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E-banking Strategies and Growth of Selected Commercial Banks in Nairobi City County, Kenya

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Abstract

Purpose: The growth of Kenyan commercial banks has been sluggish despite the widespread adoption of the latest trends. This delayed progress can be attributed to the uncertainty surrounding the outcomes of the devised e-banking strategies by management. The growth of commercial banks in Nairobi City County, Kenya has been significantly affected by the rate of adoption of technology, which is one of the latest trends in banking. A majority of the clients of commercial banks in Kenya have been hesitant to embrace the new trends in form of online banking in preference for traditional banking as a result of a lack of trust. In addition, there have been also some challenges in Point of Sale (POS) systems, e-banking transfers, virtual assistants, and chatbots. This research aimed to investigate the impact of e-banking strategies on the growth of selected commercial banks in Nairobi City County, Kenya.

Methodology: To achieve the study's objectives, a descriptive research design was employed. The target population comprised managers of commercial banks responsible for strategy implementation. The sample included Digital Banking Managers, Operational Managers, IT Managers, Customer Relations Managers, Finance Managers, and Business Development Managers, totaling 54 respondents. Before data collection, a pilot study was carried out to assess the feasibility of the research. Additionally, validity and reliability tests were carried out to ensure the research instrument accurately measures its intended variables. Data was collected through a combination of closed and open-ended questionnaires, administered via drop-and-pick methods. Subsequently, the collected data was analyzed through descriptive analysis.

Results: The study found that e-banking strategies, including SMS banking, POS systems, Electronic Bank Transfers, and virtual assistants/chatbots, significantly impact the growth of commercial banks in Kenya, despite challenges such as unread messages and interoperability issues.

Conclusion: It was concluded that banks should address usability concerns, strengthen security measures, and prioritize user-centric design to maximize benefits. Recommendations include enhancing SMS banking usability of commercial banks, improving transaction security, and investing in technological innovations for operational efficiency and competitiveness.

Keywords: *E-banking Strategies, Growth of Commercial Banks, Electronic Bank Transfer, Online banking, Point of Sale (POS)*

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1.0 Introduction

E-banking has emerged as a transformative force in banking sector worldwide. Rapid advancements in technology and the widespread adoption of digital devices have revolutionized the way customers interact with financial institutions. E-banking encompasses a range of electronic channels such as online banking, mobile banking, and electronic fund transfers, offering customers convenient access to banking services anytime, anywhere (Datta, Sabuj & Ahammed, 2022). The global banking industry has recognized the potential of e-banking to drive growth, enhance customer experiences, and improve operational efficiency. Commercial banks across different countries have been implementing e-banking initiatives and aligning their growth strategies to leverage the opportunities presented by digital transformation.

In developed nations like Japan and Germany, commercial banks have encountered challenges in sustaining substantial growth due to various factors. In Japan, a rapidly aging population coupled with a prolonged period of low interest rates has constrained profitability for banks. The country's banking sector, including giants like Mitsubishi UFJ Financial Group and Sumitomo Mitsui Financial Group, has grappled with sluggish loan demand and narrowing interest margins, posing hurdles to robust expansion (Matousek et al., 2019). Similarly, in Germany, despite the presence of influential financial institutions like Deutsche Bank and Commerzbank, there have been hurdles in achieving significant growth. The fragmented nature of the banking sector and persistent economic uncertainties within the Eurozone have constrained these banks' ability to expand their market shares substantially.

Turning to developing nations, Brazil, despite robust financial institutions like Itaú Unibanco and Banco do Brasil, economic volatility, political instability, and regulatory changes have posed challenges to sustained growth for these banks (Chmielarz, & Zborowski, 2020). The cyclical nature of the economy and the impact of external market fluctuations have affected their ability to grow consistently. Additionally, India faces unique challenges in the growth trajectory of its commercial banks. Despite notable players like State Bank of India and HDFC Bank, regulatory constraints and a large population that remains unbanked or underbanked have hindered substantial growth. The need for financial inclusion and the vast informal economy present hurdles to achieving rapid expansion in the banking sector.

In the African continent, e-banking has gained significant traction, driven by the expanding internet and mobile penetration rates. Countries like Kenya, Nigeria, South Africa, and Egypt have witnessed a surge in e-banking adoption, fueled by the growing demand for convenient banking services, the rise of digital payment platforms, and the push for financial inclusion (Kawimbe, Sishumba, Sikazwe & Saidi, 2022). African commercial banks are recognizing e-banking as a strategic tool to enhance competitiveness, attract a broader customer base, and optimize operational processes. However, there is a need to understand the specific dynamics and challenges within the African context to effectively leverage e-banking for growth strategies.

Within the East African region, Kenya has emerged as a frontrunner in e-banking adoption and innovation. The country's progressive regulatory environment, robust telecommunications infrastructure, and tech-savvy population have created a conducive ecosystem for e-banking growth (Mang’ana, 2022). Kenyan commercial banks have been leading in leveraging e-banking to expand their market share, drive customer engagement, and improve operational efficiencies (Chumo, 2022). However, the success and impact of e-banking on growth

strategies in Kenya require in-depth analysis, considering the unique market conditions, regulatory frameworks, and customer behaviors prevalent in the region.

Nationally, the commercial banking sector in Kenya has experienced a notable deceleration in growth over recent years. This decline can be attributed to several factors, notably stringent regulatory measures imposed by authorities, intensifying competition within the industry, and shifts in the overall economic landscape (Nyabaga & Wepukhulu, 2020). Statistical data indicates a visible reduction in the pace at which these banks are expanding compared to previous periods. In response to this challenge, banks are increasingly turning towards e-banking strategies as a viable solution. This entails a fundamental shift towards leveraging digital platforms such as online banking portals and mobile applications. The adoption of these electronic banking approaches is seen as a crucial step towards optimizing operational efficiency, enriching customer experiences, and broadening their market penetration (Ntwiga, 2020). By embracing e-banking, these financial institutions aim not only to address the current impediments but also to position themselves competitively in an ever-evolving financial environment.

