing innovation, many products have been developed and used specifically for marketing by these banks including; Internet Banking, Mobile Banking, Electronic Banking Outlets including ATMs, and agency banking where commercial banks have rapidly developed Internet and mobile banking as one of their business' products for marketing. The findings noted that even though banks carry out environmental analysis and respond to those changes to some extent, there is delay in dealing with customer suggestions and complaints. There is great need for commercial bank to carry out an in-depth environmental analysis so as to develop valuable marketing content that serve customer evolving demands. When Commercial banks strategically deploy digital marketing techniques to target customers, develop personalized marketing approaches such as email marketing as a measure of ROE tend to achieve superior performance outcome. Creating value through pricing has been demonstrated in the banks to some extent and media channels have been used to market digital products though there is need for commercial banks to explore variety of digital channels to improve their financial performance.

A more profound conclusion is hereby made on object four; organization innovation strategy encompasses various facets like knowledge transfer and learning. This current study concludes that majority of commercial banks were not into knowledge sharing,

which harness the full potential of employee capabilities and satisfaction. Perceived potential benefits of knowledge sharing should supersede the fear of imitation. Banks are able to achieve operational efficiency, cost reduction, employee increased productivity and satisfaction, customer experience, increased innovation capabilities and overall profitability compared to fear of imitation which can be countered through enacting safety measures such as copyrights and patents. There is need for banks to prioritize organizational restructuring, employee training and change management in order to flatten hierarchies, decentralize decision making and empower employees to achieve superior performance. Most commercial banks are reluctant on fully re-engineering internal processes within the organization in matters, organizational culture, structure, employee training and communicating change. In turn may compromise on quality, speed, service delivery and eventually increasing cost impacting negatively on performance of commercial Banks.

Objective five aimed to seek the moderating effect of government policies on the performance of commercial banks. Evidence adduced shows that the hypothesis was rejected, concluding that government policies had a positive correlation and significantly influence performance of commercial banks. This situation explained government policy has a positive correlation between the independent variables (process, product, marketing and organization innovation and performance of commercial banks in Kenya. Despite potential benefits, commercial banks face challenges around regulatory compliance, data security concerns, legal system integration and resource constraints. Supportive regulations assist banks to navigate the complexities of digital transformations successfully to realize the full potential of digital innovations. Multifaceted government policies and regulatory constraints around Cyber security risks and Data privacy concerns limits the banks' ability to meet evolving expectations of their tech-savvy clientele who

are always vulnerable to fraud. They to a great extent hamper seamless uptake of digital innovations hence the insignificance to ROE.

5.4 Recommendations

The study came up with the following recommendations based on the findings and conclusions.

5.4.1 Recommendations Based on the Primary Constructs of the Study

On objective one, owing to the significance of process innovation strategy and performance of commercial banks in Kenya, this research recommends that there should be a need to identify process innovations that can be handled by a given bank in a given time based on their capabilities as far as finances are concerned. Another recommendation is that commercial banks need to open up and embrace decentralized decision making and get ideas from different entities including workers or even customers on what process innovation should be used when and how rather than imposing the same from others. The study recommended capacity building program for all workers to encourage them come up with ideas and creativity. Banks can leverage on talent development where employees' creativity and skills generation can be enhanced. Measures should be undertaken to safeguard individual creativity and idea generation. Investing in robust technological infrastructure in data analytical tools such as using Artificial Intelligence to improve customer service and support and leveraging on data analytics to understand customer need and preferences. Commercial banks can implement agile process innovation management policies to flatten hierarchies that may stifle innovation. The commercial banks can develop innovation labs to enhance the capability to evaluate new digital ideas and creativity before up taking them. Banks can explore various automated delivery techniques by developing their own unique methods to expand their use especially in least digitalized areas such as credit transactions.

This study agrees that products innovation strategy is noble idea, but focusing on cost benefits of products should be encouraged, leaders need to develop means in which perception of customers need to be dealt with. Prioritize customer centricity when developing new products to ensure quality is communicated to customers. Product quality and differentiation can be achieved through green technology (GreenTech)where products or practices that significantly reduce negative environmental impacts such as emissions, pollutants, and waste are encouraged. Commercial Banks in Kenya can invest in Innovation labs to test new products developed to increase survival rates of the products when it has been introduced in the market. Promotion of digital literacy among consumers on digital product innovations such digital wallets and personalized financial management tools to increase client base. Commercial banks develop an elaborate digital system to cut costs when undertaking product innovations, by not relying on third party service providers who may be more expensive in the long-run

The commercial banks can develop personalized digital distribution channels that does not necessarily revolve around mobile and internet banking to reach new deserving yet unreached markets. Commercial banks can develop strategies around real chat time, where customer concerns are dealt with on urgently and with outmost care. The government can ensure widespread communication coverage and internet connectivity for customers to access banking services at any instance. Commercial Banks have not optimally achieved the benefits from digital marketing innovations due to skills shortages and content creation complexities. Commercial banks can invest in marketing automation tools, data analytics capabilities and talent development to overcome the challenges associated with digital marketing innovations. Machine Learning (ML) and artificial intelligence can be

employed in marketing innovations to allow better prediction of market movements and proactively monitoring customer behavior and identifying anomalies in real-time.

On the other hand, this research recommends organizational re-engineering in areas organizational structure, culture, and change management. There is need for banks to forge strategic partnerships such as fintech start-ups, technological firms and other industry stakeholders to accelerate digital innovations. This allows banks to leverage on external expertise, access innovative technologies and explore new business models. Culture of innovation can be fostered through experimentation, collaboration and continuous learning. Re-engineering of organizational structure can enhance leadership development and fostering a culture of experimentation and learning. This will in turn reduce instances of resistance to change and greatly improve performance of commercial banks that subsequently lead to increased ROE.

Empirical evidence from the study suggest that moderating effect of government policies on uptake of digital innovations has a significant influence on the financial performance of commercial banks in Kenya through Tax and levies, CBK Act 2015, Cyber Crime Act 2018 and Data Protection Act 2019. Data must be well-defined, structured and organized to be useful for analysis and decision making. Commercial banks can leverage application of Big Data and Data analytics, Biometric technology and cloud computing to enhance customer data protection as a regulatory requirement. These policies should not be a hindrance to innovations but a catalyst of encouraging more digital innovation in banking space. Future research should continue to monitor the impact of evolving government policies on the banking sector and explore strategies in enhancing regulatory effectiveness, improving ROE and strengthen assumption of digital innovations.

The study further recommends that digital innovations should not be implemented in isolation but rather to be integrated in order to reap maximum benefits such as improved ROE. The adoption of digital innovations allows organizations to streamline operations, reducing costs and improving service delivery. Banks can automate delivery techniques, artificial intelligence, and blockchain to streamline core banking processes, such as loan processing, payments, and customer service, resulting in faster and more efficient service delivery. Commercial banks can innovate products by improving internet banking services, enhance security features within the banking hall such as queuing system, advanced features in ATM and introduction of many mobile banking features to improve financial performance. Commercial banks can make use of digital wealth management platforms such as Robo-advisors who use algorithms to analyze customer risk profiles, investment goals, and market trends, providing personalized investment recommendations and asset allocation strategies hence attract tech-savvy customers and expanding banks' wealth management offerings.

5.5 Recommendations for Future Research

Based on the findings and context of the current study, recommendations for further studies were made. The study investigated the main phenomena where employees in commercial banks were primary respondents. The findings of a study did not necessarily generalize to other industries or geographical contexts. Factors such as regulatory frameworks, market structures, cultural norms, and technological infrastructure can vary significantly between organizations and regions, limiting the external validity of the study's conclusions. The proposed comparative studies across diverse economic spheres can help assess the generalizability of findings.

5.6 Publication

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APPENDICES

Appendix I: Letter of Introduction

Doris Kagendo Kimathi

P.0 BOX 43-60602

DATE……

TO……

Dear Sir/Madam,

RE: LETTER OF TRANSMITTAL OF DATA COLLECTION INSTRUMENTS.

This is to inform you that I am carrying out a research thesis that will lead to the award of Degree of Doctor of Philosophy of Business Management of the Meru University of Science and Technology. The focus of the study is to assess the effect of uptake of strategic digital innovations on performance of commercial banks in Kenya.

The findings will help future researchers, policy makers, investors, Commercial banks, Governments and the general public by providing reference learning material, get to deeply understand the effect of uptake of digital innovation strategies on influencing performance of the commercial banks in Kenya, effect of digital regulations and compliance to enhance the sustainable return on investment and performance of commercial banks. All information provided will strictly be handled with confidentiality.

Kindly, find a copy of the questionnaire attached which requires you to provide information by filling it in. Kindly, be honest and objective as much as you can. You are not required to write your name anywhere in the questionnaire.

Thank you for finding time to fill in the questionnaire and cooperating with my research assistant.

Yours Faithfully,

Doris Kagendo Kimathi.

Reg no:BS501/0003/18

Phone No: 0721511553.

Appendix II: National Commission for Science, Technology and Innovation Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **568346**

Date of Issue: **02/August/2023**

RESEARCH LICENSE

This is to Certify that Ms.. Doris Kagendo Kimathi of Meru University of Science and Technology, 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: UPTAKE OF DIGITAL INNOVATIONS ON PERFORMANCE OF COMMERCIAL BANKS IN KENYA for the period ending : 02/August/2024.

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The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
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14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix III: Questionnaire

Section A: Demographics and General information

1. Name of your organization? (optional)

……

2. What is your Position in the bank?

a) Senior Management ( )
b) Middle Level Management ( )
c) First Line Management ( )

3. What is your work experience in years in your current position?

a) Less than 5years ( )
b) 6-10 years ( )
c) 11-20 years ( )
d) Over 20 years ( )

Section B: Process Innovation Strategy

4. Uptake of digital process innovations Strategy has no significant influence on financial performance of commercial banks in Kenya.

a) Strongly agree ( )
b) Agree ( )
c) Neutral ( )
d) Disagree ( )
e) Strongly disagree ( )

6.How can you rate the level of uptake of any digital process innovations in your firm?1 = Strongly Disagree 2= Disagree, 3= Neutral 4 = Agree 5=Strongly Agree

Process Innovation Strategy	1	2	3	4	5

a) The firm communicate innovative ideas with an aim of increasing their operational capacity					
b) The bank has the capabilities to evaluate, execute or develop marketing strategies					
c)The firm uptake current technology and regulations to increase productivity.					
d)The firm supports technological creativity through offering technical support.					
e) The firm ensures new ideas undergo trial before they are implemented.					

7. Which method does your organization use to identify the most promising digital idea for application.

a) Ideation ( )
b) Automated delivery techniques ( )
c) Creativity ( )

8. What affects the idea generation process of this organization

a) Inexperienced Facilitation/ Groupthink ( )
b) Unclear Goals/ Old Pattern Thinking ( )
c) Egos and Hierarchy/ Idea Killers ( )
d) Closed-Mindedness/Cognitive Bias ( )

9. Which one of the following automation delivery techniques have been developed in your organization?

a) Mobile Banking ( )
b) Internet Banking ( )
c) Agency Banking ( )
d) Electronic Banking Outlets ( )
e) Cyber Security ( )

f) RTGS ( )

10.Which of the following have the greatest impact on creativity in your organization

a) Education and learning system ( )
b) Labour market structures ( )
c) Organizational culture ( )
d) Costs associated with creativity ( )

Section C: Product Innovation Strategy

11. Uptake of digital product innovations Strategy has no significant influence on financial performance of commercial banks in Kenya.

……

12. What hampers new product development in your firm?

……
……

13. Choose among which products have been newly introduced in your bank for the last 5 years.

a) Securitized assets ( )
b) Derivatives, and weather derivatives ( )
c) Mortgages and hedge funds ( )
d) Exchange-traded funds ( )
e) None of the Above ( )

14.What are the challenges, if any, your firm has faced while undertaking product innovations?

……
……
……

15. What are some of the milestone that your company has accomplished since you started implementing new products?

a) Execute Your Marketing Strategy ( )
b) Outsource Skills ( )
c) Repeat Customers ( )
d) Grow Your Brand ( )
e) Not Sure ( )
f) None Of The Above ( )

16. On level of agreement or lack of it do you agree or disagree based innovation uptake or lack of uptake of any product innovations in the firm. 1 = Strongly Disagree 2= Disagree, 3= Neutral 4 = Agree 5=Strongly Agree

Product Innovation Strategy	1	2	3	4	5
a)The firm offers wide range of products to its customers					
b)The bank uptake development of new products to cater for changing and evolving needs of customers.					
c)The bank undertakes market survey to identify the needs of its customers					
d)The banks ensure quality management in the products and services provided					
e) Product differentiation in this bank has not been identified.					

Section D: Marketing Innovation Strategy

17. Uptake of digital marketing innovations Strategy has no significant influence on financial performance of commercial banks in Kenya.

……
…

18.Which of the following innovations apply to your firm? Use: 1 = Strongly Disagree 2= Disagree, 3= Neutral 4 = Agree 5=Strongly Agree

Marketing Innovation Strategy	1	2	3	4	5
a) The firm uses of various media channels to market its products					
b) The firm creates value through pricing					
c)The firm introduces new marketing approaches					
d)The firm does environmental analysis and responses to changes in the environment.					
e) The firm deal with customers suggestion or complaints urgently and with utmost care					

19.What form of market innovation strategies does your firm employ? (You can tick more than one)

a) Creating value through pricing ( )
b) Customer satisfaction and retention ( )
c) Entry into new markets ( )
d) Environmental analysis and response to changes ( )
e) Aggressive anti-competitors marketing campaigns ( )

20. Outline ways in which products in your organization reach its intended individuals

a) Distribution Channel ( )
b) Ask for Referrals ( )
c) Build Partnerships/networking ( )

d) Offer Free Samples ( )

21. Which new digital products has your bank developed or introduced into the market in the last five (5) years

i……

ii. ……

iii……..…….

iv……

Section E: Organization Innovation Strategy

22. Uptake of digital organizational innovations Strategy has no significant influence on financial performance of commercial banks in Kenya.