Kenyan commercial banks are increasingly embracing e-banking as a strategic imperative to propel their growth strategies. The banking sector in Kenya has witnessed a significant shift towards digital channels, with customers increasingly relying on internet banking, mobile banking apps, and electronic fund transfers for their financial needs (Kavila & Kilika, 2023). E-banking offers commercial banks in Kenya the potential to acquire new customers, improve customer retention, introduce innovative products and services, enhance operational efficiency, as well as maintain a competitive edge (Aboma, 2022). However, there is a need for empirical research to explore the specific linkages between e-banking and growth strategies of Kenyan commercial banks, considering factors such as customer preferences, regulatory frameworks, technological infrastructure, and competitive dynamics.

1.1 Problem Statement

According to Gatauwa et al. (2024), Kenyan commercial banks grapple with a multitude of obstacles in achieving sustained growth through conventional strategies. Despite endeavors to broaden customer bases, introduce novel products, and streamline operations, these traditional methods, as per Dang (2020), exhibit limitations in meeting the swiftly changing demands of customers in the digital era. Statistical data from 2018 to 2021 highlights a concerning trend, showcasing a reduction in annual growth rate of these banks (Mang'ana, 2022). In 2018, the growth rate stood at 8.5%, which gradually decreased to 6.2% in 2019, further dropping to 4.1% in 2020, and hitting a notable low of 2.8% in 2021 (Harrison, & Muiruri, 2021). This downward trajectory underscores the challenges faced by banks in sustaining growth amidst evolving market dynamics.

Various studies have explored e-banking strategies and the effect that they have on commercial bank's growth though these studies exhibit methodological (Mutua, & Kori, 2022; Kori, 2020), conceptual (Kimani, & Kibera, 2023; Kiruja, & Kimencu, 2020), and contextual gaps (Kombe, 2023; Ongongo, & Mang'ana, R. (2022), that this current research aims to fill.

According to Jenik, Flaming, & and Salman (2021), the market has become intensely competitive due to the rise of fintech companies and digital-native banks leveraging technology to offer tailored and convenient banking services. Consequently, traditional banks face the risk of losing market share to these agile and tech-savvy competitors. Amidst these challenges, e-banking has emerged as a potential solution pivotal in unlocking new pathways for success. By embracing e-banking, commercial banks can harness digital platforms to revolutionize

operations and elevate customer experiences. Despite its potential advantages, a comprehensive investigation is imperative to ascertain the extent to which e-banking can bolster the growth strategies of Kenyan commercial banks. This entails understanding the specific challenges and opportunities in the Kenyan banking landscape and identifying potential barriers to successful implementation.

1.2 Research Objectives

The study was guided by the following specific objectives:

i. To determine the effect of online banking on growth of commercial banks in Nairobi City County, Kenya.
ii. To establish the effect of POS (Point of Sale) on growth of commercial banks in Nairobi City County, Kenya.
iii. To outline the effect of electronic bank transfer on growth of commercial banks in Nairobi City County, Kenya.
iv. To evaluate the effect of virtual assistants and chatbots on growth of commercial banks in Nairobi City County, Kenya.

2.0 Literature Review

2.1 Theoretical Review

2.1.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was introduced by Davis (1989). It stands as a widely acknowledged theory elucidating the process by which users embrace and approve of new technology. TAM centers on the elements that impact an individual's inclination to adopt a specific technology and its subsequent practical usage. In its applications, the Technology Acceptance Model (TAM) is based on various assumptions. One of these assumptions is perceived usefulness. TAM assumes that individuals have a high chance of accepting and using a technology if they view it as useful in boosting their performance or making their work easier (Lah, Lewis & Šumak, 2020). Another assumption of this theory is based on perceived ease of use. The users' perceptions of the ease of using a technology significantly influence their acceptance and adoption of it. The model posits that individuals are likely to embrace technology if they have a perception of technology to be uncomplicated, user-friendly, and convenient to use (Lah, Lewis & Šumak, 2020). This perception of ease of use contributes to the willingness to adopt and utilize the technology. TAM can be utilized to examine customers' acceptance and adoption of e-banking services. It explores factors influencing customers' perceived usefulness along with ease of use of e-banking technologies, like online banking, as well as mobile banking. TAM helps to understand customers' behavioral intentions and their willingness to engage with e-banking platforms.

2.1.2 Diffusion of Innovation Theory

The primary proponent of the Diffusion of Innovation Theory is Rogers (1962). The Diffusion of Innovation Theory states that the adoption and spread of new ideas, products, or technologies within a society or social system follow a predictable pattern. The theory assumes that individuals within a social system vary in their willingness to adopt new innovations. It categorizes individuals into different groups based on their innovativeness ranging from innovators (who are the earliest to adopt innovations) to laggards (who are the slowest to adopt) (Singhal & Svenkerud, 2019). This theory proposes that the adoption of innovations adheres to a predictable pattern across various segments of society. Diffusion of innovation theory assumes that communication channels play a crucial role in spreading information about

innovations (Singhal & Svenkerud, 2019). This theory can be applied to explore the diffusion and adoption of e-banking among Kenyan commercial banks. It investigates the factors influencing adoption of innovative e-banking technologies and practices, such as the innovation characteristics, the channels of communication, and the adopters' characteristics (Singhal & Svenkerud, 2019). The theory helps to understand the rate of adoption and factors affecting diffusion of e-banking in banking sector. The innovation diffusion theory can also be linked to the dependent variable of growth.