	Category	**1**	**2**	**3**	**4**	**5**
A)	Agree					
B)	Strongly Agree					
C)	Neutral					
D)	Disagree					
E)	Strongly Disagree					

23. Are you aware of any form of knowledge transfers between commercial banks and other organizations? If yes which firms does you company collaborate with as far as knowledge transfers is concerned?

……

……

24. How does the firm avoid being imitated by other firms of its special characteristics of knowledge transfers?

a) Seek Authorized Retailers. ( )

b) Obtain High-Quality Inputs ( )

c) Trademarks, Patents, Or Copyrights ( )

d) Culture/Image/Brand Name ( )

25. What are the organization opportunities resulting from the knowledge management transfers and sharing?

……
……
……

26.What challenges is the firm facing in implementing transfer of knowledge and knowledge sharing?

……
……
……

27.To what extent do you agree with the following statement about the effects of internal change management at your organization? Use 1- Not at all, 2 – little extent, 3 – Moderate extent, 4 – Great extent and 5 – Very great extent

Organization Innovation Strategy	1	2	3	4	5
Change management is communicated effectively with the organization					
here is mutual relationship among the workers which enhances communication in the organization					
Failures in the organization have led to failures in implementation of organization innovation or lack of it					
There is adequate training to enable employees cope with changes in management					

28. How can you rate the level of readiness of employees in organizational innovation after uptake or lack of uptake of any of innovations. 1 = Strongly Disagree 2= Disagree, 3= Neutral 4 =Agree 5=Strongly Agree

Organization Innovation Strategy	1	2	3	4	5
(a)Employee resist implementation of change within the institution					
(b)Employee tend to refuse new responsibilities brought about by change in management					
(c)Poor Organizational structure causes resistance among some employees					
(d)There is adequate training to enable employees cope with change in the organization					

Section F: Government Policies and the Moderating Effect on Commercial banks performance

28.To what extent does the following government policies effect on the uptake of the above innovations in your firm? Use 1- Not at all 2 – little extent 3 – Moderate extent 4 – Great extent and 5 – Very great extent

Government Policies	**1**	**2**	**3**	**4**	**5**
(a) Lending Policy					
(b)Taxation					
(c) Data Protection					

THANK YOU FOR YOUR COOPERATION

Appendix IV: List of all Commercial Banks in Kenya

	Commercial Banks	Market size	Senior Management	Middle Level Management	First line Management	Total
	Large Tier Group >5%					
1	KCB Bank Kenya Ltd	13.81	10	9	25	44
2	Equity Bank Kenya Ltd	13.57	12	12	30	54
3	NCBA Bank Kenya PLC	9.72	6	8	16	30
4	Co-operative Bank of Kenya	9.42	25	19	36	80
5	Absa Bank Kenya Plc	6.37	12	13	32	57
6	Standard Chartered Bank (K)	5.70	6	8	12	26
7	Diamond Trust Bank Kenya	5.64	11	12	16	39
8	I & M Bank Limited	5.31	6	8	12	26
9	Stanbic Bank Kenya Ltd	5.22	7	6	10	23
	Medium Tier Group (1-5%)					
1	Bank of Baroda (Kenya)	3.14	6	8	12	26
2	Prime Bank Ltd	2.43	11	12	16	39
3	National Bank of Kenya Ltd	2.31	7	10	18	35
4	Citibank N.A. Kenya	2.30	12	17	36	65
5	Family Bank Ltd.	1.81	7	10	18	35
6	Bank of India	1.72	6	8	16	30
7	Ecobank Kenya Ltd	1.49	14	15	36	65
8	SBM Bank Kenya Ltd	1.21	8	4	10	22
	Small Tier Group < 1%					
1	HFC Ltd	0.86	8	8	16	32
2	Victoria Commercial Bank	0.74	6	9	10	25
3	Guaranty Trust Bank	0.71	7	14	36	57
4	Bank of Africa Ltd	0.65	10	12	16	38
5	Gulf African Bank	0.62	11	10	16	37
6	Sidian Bank Ltd	0.60	7	7	15	29
7	African Banking Corporation	0.57	6	8	15	29
8	Habib Bank AG Zurich	0.46	5	5	10	20

Commercial Banks	Market size	Senior Management	Middle Level Management	First line Management	Total
9 Credit Bank Ltd	0.41	8	26	36	70
10First Community Bank Ltd	0.38	6	10	18	34
11Guardian Bank Limited	0.31	11	11	16	38
12Development Bank of Kenya	0.30	15	16	16	47
13Mayfair CIB Bank Limited	0.29	11	13	32	56
14DIB Bank Kenya Ltd	0.29	6	9	10	25
15M-Oriental Commercial	0.26	5	8	14	27
16Consolidated Bank of Kenya	0.22	9	11	16	36
17Paramount Bank Ltd	0.22	7	7	15	29
18Access Bank (Kenya) PLC	0.21	10	7	14	31
19UBA Kenya Bank Ltd	0.19	8	10	10	27
20Middle East Bank (K) Ltd	0.18	7	11	15	33
21Spire Bank Limited	0.05	7	10	12	29
Sub-Total	**8.82**	**341**	**410**	**719**	

Appendix V: Banking Sector Report on Profitability (ROE) – Year 2018 - 2022

2018	2019	2020	2021	2022	Average
22.88%	22.11%	14.2%	22.3%	26.5%	21.598%

Source: Central Bank of Kenya- Bank Supervision Annual Reports

Appendix VI: Central Bank of Kenya Annual Supervision Reports Year 2018 -2022

Appendix III

BANKING SECTOR OTHER DISCLOSURES – DECEMBER 2018							
Ksh. Millions							
	2017	**2018**					
	BANKS	**NBFIS**	**GRAND TOTAL**	**BANKS**	**NBFIS**	**GRAND TOTAL**	**ANNUAL% GRIOWTH**
NON-PERFORMING LOANS AND ADVANCES							
(a) Gross Non-performing loans and advances	256,405	8,212	264,617	303,378	13,334	316,712	19.69
(b) Less: Interest in Suspense	42,465	1,261	43,726	51,946	2,502	54,447	24.52
(c)Total Non-Performing Loans and Advances (a-b)	**213,940**	**6,951**	**220,891**	**251,432**	**10,833**	**262,265**	**18.73**
(d) Less: Loan Loss Provision	99,464	1,729	101,193	113,501	2,098	115,599	14.24
(e) Net Non-Performing Loans and Advances(c-d)	114,475	5,222	119,698	137,931	8,735	146,666	22.53
(f) Discounted Value of Securities	105,056	5,222	110,278	125,252	8,735	133,987	21.50
(g) Net NPLs Exposure (e-f)	9,420	-	9,420	12,679	0	12,679	34.59
INSIDER LOANS AND ADVANCES							
(a) Directors, Shareholders and Associates	28,086	508	28,593	32,139	1,549	33,688	17.82
(b) Employees	68,364	1,020	69,383	70,217	869	71,086	2.45
(c) Total Insider Loans and Advances and other facilities	**96,449**	**1,527**	**97,977**	**102,356**	**2,418**	**104,774**	**6.94**
OFF-BALANCE SHEET ITEMS							
(a) Letters of credit, guarantees, acceptances	416,329	280	416,609	513,966	185	514,150	23.41
(b) Forwards, swaps and options	357,126	1445	358,571	416,929	972	417,901	16.55
(c) Other contingent liabilities	32,387		32,387	21,385	-	21,385	-33.97
(d) Total Contingent Liabilities	**805,841**	**1,726**	**807,567**	**952,279**	**1,157**	**953,436**	**18.06**
CAPITAL STRENGTH							
Core capital	540,284	8,298	548,582	575,464	6,926	582,390	6.16
Minimum Statutory Capital	1,000	1,000	1,000	1,000	1,000	1,000	
Excess/(Deficiency)(a-b)	539,284	7,298	546,582	575,464	5,926	581,390	6.37
Supplementary Capital	74,846	811	75,658	102,825	685	103,510	36.81
Total Capital (a+d)	**615,130**	**9,109**	**624,239**	**678,289**	**7,611**	**685,899**	**9.88**
Total risk weighted assets	**3,272,158**	**53,576**	**3,325,733**	**3,464,064**	**48,940**	**3,513,005**	**5.63**
Core Capital/Total deposits Liabilities (%)	18.90	22.50	18.90	17.85	19.86	17.87	
Minimum statutory Ratio (%)	8.00	8.00	8.00	8.00	8.00	8.00	
Excess/(Deficiency) (g-h) (%)	10.90	14.50	10.90	9.85	11.86	9.87	
Core Capital / total risk weighted assets (%)	16.50	15.50	16.50	16.61	14.15	16.58	
Minimum Statutory Ratio (%)	10.50	10.50	10.50	10.50	10.50	10.50	
Excess (Deficiency) (j-k) (%)	6.00	5.00	6.00	6.11	3.65	6.08	
Total Capital/total risk weighted assets (%)	**18.80**	**17.00**	**18.80**	**19.58**	**15.55**	**19.52**	
Minimum statutory Ratio (%)	14.50	14.50	14.50	14.50	14.50	14.50	
Excess/(Deficiency) (m-n) (%)	4.30	2.50	4.30	5.08	1.05	5.02	
LIQUIDITY							
(a) Liquidity Ratio (%)	44.00	19.00	43.70	48.91	18.42	48.60	
(b) Minimum Statutory Ratio (%)	20.00	20.00	20.00	20.00	20.00	20.00	
(c) Excess (Deficiency) (a-b) (%)	24.00	-1.00	23.70	28.91	-1.58	28.60	
Performance Indicators							
Yield on Earning Assets (%)	11.30	12.90	11.30	10.19	11.05	10.20	
Cost of Funding Earning Assets (%)	3.60	7.30	3.60	3.56	6.60	3.60	
Interest Margin on Earning Assets (%)	7.70	5.60	7.70	6.63	4.45	6.60	
Yield on Advances (%)	11.30	13.20	11.40	10.69	11.50	10.71	
Cost of Deposits (%)	4.30	11.00	4.40	4.05	10.19	4.12	
Return on Assets (ROA) (%)	2.70	0.60	2.60	2.80	-0.63	2.76	
Return on Equity (ROE) (%)	20.80	3.90	20.60	22.88	-4.31	22.51	
Overheads to Earnings (%)	45.90	39.80	45.80	43.25	49.33	43.33	
Gross NPLs/Gross Loans (%)	10.87	15.60	10.98	12.44	27.09	12.73	
RATINGS	**2**	**2**	**2**	**2**	**4**	**2**	
Capital Adequacy	2	2	2	1	2	1	
Asset Quality	2	4	2	2	4	2	
Earnings	1	3	1	2	5	2	
Liquidity	1.75	2.75	1.75	1	4	1	
Composite Score	2	2	2	2	4	2	
Performance Category	**Satisfactory**	**Fair**	**Satisfactory**	**Satisfactory**	**Marginal**	**Satisfactory**	
Rating	Management Total Weighted Score	Earnings Net Profits/Total Assets (%)	Liquidity Net Liquid Assets/ Total (%)	Management Total Weighted Score	Earnings Net Profits/Total Assets (%)	Liquidity Net Liquid Assets/ Total (%)	Liquidity Net Liquid Assets/ Total (%)
1	1.0 - 1.4	Over 3	Over 34	1.0 - 1.4	Over 3	Over 34	Over 34
2	1.5 - 2.4	2.0-2.9	26-34	1.5 - 2.4	2.0-2.9	26-34	26-34
3	2.5 - 3.4	1.0-1.9	20-25	2.5 - 3.4	1.0-1.9	20-25	20-25
4	3.5 - 4.4	0.0-0.9	15-19	3.5 - 4.4	0.0-0.9	15-19	15-19
5	4.5 - 5.0	Net Loss	Under 15	4.5 - 5.0	Net Loss	Under 15	Under 15
Source: Commercial Banks Published Financial Statements (December 2018)							