2.1.3 Resource-Based View (RBV)

The Resource-Based View (RBV) theory has its proponent as Penrose (1959). The Resource-Based View (RBV) argues that a firm's sustainable competitive advantage is determined by the unique and valuable resources it possesses. RBV assumes that resources and capabilities among firms vary in terms of their nature, availability, and ability to be replicated or imitated by competitors (Freeman et al., 2021). Another assumption of this theory is in regard to dynamic capabilities and adaptation. RBV emphasizes the importance of dynamic capabilities within firms. It assumes that firms need to possess the ability to adapt, change, and renew their resources as well as capabilities to respond effectively to changing market conditions, technological advancements, and competitive landscapes (Freeman et al., 2021). RBV can be employed to analyze the strategic implications of e-banking on the growth strategies of commercial banks. It focuses on the unique resources and capabilities that banks possess and how they can be leveraged through e-banking initiatives. RBV helps to identify the competitive advantages that e-banking can provide, such as customer relationships, technology infrastructure, and data analytics capabilities.

2.1.4 Transaction Cost Economics

Transaction Cost Economics (TCE) is a theory that has been developed and advanced by Williamson (1985). This theory seeks to explain the existence and boundaries of firms based on the analysis of transaction costs. One of these assumptions is based on transaction costs. TCE assumes that economic activities within organizations or between firms involve transaction costs (Collins, 2021). TCE also emphasizes the role of asset specificity and environmental uncertainties in shaping transaction costs. It assumes that investments in specific assets (assets tailored for a particular transaction) increase the vulnerability to opportunistic behavior and higher transaction costs (Collins, 2021). This theory can be employed in examining the impact of e-banking on transaction costs within commercial banks. It explores how e-banking can potentially reduce transaction costs by enabling efficient and streamlined processes, eliminating intermediaries, and improving information flow. The theory helps to understand the cost-saving potential of e-banking and its implications for growth strategies.

2.2 Empirical Review

2.2.1 Online Banking and Growth of Commercial Banks

Sharma (2023) conducted a study examining the adoption and impact of Internet/web banking on the growth of commercial banks in India. It was found that internet/web banking adoption among commercial bank customers in India was positively correlated with younger age, higher education levels, and access to internet connectivity. It also revealed that commercial banks implementing effective Internet/web banking strategies experienced growth in terms of increased customer acquisition, improved operational efficiency, and enhanced customer satisfaction. However, the study identified gaps related to limited awareness among certain customer segments and concerns about security and data privacy. Makurumidze and Rwodzi (2023) explored the potential of SMS banking as a growth strategy for commercial banks in

Zimbabwe. The study revealed that SMS banking had significant potential as a growth strategy for commercial banks in Zimbabwe, particularly due to the widespread usage of mobile phones in the country. It highlighted the convenience and accessibility of SMS banking for customers with limited internet connectivity or smartphone access. However, the study also identified challenges such as regulatory considerations, transaction limitations, and the need for robust security measures to build customer trust and ensure widespread adoption. Osuji, Erhijakpor, and Mgbeze (2023) employed a usability evaluation approach to assess the user experience of internet/web banking platforms offered by commercial banks in Nigeria. The study identified usability issues in Internet/web banking platforms, such as complex navigation, inconsistent design elements, and limited accessibility for users with disabilities.

2.2.2 Point of Sale (POS) and Growth of Commercial Banks

Enache, Friberg, and Wiklander (2023) conducted a qualitative study that involved in-depth interviews with commercial bank executives, app developers, and mobile payment service providers. It was revealed that in-app payments had the potential to drive commercial banks' growth by offering seamless and convenient payment experiences within mobile applications. It identified challenges such as security concerns, integration complexities, and user adoption barriers. The study emphasized the need for partnerships with app developers and investment in user-friendly interfaces to promote the adoption of in-app payments. Mróz-Gorgoń, Wodo, Andrych, Caban-Piaskowska, and Kozyra (2022) study found that customers were generally receptive to biometric payments due to the convenience, security, and speed they offered. Commercial banks implementing biometric payment solutions experienced increased customer satisfaction. However, the study identified gaps related to concerns about privacy, interoperability issues, and the need for standardized regulations to ensure secure and widespread adoption. Chen, Yang and Ma (2022) study found that the adoption of traditional POS terminals was positively associated with increased transaction volumes, revenue growth, and improved customer satisfaction for commercial banks. It identified the convenience and acceptance of card payments as key drivers for merchants and customers. However, the study highlighted gaps such as inconsistent user experiences, lack of interoperability different point of sale technologies, and limited merchant adoption due to high setup costs.

2.2.3 Electronic Bank Transfer and Growth of Commercial Banks

Sirengo and Muturi (2022) did a quantitative study involving analyzing transaction data from commercial banks to examine the volume and revenue generated through wire transfers. The study found that wire transfers contributed significantly to the growth of commercial banks, with higher transaction volumes associated with increased revenue streams. However, the study identified gaps such as high transaction fees and complex processes, which could hinder the wider adoption of wire transfer services.

Bhattacharya, Das, and Basu (2022) study found that RTGS had a positive impact on commercial banks' operational efficiency by enabling real-time settlement, reducing transaction processing time, and minimizing liquidity risks. It also identified the need for robust infrastructure, adequate liquidity management strategies, and skilled workforce to fully capitalize on the benefits of RTGS. The study highlighted gaps such as limited accessibility to RTGS for smaller banks and the need for enhanced interbank connectivity.

Olli (2022) did a comparative analysis of wire transfers, RTGS, and ACH transfers. The study identified gaps such as varying costs, different processing times, and fragmented infrastructure across the different electronic bank transfer systems. It emphasized the need for harmonization, interoperability, and standardized regulations to facilitate seamless and cost-effective

electronic bank transfers. The study proposed recommendations to address these gaps, including enhancing connectivity between systems, promoting customer awareness, and fostering collaboration among stakeholders.

Mwiti (2020) conducted a qualitative study that involved in-depth interviews with bank representatives, payment processors, and regulatory authorities to explore the opportunities and challenges associated with ACH transfers. The study found that ACH transfers offered cost-effective and efficient payment solutions for commercial banks, particularly for recurring transactions such as payroll and bill payments. It highlighted the potential for increased customer convenience, reduced operational costs, and enhanced cash flow management. However, the study identified gaps such as longer settlement times compared to RTGS and the need for standardized processes and streamlined interoperability between different ACH systems.

2.2.4 Virtual Assistants and Chatbots and Growth of Commercial Banks

Umamaheswari and Valarmathi (2023) surveyed 500 customers from various commercial banks in different regions. Customers who frequently utilized these AI-powered tools reported higher levels of satisfaction due to the increased speed of response, availability, and personalized assistance offered by virtual assistants and chatbots. The convenience of having 24/7 support for routine inquiries and transaction assistance contributed to overall higher customer satisfaction levels. Despite the study's findings on the positive relationship between the usage of virtual assistants and chatbots and customer satisfaction in commercial banks, there is a need for further investigation into the specific features and functionalities of these AI-powered tools that have the most significant impact on customer satisfaction.

Kanishcheva (2021) included 200 customers who actively used virtual assistants and chatbots in their interactions with a specific commercial bank. The research revealed that the use of virtual assistants and chatbots in commercial banks significantly enhanced customer engagement. While this study highlights the importance of responsive, personalized, and efficient interactions with virtual assistants and chatbots for enhancing customer engagement, it does not delve deeply into the potential challenges or issues faced by customers in their interactions with these AI tools.

Mackhija and Chacko (2021) analyzed financial data and operational metrics from multiple commercial banks over five years. The study demonstrated that the implementation of virtual assistants and chatbots in customer service and support operations led to a significant reduction in operational costs for commercial banks. While this study clearly shows the cost-saving benefits of implementing virtual assistants and chatbots in commercial banks, it does not address the potential downsides or challenges that banks might face during the implementation process.

2.3 Conceptual Framework

Figure 1 shows the study's conceptual framework which shows the interrelation between the independent variable and the dependent variable.

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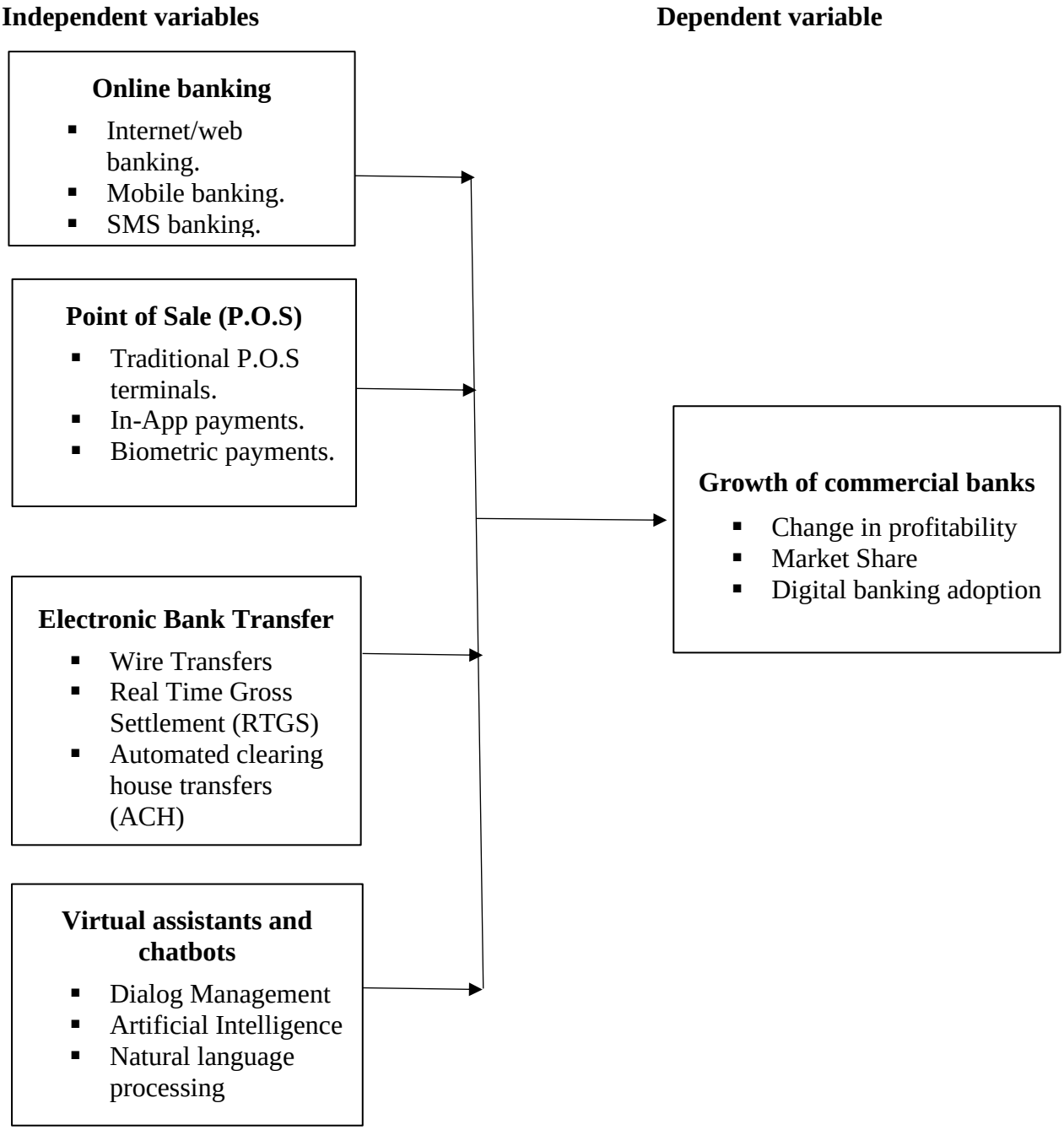

Figure 1: Conceptual Framework

3.0 Methodology

Descriptive research design is the one that was utilized in this study. The reason for the use of this method in this study is because it is the simplest approach and that it is suitable in describing a single or multiple variables in research while providing causal relationship among such elements. Apart from that, the other reason why descriptive research approach is deemed useful in this study is because of its significant capability of the possibility of observing a phenomenon in a natural environment that is completely unchanged and natural. Besides that, descriptive research design as the approach that was employed in this study, can integrate both

the qualitative along with quantitative methods of data collection, which were employed in this research.