Appendix III : BANKING SECTOR OTHER DISCLOSURES – DECEMBER 2019

	Figures in Ksh. Millions						
	2018			2019			
	BANKS	NBFIS	GRAND TOTAL	BANKS	NBFIS	GRAND TOTAL	ANNUAL PERCENTAGE CHANGE (%)
NON-PERFORMING LOANS AN ADVANCES							
(a) Gross Non-performing Loans and Advances	303,378	13,334	316,712	324,272	12,316	336,588	6.28
(b) Less: Interest in suspense	51,946	2,502	54,447	59,376	3,231	62,607	14.99
(c)Total Non-Performing Loans and Advances (a-b)	**251,432**	**10,833**	**262,265**	**264,896**	**9,085**	**273,980**	**4.47**
(d) Less: Loan loss provision	113,501	2,098	115,599	131,640	2,656	134,296	16.17
(e) Net Non-performing Loans and Advances(c-d)	137,931	8,735	146,666	133,255	6,429	139,684	-4.76
(f) Discounted value of securities	125,252	8,735	133,987	121,208	6,429	127,637	-4.74
(g) Net NPLs exposure (e-f)	12,679	0	12,679	12,047	0	12,047	-4.98
INSIDER LOANS AND ADVANCES							
(a) Directors, shareholders and associates	32,139	1,549	33,688	41,323	1,411	42,734	26.85
(b) Employees	70,217	869	71,086	72,661	814	73,475	3.36
(c)Total Insider Loans and Advances and other facilities	**102,356**	**2,418**	**104,774**	**113,983**	**2,226**	**116,209**	**10.91**
OFF-BALANCE SHEET ITEMS							
(a) Letters of credit, guarantees, acceptances	513,966	185	514,150	544,379	92	544,471	5.90
(b) Forwards, swaps and options	416,929	972	417,901	548,606	1,238	549,843	31.57
(c) Other contingent liabilities	21,385	-	21,385	18,903	-	18,903	-11.61
(d) Total Contingent Liabilities	**952,279**	**1,157**	**953,436**	**1,111,888**	**1,330**	**1,113,217**	**16.76**
CAPITAL STRENGTH							
(a) Core capital	575,464	6,926	582,390	626,393	5,813	632,206	8.55
(b) Minimum statutory capital	1,000	1,000	1,000	1,000	1,000	1,000	
(c) Excess/(Deficiency)(a-b)	575,464	5,926	581,390	626,393	4,813	631,206	8.57
(d) Supplementary capital	102,825	685	103,510	82,260	558	82,818	-19.99
(e) Total Capital (a+d)	**678,289**	**7,611**	**685,899**	**708,653**	**6,371**	**715,024**	**4.25**
(f) Total Risk Weighted Assets	**3,464,064**	**48,940**	**3,513,005**	**3,752,476**	**44,679**	**3,797,156**	**8.09**
(g) Core capital/otal deposits liabilities (%)	17.85	19.86	17.87	17.93	15.51%	17.90	
(h) Minimum statutory Ratio (%)	8.00	8.00	8.00	8.00	8.00	8.00	
(i) Excess/(Deficiency) (g-h) (%)	9.85	11.86	9.87	9.93	7.51	9.90	
(j) Core Capital / Total risk weighted Assets (%)	16.61	14.15	16.58	16.69	13.01	16.65	
(k) Minimum statutory ratio (%)	10.50	10.50	10.50	10.50	10.50	10.50	
(l) Excess (Deficiency) (j-k) (%)	6.11	3.65	6.08	6.19	2.51	6.15	
(m) Total Capital/Total Risk Weighted Assets	**19.58**	**15.55**	**19.52**	**18.88**	**14.26**	**18.83**	
(n) Minimum Statutory Ratio (%)	14.50	14.50	14.50	14.50	14.50	14.50	
(o) Excess/(Deficiency) (m-n) (%)	5.08	1.05	5.02	4.38	-0.24	4.33	
LIQUIDITY							
(a) Liquidity ratio (%)	48.91	18.42	48.60	50.08	17.85	49.74	
(b) Minimum Statutory Ratio (%)	20.00	20.00	20.00	20.00	20.00	20.00	
(c) Excess (Deficiency) (a-b)	28.91	-1.58	28.60	26.20	0.80	25.54	
Performance Indicators							
Yield on Earning Assets (%)	10.19	11.05	10.20	9.40	9.99	9.40	
Cost of Funding Earning Assets (%)	3.56	6.60	3.60	3.23	5.59	3.26	
Interest Margin on Earning Assets (%)	6.63	4.45	6.60	6.17	4.40	6.14	
Yield on Advances (%)	10.69	11.50	10.71	9.84	10.21	9.85	
Cost of Deposits (%)	4.05	10.19	4.12	3.75	7.53	3.79	
Return on Assets (ROA) (%)	2.80	-0.63	2.76	2.63	-0.04	2.60	
Return on Equity (ROE) (%)	22.88	-4.31	22.51	22.11	-0.26	21.83	
Overheads to Earnings (%)	43.25	49.33	43.33	44.76	49.58	44.81	
Gross NPLs/Gross Loans (%)	12.44	27.09	12.73	12.26	26.88	12.51	
RATINGS							
Capital Adequacy	1	2	1	2	3	2	
Asset Quality	2	4	2	2	5	2	
Earnings	2	5	2	2	5	2	
Liquidity	1	4	1	1	3	1	
Composite Score	2	4	2	2	4	2	
Performance Category	**Satisfactory**	**Marginal**	**Satisfactory**	**Satisfactory**	**Marginal**	**Satisfactory**	
Ratings	PERFOR-MANCE CATEGORY	CAPITAL ADE-QUACY (Total Capital/ TRWA) (%)	ASSET QUALIITY (NPLs-Pro-visions)/ Gross Loans (%)	EARNINGS Net Prof-its/ Total Assets (%)	LIQUIDITY (Total Liquid Assets/Total Short-term Liabilities) (%)	MANAGE-MENT (Total weighted Score)	COMPOSITE SCORE (Average Score)
1	Strong	19.50 and above	0 - 5	Over 3	Over 34	1.0 - 1.4	1.0 - 1.4
2	Satisfactory	15.60 - 19.49	5.1 - 10.0	2.0-2.9	26 - 34	1.5 - 2.4	1.5 - 2.4
3	Fair	12.00 - 15.59	10.1 - 15.0	1.0-1.9	20 - 25	2.5 - 3.4	2.5 - 3.4
4	Marginal	8.31 - 11.99	15.1 - 20.0	0.0-0.9	15 - 19	3.5 - 4.4	3.5 - 4.4
5	Unsatisfactory	8.30 and below	Over 20	Net Loss	Under 15	4.5 - 5.0	4.5 - 5.0

Source: Commercial Banks Published Financial Statements (December 2018 and 2019)