The target population in this research on e-banking strategies and growth of commercial banks in Kenya were commercial banks from which Digital Banking Managers, Operational Managers, Finance Managers, IT Managers, Customer Relations Managers and Business Development Managers were targeted from the headquarters of the 9 commercial banks in Nairobi City County, Kenya, and this includes Kenya Commercial Bank (KCB), I&M Bank, Cooperative Bank, Equity Bank, Family Bank, Stanbic Bank, National Bank of Kenya, Prime Bank and Diamond Trust Bank. Six respondents were targeted for each bank bringing the total number of respondents to 54. This study adopted a census in arriving at the respondents to the study. The reason for the selection of this approach of sampling is that the research was concentrated at the headquarters of the mentioned commercial banks because they house important information on their respective e-banking strategies. This study utilized a questionnaire as the research tool used in the collection of primary data to back up the secondary data as captured in the literature review. The questionnaire comprised of both open and closed-ended questions.

There was the use of a linear regression model in analysis of collected data. The regression model that the study utilized was: $Y=\beta 0 + \beta 1\ X1+ \beta 2\ X2+ \beta 3\ X3 + \beta 4\ X4 + \varepsilon$. In this case, the dependent variable was the growth of Commercial Banks (Y) while the dependent variable comprised of (X1) Online Banking, (X2) Point of Sale, (X3) Electronic Bank Transfer, (X4) Virtual Assistants and Chatbots. β1, β2, β3 and β4 are the coefficient of X1, X2, X3 and X4, respectively while ε is error term. On the other hand, qualitative data was analysed using SPSS version 29. The analyzed data was then presented in figures, tables, and charts for ease of interpretation. The results of the regression analysis was used to determine the relative strength in the various components of the independent variables compared to the dependent variable

4.0 Results and Discussion

4.1 Descriptive Statistics

4.1.1 Descriptive Statistics for Online Banking

There were several statements on the effect of online banking on growth of commercial banks in Kenya. The respondents to this study were asked to indicate the extent of their agreement with each statement in regard to online banking and how it has influenced growth of commercial banks in Kenya. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4 = Agree and 5 = Strongly agree was used. The findings are as shown in Table 1.

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Table 1: Descriptive Statistics for online banking

Statements on online banking	Mean	Std. Dev
SMS banking can enhance financial inclusion in Kenya, considering the high mobile phone penetration in the country.	3.43	0.745
Clients are satisfied with the user-friendliness of Internet/web banking platforms in Kenya, including aspects like navigation, design consistency, and accessibility.	3.51	0.739
Mobile banking applications in Kenya offer a consistent user experience, enhanced functionality, and robust transaction security.	3.42	0.735
Mobile banking has the potential to improve financial access and convenience for individuals in Kenya	3.30	0.691
Average scores	**3.42**	**0.731**

The findings displayed in Table 1 established that majority of the respondents agreed that SMS banking can enhance financial inclusion in Kenya, considering the high mobile phone penetration in the country (mean = 3.43; Std. Dev = 0.745), clients are satisfied with the user-friendliness of internet/web banking platforms in Kenya, including aspects like navigation, design consistency, and accessibility (mean = 3.51; Std. Dev = 0.739), mobile banking applications in Kenya offer a consistent user experience, enhanced functionality, and robust transaction security (mean = 3.42; Std. Dev = 0.735) and mobile banking have the potential for improving financial access and convenience for individuals in Kenya (mean = 3.30; Std. Dev = 0.691). The findings by a majority of the respondents in this research indicated that SMS banking has a significant potential as a growth strategy in affirmation that by Makurumidze and Rwodzi (2023), who indicated that SMS banking had significant potential as a growth strategy for commercial banks in Zimbabwe, particularly due to the widespread usage of mobile phones in the country.

On usability issues in internet/web banking platforms, such as complex navigation, inconsistent design elements, and limited accessibility for users with disabilities, the findings of this research are in line with those by Osuji, Erhijakpor, and Mgbeze (2023) who identified usability issues in internet/web banking platforms, such as complex navigation, inconsistent design elements, and limited accessibility for users with disabilities. In addition, the findings by all the respondents to this research who acknowledge the existence of issues in transaction security is in line with those of Tsindeliani et al. (2022) who also found gaps in mobile banking services in Kenya, including inconsistent user experiences across different banking applications, limited functionality, and issues related to transaction security. The findings by a majority of all the respondents who indicated one or more factors are in line with that of Tertia and Nurbasari (2022) who found that customer trust in mobile banking was influenced by factors such as data privacy, transaction security, fraud prevention measures, and the reputation of the banks.

4.1.2 Descriptive Statistics for Point of Sale (POS)

There were several statements on the effect of Point of Sale (POS) on growth of commercial banks in Kenya. The respondents to this study were asked to indicate the extent of their agreement with each statement in regard to Point of Sale (POS) and how it has influenced

growth of commercial banks in Kenya. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4 = Agree and 5 = Strongly agree was used. The findings are shown in Table 2.

Table 2: Descriptive Statistics for Point of Sale

Statements on Point of Sale	Mean	Std. Dev
Commercial banks are found to aggressively implement biometric payment solutions.	3.26	0.734
It is key for commercial banks to adopt biometric payment in order to improve security and efficiency in financial transactions.	3.48	0.721
Customers express contentment with the adoption of biometric payment solutions in commercial banking.	3.20	0.753
The implementation of POS systems can enhance the payment experience for both customers and businesses	3.18	0.698
Average scores	**3.28**	**0.727**

The findings displayed in Table 2 established that majority of the respondents agreed that commercial banks are found to aggressively implement biometric payment solutions (mean = 3.26; Std. Dev = 0.734), it is key for commercial banks to adopt biometric payment to improve security and efficiency in financial transactions (mean = 3.48; Std. Dev = 0.721), customers express contentment with the adoption of biometric payment solutions in commercial banking (mean = 3.20; Std. Dev = 0.753) and the implementation of POS systems can enhance the payment experience for both customers and businesses (mean = 3.18; Std. Dev = 0.698).

The findings by a majority of the respondents in this research are in line with those by Mróz-Gorgoń et al. (2022) who found that customers were generally receptive to biometric payments due to the convenience, security, and speed they offered. Given that the implementation of POS might be associated with some challenges that might affect its intended benefits. The respondents to this research, with this fact in mind, were asked to give recommendations that would enhance a seamless adoption of Point of Sale. In this case, one of the recommendations provided by 70% of the respondents was that there was the need to ensure that the POS is offered at an affordable price, as this will help in dealing with the user adoption barriers, which was one of the challenges as highlighted in a study by Enache et al. (2023).

Another recommendation provided by the respondents to this research was to dealing with the issue of integration complexities, which is also another key area of concern as highlighted in research by Enache et al. (2023). On this issue of complexities in integration, the respondents were asked to give recommendations on the way forward given this challenge. In this case, 60% of the study participants highlighted that there is the need to advise the manufacturer of the system to ensure that the system is customized in a manner that has a user-friendly interface.

4.1.3 Descriptive Statistics for Electronic Bank Transfer

There were several statements on the effect of electronic bank transfer on growth of commercial banks in Kenya. The respondents to this study were asked to indicate the extent of their agreement with each statement in regard to electronic bank transfer and how it has influenced growth of commercial banks in Kenya. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4 = Agree and 5 = Strongly agree was used. The findings are shown in Table 3.

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Table 3: Descriptive Statistics for Electronic Bank Transfer

Statements on Electronic Bank Transfer	Mean	Std. Dev
Wire transfers have significantly contributed to the growth of commercial banks.	3.34	0.741
There are quite several challenges that are associated with the adoption of electronic bank transfers.	3.51	0.735
Most commercial banks have now adopted ACH (Automated Clearing House) transfers.	3.45	0.747
Wire transfers have helped enhance transaction volumes and increase revenue for commercial banks	3.27	0.689
Average scores	**3.39**	**0.728**

The findings displayed in Table 3 established that majority of the respondents agreed that wire transfers have significantly contributed to the growth of commercial banks (mean = 3.3; Std. Dev = 0.741), there are quite several challenges that are associated with the adoption of electronic bank transfer (mean = 3.51; Std. Dev = 0.735), most commercial banks have now adopted ACH (Automated Clearing House) transfers (mean = 3.45; Std. Dev = 0.747) and wire transfers have helped in enhancing transaction volumes and increasing revenue for commercial banks (mean = 3.27; Std. Dev = 0.689).

The findings by a majority of the respondents in this research is in affirmation with those by Sirengo and Muturi (2022) who found that wire transfers contributed significantly to the growth of commercial banks, with higher transaction volumes associated with increased revenue streams. In addition, the findings by a majority of the respondents in this research are in line with those by Olli (2022) who identified gaps such as varying costs, different processing times, and fragmented infrastructure across the different electronic bank transfer systems. In addition, the conformation by a majority of the respondents to this research who found that there has been increased adoption of ACH transfer by various commercial banks can be attributed to the benefits that can be derived from it as cited in a study by Mwiti (2020) who found that ACH transfers offered cost-effective and efficient payment solutions for commercial banks, particularly for recurring transactions such as payroll and bill payments.

4.1.4 Descriptive Statistics for Virtual assistants and chat bots

There were several statements on virtual assistants and chatbots and growth of commercial banks in Kenya. The respondents to this study were asked to indicate the extent of their agreement with each statement in regard to virtual assistants and chatbots and how it has influenced growth of commercial banks in Kenya. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4 = Agree and 5 = Strongly agree was used. The findings are shown in Table 4.

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Table 4: Descriptive Statistics for Virtual Assistants and Chatbots

Statements on Virtual Assistants and Chatbots	Mean	Std. Dev
The introduction of innovation to include chatbots and virtual assistants has led to a significant reduction in operational costs for commercial banks.	3.28	0.756
Incorporating AI into ACH transfers offers cost-effective and efficient payment solutions for commercial banks, particularly for recurring transactions such as payroll and bill payments.	3.31	0.742
AI integration with RTGS have a positive impact on commercial banks' operational efficiency by enabling real-time settlement, reducing transaction processing time, and minimizing liquidity risks.	3.54	0.739
In-app payments have the potential to drive commercial banks' growth by offering seamless and convenient payment experiences within mobile applications.	3.48	0.691
Implementing effective Internet/web banking strategies in banks leads to growth in terms of increased customer acquisition, improved operational efficiency, and enhanced customer satisfaction.	3.19	0.674
Average scores	**3.36**	**0.720**

The findings displayed in Table 4 established that majority of the respondents agreed that the introduction of innovation to include chatbots and virtual assistants have led to a significant reduction in operational costs for commercial banks (mean = 3.28; Std. Dev = 0.756), virtual assistants incorporating ACH transfers offer cost-effective and efficient payment solutions for commercial banks, particularly for recurring transactions such as payroll and bill payments (mean = 3.31; Std. Dev = 0.742), virtual assistants' integration with RTGS have a positive impact on commercial banks' operational efficiency by enabling real-time settlement, reducing transaction processing time, and minimizing liquidity risks (mean = 3.54; Std. Dev = 0.739), In-app payments have the potential to drive commercial banks' growth by offering seamless and convenient payment experiences within mobile applications (mean = 3.48; Std. Dev = 0.691) and implementing effective internet/web banking strategies in banks leads to growth in terms of increased customer acquisition, improved operational efficiency, and enhanced customer satisfaction. (mean = 3.19; Std. Dev = 0.674).