Appendix III: BANKING SECTOR OTHER DISCLOSURES – DECEMBER 2020, Ksh. Millions

	December 2019			December 2020			
	BANKS	NBFIS	GRAND TOTAL	BANKS	NBFIS	GRAND TOTAL	ANNUAL PERCENTAGE CHANGE
NON-PERFORMING LOANS AND ADVANCES							
(a) Gross Non-performing loans and advances	324,272	12,316	336,588	425,268	10,799	436,067	29.6
(b) Less: Interest in Suspense	59,376	3,231	62,607	68,523	3,288	71,810	14.7
(c)Total Non-Performing Loans and Advances (a-b)	264,896	9,085	273,980	356,745	7,511	364,256	32.9
(d) Less: Loan Loss Provision	131,640	2,656	134,296	194,503	3,564	198,067	47.5
(e) Net Non-Performing Loans and Advances(c-d)	133,255	6,429	139,684	162,242	3,947	166,189	19.0
(f) Discounted Value of Securities	121,208	6,429	127,637	148,488	3,947	152,435	19.4
(g) Net NPLs Exposure (e-f)	12,047	0	12,047	13,754	0	13,754	14.2
INSIDER LOANS AND ADVANCES							-
(a) Directors, Shareholders and Associates	41,323	1,411	42,734	46,732	2,212	48,943	14.5
(b) Employees	72,661	814	73,475	77,713	794	78,507	6.8
(c)Total Insider Loans and Advances and other facilities	113,983	2,226	116,209	124,444	3,006	127,450	9.7
OFF-BALANCE SHEET ITEMS							-
(a) Letters of credit, guarantees, acceptances	544,379	92	544,471	586,922	822	587,743	7.9
(b) Forwards, swaps and options	548,606	1,238	549,843	452,430	665	453,095	(17.6)
(c) Other contingent liabilities	18,903	-	18,903	14,154	-	14,154	(25.1)
(d) Total Contingent Liabilities	1,111,888	1,330	1,113,217	1,053,505	1,487	1,054,992	(5.2)
CAPITAL STRENGTH							-
(a) Core capital	626,393	5,813	632,206	683,048	3,622	686,669	8.6
(b) Minimum Statutory Capital	1,000	1,000	1,000	1,000	1,000	1,000	-
(c) Excess/(Deficiency)(a-b)	626,393	4,813	631,206	683,048	2,622	685,669	8.6
(d) Supplementary Capital	82,260	558	82,818	98,991	579	99,569	20.2
(e) Total Capital (a+d)	708,653	6,371	715,024	782,038	4,200	786,239	10.0
(f) Total risk weighted assets	3,752,476	44,679	3,797,156	4,090,000	46,280	4,136,280	8.9
(g) Core Capital/Total deposits Liabilities	17.9	15.5	17.9	17.2	9.1	17.1	
(h) Minimum statutory Ratio	8.0	8.0	8.0	8.0	8.0	8.0	
(i) Excess/(Deficiency) (g-h)	9.9	7.5	9.9	9.2	1.1	9.1	
(j) Core Capital / total risk weighted assets	16.7	13.0	16.6	16.7	7.8	16.6	
(k) Minimum Statutory Ratio	10.5	10.5	10.5	10.5	10.5	10.5	
(l) Excess (Deficiency) (j-k)	6.2	2.5	6.1	6.2	-2.7	6.1	
(m) Total Capital/total risk weighted assets	18.9	14.3	18.8	19.1	9.1	19.0	
(n) Minimum statutory Ratio	14.5	14.5	14.5	14.5	14.5	14.5	
(o) Excess/(Deficiency) (m-n)	4.4	-0.2	4.3	4.6	-5.4	4.5	
LIQUIDITY							
(a) Liquidity Ratio	46.2	20.8	45.5	54.9	18.2	54.5	
(b) Minimum Statutory Ratio	20.0	20.0	20.0	20.0	20.0	20.0	
(c) Excess (Deficiency) (a-b)	26.2	0.8	25.5	34.9	-1.8	34.5	
Performance Indicators							
Yield on Earning Assets	9.4	10.0	9.4	9.0	8.3	9.0	
Cost of Funding Earning Assets	3.2	5.6	3.3	3.0	4.5	3.0	
Interest Margin on Earning Assets	6.2	4.4	6.1	6.0	3.8	6.0	
Yield on Advances	9.8	10.2	9.8	9.5	8.5	9.5	
Cost of Deposits	3.7	7.5	3.8	3.5	5.8	3.5	
Return on Assets (ROA)	2.6	0.0	2.6	1.7	-1.5	1.7	
Return on Equity (ROE)	22.1	-0.3	21.8	14.2	-11.7	13.9	
Overheads to Earnings	44.8	49.6	44.8	55.1	69.8	55.2	
Gross NPLs/Gross Loans	12.3	26.9	12.5	14.3	25.8	14.5	
RATINGS							
Capital Adequacy	2	3	2	2	4	2	
Asset Quality	2	5	2	2	4	2	
Earnings	2	5	2	3	5	3	
Liquidity	1	3	1	1	4	1	
Composite Score	2	4	2	2	4	2	
Performance Category	Satisfactory	Marginal	Satisfactory	Satisfactory	Marginal	Satisfactory	
Ratings	PERFORMANCE CATEGORY	CAPITAL ADE-QUACY (Total Capital/ TRWA) (%)	ASSET QUALITY (NPLs-Provi-sions)/Gross Loans (%)	EARNINGS Net Profits/ Total Assets (%)	LIQUIDITY (Total Liquid Assets/Total Short-term Liabilities)(%)	MANAGEMENT (Total weighted Score)	COMPOSITE SCORE (Average Score)
1	Strong	19.50 and above	0 - 5	Over 3%	Over 34	1.0 - 1.4	1.0 - 1.4
2	Satisfactory	15.60 - .49	5.1 - 10.0	2.0%-2.9%	26 - 34	1.5 - 2.4	1.5 - 2.4
3	Fair	12.00 - .59	10.1 - 15.0	1.0%-1.9%	20 - 25	2.5 - 3.4	2.5 - 3.4
4	Marginal	8.31 - 1.99	15.1 - 20.0	0.0%-0.9%	15 - 19	3.5 - 4.4	3.5 - 4.4
5	Unsatisfactory	8.30 and below	Over 20	Net Loss	Under 15	4.5 - 5.0	4.5 - 5.0

Source: Commercial Banks Published Financial Statements

APPENDIX III: BANKING SECTOR OTHER DISCLOSURES – DECEMBER 2021, Ksh. Millions

	December 2020			December 2021			
	BANKS	NBFIS	GRAND TOTAL	BANKS	NBFIS	GRAND TOTAL	ANNUAL PERCENTAGE CHANGE
NON-PERFORMING LOANS AND ADVANCES							
(a) Gross Non-performing loans and advances	425,268	10,799	436,067	451,341	8,673	460,008	5.5
(b) Less: Interest in Suspense	68,523	3,288	71,810	70,333	2,817	73,150	1.9
(c)Total Non-Performing Loans and Advances (a-b)	**356,745**	**7,511**	**364,256**	**381,008**	**5,856**	**386,859**	**6.2**
(d) Less: Loan Loss Provision	194,503	3,564	198,067	210,833	3,567	214,400	8.2
(e) Net Non-Performing Loans and Advances(c-d)	**162,242**	**3,947**	**166,189**	**170,175**	**2,289**	**172,459**	**3.8**
(f) Discounted Value of Securities	148,488	3,947	152,435	160,929	2,289	163,218	7.1
(g) Net NPLs Exposure (e-f)	**13,754**	**0**	**13,754**	**9,246**	**0**	**9,241**	**(32.8)**
INSIDER LOANS AND ADVANCES							
(a) Directors, Shareholders and Associates	46,732	2,212	48,943	46,107	2,323	48,430	(1.0)
(b) Employees	77,713	794	78,507	80,169	772	80,941	3.1
(c)Total Insider Loans and Advances and other facilities	**124,444**	**3,006**	**127,450**	**126,276**	**3,095**	**129,371**	**1.5**
OFF-BALANCE SHEET ITEMS							
(a) Letters of credit, guarantees, acceptances	586,922	822	587,743	643,002	1,146	644,148	9.6
(b) Forwards, swaps and options	452,430	665	453,095	438,693	915	439,607	(3.0)
(c) Other contingent liabilities	14,154	-	14,154	18,545	-	18,545	31.0
(d) Total Contingent Liabilities	**1,053,505**	**1,487**	**1,054,992**	**1,100,240**	**2,061**	**1,102,300**	**4.5**
CAPITAL STRENGTH							
(a) Core capital	683,048	3,622	686,669	747,348	3,172	750,519	9.3
(b) Minimum Statutory Capital	1,000	1,000	1,000	1,000	1,000	1,000	-
(c) Excess/(Deficiency)(a-b)	683,048	2,622	685,669	747,348	2,172	749,519	9.3
(d) Supplementary Capital	98,991	579	99,569	131,426	1,480	132,906	33.5
(e) Total Capital (a+d)	**782,038**	**4,200**	**786,239**	**878,773**	**4,652**	**883,425**	**12.4**
(f) Total risk weighted assets	4,090,000	46,280	4,136,280	4,490,860	38,441	4,529,301	9.5
(g) Core Capital/Total deposits Liabilities	**17.2**	**9.1**	**17.1**	**16.9**	**8.4**	**16.9**	
(h) Minimum statutory Ratio	8.0	8.0	8.0	8.0	8.0	8.0	
(i) Excess/(Deficiency) (g-h)	9.2	1.1	9.1	8.9	0.4	8.9	
(j) Core Capital / total risk weighted assets	**16.7**	**7.8**	**16.6**	**16.6**	**8.3**	**16.6**	
(k) Minimum Statutory Ratio	10.5	10.5	10.5	10.5	10.5	10.5	
(l) Excess (Deficiency) (j-k)	6.2	-2.7	6.1	6.1	-2.2	6.1	
(m) Total Capital/total risk weighted assets	**19.1**	**9.1**	**19.0**	**19.6**	**12.1**	**19.5**	
(n) Minimum statutory Ratio	14.5	14.5	14.5	14.5	14.5	14.5	
(o) Excess/(Deficiency) (m-n)	**4.6**	**-5.4**	**4.5**	**5.1**	**-2.4**	**5.0**	
LIQUIDITY							
(a) Liquidity Ratio	54.9	18.2	54.5	56.5	22.5	56.2	
(b) Minimum Statutory Ratio	20.0	20.0	20.0	20.0	20.0	20.0	
(c) Excess (Deficiency) (a-b)	34.9	-1.8	34.5	36.5	2.5	36.2	
Performance Indicators							
Yield on Earning Assets	9.0	8.3	9.0	8.9	8.2	8.8	
Cost of Funding Earning Assets	3.0	4.5	3.0	2.8	4.2	2.8	
Interest Margin on Earning Assets	6.0	3.8	6.0	6.1	4.0	6.0	
Yield on Advances	9.5	8.5	9.5	9.3	8.1	9.2	
Cost of Deposits	3.5	5.8	3.5	3.4	5.5	3.4	
Return on Assets (ROA)	1.7	-1.5	1.7	3.3	-1.3	3.3	
Return on Equity (ROE)	14.2	-11.7	13.9	22.3	-8.3	22.0	
Overheads to Earnings	55.1	69.8	55.2	44.0	67.7	44.2	
Gross NPLs/Gross Loans	14.3	25.8	14.5	14.3	20.5	14.1	
RATINGS							
Capital Adequacy	2	4	2	1	3	1	
Asset Quality	2	4	2	2	3	2	
Earnings	3	5	3	2	5	2	
Liquidity	1	4	1	1	4	1	
Composite Score	2	4	2	2	4	2	
Performance Category	**Satisfactory**	**Marginal**	**Satisfactory**	**Satisfactory**	**Marginal**	**Satisfactory**	

Ratings	PERFORMANCE CATEGORY	CAPITAL ADEQUACY (Total Capital/ TRWA) (%)	ASSET QUALITY (NPLs-Provisions)/ Gross Loans (%)	EARNINGS Net Profits/Total Assets (%)	LIQUIDITY (Total Liquid Assets/ Total Short-term Liabilities) (%)	MANAGEMENT (Total weighted Score)	COMPOSITE SCORE (Average Score)
1	Strong	19.50 and above	0 - 5	Over 3	Over 34	1.0 - 1.4	1.0 - 1.4
2	Satisfactory	15.60 - .49	5.1 - 10.0	2.0-2.9	26 - 34	1.5 - 2.4	1.5 - 2.4
3	Fair	12.00 - .59	10.1 - 15.0	1.0-1.9	20 - 25	2.5 - 3.4	2.5 - 3.4
4	Marginal	8.31 - 1.99	15.1 - 20.0	0.0-0.9	15 - 19	3.5 - 4.4	3.5 - 4.4
5	Unsatisfactory	8.30 and below	Over 20	Net Loss	Under 15	4.5 - 5.0	4.5 - 5.0

Source: Commercial Banks Published Financial Statements (December 2021)

APPENDIX III: BANKING SECTOR OTHER DISCLOSURES – DECEMBER 2022

Figures in Ksh. Millions

	December 2021			December 2022			
	BANKS	NBFIS	GRAND TOTAL	BANKS	NBFIS	GRAND TOTAL	ANNUAL PERCENTAGE CHANGE (%)
NON-PERFORMING LOANS AND ADVANCES							
(a) Gross Non-performing loans and advances	451,336	8,673	460,008	494,755	8,487	503,242	9.4
(b) Less: Interest in Suspense	70,333	2,817	73,150	76,751	2,780	79,532	8.7
(c)Total Non-Performing Loans and Advances (a-b)	**381,003**	**5,856**	**386,859**	**418,004**	**5,707**	**423,710**	**9.5**
(d) Less: Loan Loss Provision	210,833	3,567	214,400	226,431	3,911	230,342	7.4
(e) Net Non-Performing Loans and Advances(c-d)	**170,170**	**2,289**	**172,459**	**191,573**	**1,796**	**193,368**	**12.1**
(f) Discounted Value of Securities	160,929	2,289	163,218	183,481	1,796	185,277	13.5
(g) Net NPLs Exposure (e-f)	**9,241**	**0**	**9,241**	**8,091**	**0**	**8,091**	**(12.4)**
INSIDER LOANS AND ADVANCES							-
(a) Directors, Shareholders and Associates	46,107	2,323	48,430	60,430	1,784	62,214	28.5
(b) Employees	80,169	772	80,941	82,371	1,049	83,421	3.1
(c)Total Insider Loans and Advances and other facilities	**126,276**	**3,095**	**129,371**	**142,801**	**2,834**	**145,635**	**12.6**
OFF-BALANCE SHEET ITEMS							-
(a) Letters of credit, guarantees, acceptances	643,002	1,146	644,148	716,040	1,935	717,975	11.5
(b) Forwards, swaps and options	438,693	915	439,607	478,373	1,816	480,189	9.2
(c) Other contingent liabilities	18,545	-	18,545	16,554	-	16,554	(10.7)
(d) Total Contingent Liabilities	**1,100,240**	**2,061**	**1,102,300**	**1,210,967**	**3,751**	**1,214,718**	**10.2**
CAPITAL STRENGTH							-
(a) Core capital	747,348	3,172	750,519	805,876	3,185	809,061	7.8
(b) Minimum Statutory Capital	1,000	1,000	1,000	1,000	1,000	1,000	-
(c) Excess/(Deficiency)(a-b)	**747,348**	**2,172**	**749,519**	805,876	2,185	**808,061**	7.8
(d) Supplementary Capital	131,426	1,480	132,906	144,061	1,532	145,593	9.5
(e) Total Capital (a+d)	**878,773**	**4,652**	**883,425**	**949,937**	**4,717**	**954,654**	**8.1**
(f) Total risk weighted assets	**4,490,860**	**38,441**	**4,529,301**	**5,002,862**	**38,520**	**5,041,382**	**11.3**
(g) Core Capital/Total deposits Liabilities	**16.9**	**8.4**	**16.9**	**17.2**	**8.0**	**17.1**	
(h) Minimum statutory Ratio	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**	
(i) Excess/(Deficiency) (g-h)	**8.9**	**0.4**	**8.9**	**9.2**	**0.0**	**9.1**	
(j) Core Capital / total risk weighted assets	**16.6**	**8.3**	**16.6**	**16.1**	**8.3**	**16.0**	
(k) Minimum Statutory Ratio	10.5	10.5	10.5	10.5	10.5	10.5	
(l) Excess (Deficiency) (j-k)	**6.1**	**-2.2**	**6.1**	**5.6**	**-2.2**	**5.5**	
(m) Total Capital/total risk weighted assets	**19.6**	**12.1**	**19.5**	**19.0**	**12.2**	**18.9**	
(n) Minimum statutory Ratio	14.5	14.5	14.5	14.5	14.5	14.5	
(o) Excess/(Deficiency) (m-n)	**5.1**	**-2.4**	**5.0**	**4.5**	**-2.3**	**4.4**	
LIQUIDITY							
(a) Liquidity Ratio	**56.5**	**22.5**	**56.2**	**51.1**	**23.7**	**50.8**	
(b) Minimum Statutory Ratio	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	
(c) Excess (Deficiency) (a-b)	36.5	2.5	36.2	31.1	3.7	30.8	
Performance Indicators							
Yield on Earning Assets	8.9	8.2	8.8	9.5	8.3	9.5	
Cost of Funding Earning Assets	2.8	4.2	2.8	3.2	4.0	3.2	
Interest Margin on Earning Assets	6.1	4.0	6.0	6.4	4.3	6.4	
Yield on Advances	9.3	8.1	9.2	9.3	8.0	9.3	
Cost of Deposits	3.4	5.5	3.4	3.7	5.3	3.7	
Return on Assets (ROA)	3.3	-1.3	3.3	3.7	0.2	3.7	
Return on Equity (ROE)	22.3	-8.3	22.0	26.5	1.2	26.3	
Overheads to Earnings	44.0	67.7	44.2	42.9	56.0	43.0	
Gross NPLs/Gross Loans	14.3	20.5	14.1	13.8	19.5	13.9	
RATINGS							
Capital Adequacy	1	3	1	2	3	2	
Asset Quality	2	3	2	2	1	2	
Earnings	1	5	1	1	4	1	
Liquidity	1	3	1	1	3	1	
Composite Score	1	4	1	**2**	**3**	**2**	
Performance Category	**Strong**	**Marginal**	**Strong**	**Satisfactory**	**Fair**	**Satisfactory**	