The findings by a majority of the respondents in this research are in affirmation to that by Umamaheswari and Valarmathi (2023) who found higher levels of satisfaction with utilization of virtual assistants and chatbots, citing advantages such as increased speed of response, availability, and personalized assistance. In addition, the finding in this research is also in agreement with that by Kanishcheva (2021) who found that AI-powered tools played a critical role in understanding customer needs and preferences and in providing relevant and timely information, thus contributing to greater customer satisfaction and loyalty.

The finding in this research whereby it was found that there was a significant reduction in operational cost on the adoption of virtual assistants and chatbots is in line with that of

Mackhija and Chacko (2021) who found that virtual assistants and chatbots in customer service and support operations led to a significant reduction in operational costs for commercial banks. In addition, the finding in this research is in agreement with that of Mwiti (2020) who found that incorporating AI to ACH transfers offers cost-effective and efficient payment solutions for commercial banks, particularly for recurring transactions such as payroll and bill payments. Besudes that, the findings by a majority of the respondents in this research is in line with that by Bhattacharya, Das and Basu (2022) who found that AI integration to RTGS had a positive impact on commercial banks' operational efficiency by enabling real-time settlement, reducing transaction processing time, and minimizing liquidity risks.

4.1.5 Growth of commercial banks

There were several statements on growth of commercial banks in Kenya. The respondents to this study were asked to indicate the extent of their agreement with each statement in regard to growth of commercial banks in Kenya. A scale of 1-5 where 1= strongly disagree, 2= disagree, 3= neutral, 4 = Agree and 5 = Strongly agree was used. The findings are shown in Table 5.

Table 5: Descriptive Statistics for Growth of Commercial Banks

Statements on Growth of Commercial Banks	Mean	Std. Dev
Online banking has positively impacted profitability of commercial banks in recent years.	3.42	0.739
Point of sale including (Traditional POS terminals, in-app payments, and biometrics payments) have positively impacted profitability of commercial banks in recent years.	3.17	0.728
Electronic bank transfers including RTGS and ACH have positively impacted net income of commercial banks in recent years.	3.29	0.741
Virtual assistant chatbots have positively impacted profitability of commercial banks in recent years	3.54	0.675
Average scores	**3.36**	**0.721**

The findings displayed in Table 5 established that majority of the respondents agreed that online banking has positively impacted profitability of commercial banks in recent years (mean = 3.42; Std. Dev = 0.739), point of sale including (Traditional POS terminals, in-app payments, and biometrics payments) have positively impacted profitability of commercial banks in recent years (mean = 3.17 Std. Dev = 0.728), electronic bank transfer including RTGS and ACH have positively impacted net income of commercial banks in recent years (mean = 3.29; Std. Dev = 0.741) and virtual assistant chatbots have positively impacted profitability of commercial banks in recent years (mean = 3.54; Std. Dev = 0.675).

The findings in this research whereby a majority of the respondents indicated that virtual assistants and chatbots have a positive effect on growth of commercial banks is in line with that of Mackhija and Chacko (2021) who found that the implementation of virtual assistants and chatbots in customer service and support operations led to a significant reduction in operational costs for commercial banks. In addition, the finding in this research on electronic bank transfers through the use of RTGS and Chatbots is in line with that by Bhattacharya, Das, and Basu (2022) who found that RTGS had a positive impact on commercial banks' operational efficiency by enabling real-time settlement, reducing transaction processing time, and

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minimizing liquidity risks. Besides that, the positive influence of Point of Sale (POS) and growth of commercial banks, was also echoed in research by Chen, Yang, and Ma (2022) who found that the adoption of traditional POS terminals was positively associated with increased transaction volumes, revenue growth, and improved customer satisfaction for commercial banks.

4.2 Regression Analysis

The researcher conducted multiple regression analysis to examine relationship between e-banking strategies and growth of commercial banks in Kenya. In this case, online banking, point of sale, electronic bank transfer virtual assistants, and chatbots were regressed on performance. The findings of Model Summary, ANOVA, and Regression Coefficients are shown in subsequent sections. Table 6 shows the results of the variations between the independent variable (e-banking strategies) and the dependent variable (growth of commercial banks).

4.2.1 Model Summary

Table 6: Summary of the linear regression model

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.436[a]	0.171	0.109	0.77428

The coefficient of determination (R^2) as indicated in Table 6 above shows how growth of commercial banks is influenced by e-banking strategies. The e-banking strategies include-online banking, point of sale, e-banking transfer, virtual assistants, and chatbots. The correlation coefficient R shows the strength of the linear relationship between the dependent variable (Y) and the independent variable (X). The coefficient of determination R^2 explains the amount of variance accounted for in the relationship between two (or more) variables.

From these results, the correlation coefficient R= 0.171 and the coefficient of determination R^2= 0.109. Since the value of R tends towards 1, it shows a positive relationship between the independent variable (e-banking strategies) and the dependent variable (growth of commercial banks). The value of R^2 shows that there is a 10.9% variance in growth in commercial banks that is attributed to e-banking strategies. These findings indicate that other factors affect the growth of commercial banks.

4.2.2 ANOVA

An ANOVA was carried out at 5% level of significance level. Table 7 shows the results of the ANOVA Test.