Ratings	PERFORMANCE CATEGORY	CAPITAL ADEQUACY (Total Capital/ TRWA) (%)	ASSET QUALITY (NPLs-Provisions)/Gross Loans (%)	EARNINGS Net Profits/Total Assets (%)	LIQUIDITY (Total Liquid Assets/Total Short-term Liabilities) (%)	MANAGEENT (Total weighted Score)	COMPOSITE SCORE (Average Score)
1	Strong	19.50 and above	0 - 5	Over 3	Over 34	1.0 - 1.4	1.0 - 1.4
2	Satisfactory	15.60 - 19.49	5.1 - 10.0	2.0-2.9	26 - 34	1.5 - 2.4	1.5 - 2.4
3	Fair	12.00 - 15.59	10.1 - 15.0	1.0-1.9	20 - 25	2.5 - 3.4	2.5 - 3.4
4	Marginal	8.31 - 11.99	15.1 - 20.0	0.0-0.9	15 - 19	3.5 - 4.4	3.5 - 4.4
5	Unsatisfactory	8.30 and below	Over 20	Net Loss	Under 15	4.5 - 5.0	4.5 - 5.0

Source: Commercial Banks Published Financial Statements (December 2022)

Appendix VII: Publications

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Uptake of Digital Organizational Innovations on Financial Performance of Commercial Banks in Kenya

Kimathi, Doris Kagendo [1], Dr. Ntongai David, PhD[2], Dr. Ann Kariuki, PhD[3], Prof. Shano Mohammed, PhD[4]

[1]Meru University of Science and Technology
P.O. Box 43-60602, Meru, Kenya.
[2]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972 -60200, Meru Kenya
[3]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972- 60200, Meru Kenya
[4]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972 60200, Meru Kenya

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Abstract

The rapid evolution of digital innovations has globally transformed the banking sector, with commercial banks in Kenya experiencing significant operational changes driven by these advancements. Despite the substantial benefits associated with digital innovations, there remains a gap in understanding the precise influence of organizational innovations on the financial performance of commercial banks. This gap is exacerbated by a lack of comprehensive empirical studies that systematically examine the relationship between digital organizational innovations and financial performance within the Kenyan banking sector. Navigating the dynamic regulatory landscape poses a significant challenge as the industry strives to balance innovation with compliance, thereby potentially dampening the enthusiasm of commercial banks to fully embrace transformative digital initiatives. This study aimed to assess the influence of digital organizational innovations on the financial performance of commercial banks in Kenya, the Evolutionary Theory of Economic Change was used to assist in explaining the objective. Adopting a positivist philosophy, the study targeted a population of 1,470 employees across 39 commercial banks in Kenya, utilizing a stratified random sampling technique to select a sample size of 315 participants, including senior management, supervisory management, and junior officers. A descriptive research design was employed, using structured questionnaires to collect primary data, while secondary data was sourced from banking sector supervisory and innovation survey reports. A pilot test was conducted to estimate reliability using Cronbach's Alpha, and content validity was assessed with the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity. Descriptive analysis was presented using frequency tables and bar graphs. A panel linear regression model was applied, revealing that 76% (R^2=0.761, F=822.691, P<0.0001) of the variations in return on equity (ROE) for commercial banks were explained by digital

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Uptake of Digital Product Innovations on Financial Performance of Commercial Banks in Kenya

Kimathi, Doris Kagendo [1], Dr. Ntongai David, PhD[2], Dr. Ann Kariuki, PhD[3], Prof. Shano Mohammed, PhD[4]

[1]Meru University of Science and Technology
P.O. Box 43-60602 Meru, Kenya,
[2]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972-60200, Meru Kenya
[3]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972- 60200, Meru Kenya
[4]School of Business and Economics, Meru University of Science and Technology
P. O. Box 972- 60200, Meru Kenya

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Abstract

Product digital innovations are key drivers for differentiation, revenue growth, and competitiveness within the banking sector. In Kenyan banking sector, since 2013, strategic advancements have led to the adoption of digital platforms for service delivery, significantly affecting the industry landscape. The study aimed to investigate the effect of digital product innovations on financial outcomes and the moderating role of government policies in this relationship guided by Evolutionary Theory of Economic Change. Using a descriptive study design, data was collected from 315 employees across 39 commercial banks, employing structured questionnaires for primary data and industry reports for secondary data. Statistical analysis, including regression models, was conducted to test the hypothesis that digital product innovations have no significant impact on financial performance. Key findings indicate that product innovations such as mobile banking solutions and e-wallets have led to improved customer satisfaction and market relevance. However, challenges such as leadership and organizational culture, financial constraints, and regulatory compliance were identified as barriers to effective product development. The study concluded that while there is a statistically significant correlation between digital product innovations and financial performance, the variability explained by innovations on return on equity (ROE) is moderate (R^2 = 42.6%). The research highlights the importance of continuous innovation and strategic alignment to enhance performance. Banks that prioritize customer-centric approaches and agile development processes are more successful in driving digital product uptake. Further, commercial banks can invest in Greentech products, enhance digital literacy on digital wallets and personalized finance management tools, adopt optimal resource allocation and invest in innovation labs with elaborate digital system to increase product survival rates and cuts on costs. It also emphasized the role of government policies as a significant factor influencing the financial outcomes of banks,