Table 7: Results of ANOVA Test

Model 1	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.549	3	1.527	2.746	.033[b]
Residual	30.239	51	.589		
Total	36.788	54			

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The results in Table 7 above indicate that the independent variable (e-banking strategies) has a lowsignificant effect on growth of commercial banks. This is explained by the low F value (2.746) and a pvalue (0.033) which is significant at 95% confidence interval. This indicates that e-banking strategies have a low effect on the growth of commercial banks.

Table 8: Regression Coefficients

Model	**Un standardized Coefficients**		**Standardized coefficients**	**T**	**Sig**
	β	**Std. Error**	**Beta**		
Constant	1.508	1.131		1.333	0.001
Online banking	0.481	0.228	0.203	2.110	0.002
Point of Sale	0.347	0.127	0.217	2.732	0.003
E-banking transfer	0.416	0.115	0.316	3.617	0.001
Virtual assistants and chatbots	0.267	0.103	0.125	2.592	0.000

From the computed data the established regression equation was

$$Y = 1.508 + 0.481X_1 + 0.347\ X_2 + 0.416\ X_3 + 0.267\ X_4$$

Where:

Y= Growth of commercial banks**,**

X_1= Online banking,

X_2= Point of Sale,

X_3= E-banking transfer,

X_4= Virtual assistants and chatbot

The regression coefficient for online banking (β= 0.481, p= 0.002), shows that financial capacity is statistically significant on performance. An increase in online banking by one unit would cause growth in commercial banks by a factor of 0.481. This implies that online banking positively affects performance.

On the other hand, the regression coefficient for point of sale (β= 0.347, p= 0.003), shows that point of sale is statistically significant on growth of commercial banks. An increase in point of sale by one unit would lead to an increase in growth of commercial banks by a factor of 0.347. This implies that point of sale positively affects growth of commercial banks.

Apart from that, the regression coefficient for e-banking transfer (β= 0.416, p= 0.001), shows that technical capacity is statistically significant on growth of commercial banks. An increase in e-banking transfer by one unit causes an increase in growth of commercial banks by a factor of 0.416, at 0.001 level of significance. This implies that e-banking transfer positively affects growth of commercial banks.

Finally, the regression coefficient for virtual assistants and chatbots (β= 0.267, p= 0.000), shows that virtual assistants and chatbots are statistically significant on growth of commercial banks. An increase in virtual assistants and chatbots by one unit causes an increase in growth of commercial banks by a factor of 0.267. This implies that virtual assistants and chatbots had a positive effect on growth of commercial banks.

5.0 Conclusion

In addressing the first objective regarding online banking, the findings suggest that SMS banking is considered a valuable growth strategy for commercial banks in Kenya. The widespread ownership of mobile phones among clients facilitates the adoption of SMS banking, despite concerns about unread messages and the intrusiveness of promotional content. Additionally, while Internet banking platforms face usability issues and security concerns remain significant, these do not seem to deter the overall confidence in online banking's potential for growth. It appears crucial for banks to continue enhancing the security and usability of their platforms to maximize their growth potential through online banking services.

The study's exploration of the effects of Point of Sale (POS) systems on the growth of commercial banks revealed a generally positive impact, particularly with the introduction of biometric payment solutions. These innovations have enhanced customer satisfaction and have contributed to fraud reduction, critical factors in the growth and trust in banking services. However, the persistence of challenges such as inconsistent user experiences and lack of interoperability between systems suggests that banks need to focus on these areas to fully leverage the potential of POS systems in driving growth.

Regarding the third objective on the impact of Electronic Bank Transfers, the findings indicate that while wire and Automated Clearing House (ACH) transfers are viewed positively for their contribution to bank growth, issues such as varying costs and processing times, along with fragmented infrastructure, present significant hurdles. The positive reception of ACH transfers, in particular, due to their cost-effectiveness and efficiency, underscores the importance of streamlining electronic transfer systems and standardizing practices to overcome these challenges and enhance the growth and efficiency of commercial banking operations.

Finally, the study's examination of virtual assistants and chatbots revealed a significant positive impact on the growth of commercial banks through increased customer satisfaction and reduced operational costs. The benefits underscored by respondents highlight the importance of AI in enhancing customer service within the banking sector. However, the successful deployment of such technologies depends heavily on their ease of use and perceived usefulness, emphasizing the need for banks to invest in user-centric designs and continuous improvement of AI tools to ensure they meet customer needs effectively.

6.0 Recommendations

Enhancing the usability of SMS banking is essential. Banks need to focus on creating user-friendly interfaces and ensuring clear communication to address concerns related to unread SMS messages. Banks should prioritize streamlining navigation, ensuring consistency in design elements, and improving accessibility for all users, including those with disabilities.

These efforts can lead to higher adoption rates and enhanced customer satisfaction, which are vital for growth.

Transaction security in mobile banking applications must also be strengthened. By implementing robust security measures such as multi-factor authentication, encryption protocols, and proactive monitoring systems, banks can instill greater trust and confidence among their users. Additionally, promoting customer education on security features will play a critical role in fostering trust and ensuring that customers are well-informed about protecting their personal information.

For Point of Sale (POS) systems, improving integration and affordability is necessary. Banks should work with technology providers to simplify integration processes and make POS solutions more affordable to encourage broader merchant adoption. This approach can help overcome interoperability issues and inconsistent user experiences, enhancing the effectiveness of these payment solutions.

Streamlining processes for Wire Transfers and optimizing Automated Clearing House (ACH) transfer systems are also imperative. Standardizing fee structures and reducing processing times can address the challenges related to varying costs and enhance customer satisfaction. For ACH transfers, collaborating with industry stakeholders to reduce costs and enhance interoperability will maximize their efficiency and effectiveness.

Furthermore, banks should fully embrace AI-powered customer support to leverage the benefits of chatbots and virtual assistants. Deploying these technologies for routine inquiries and transaction assistance can improve response times and provide personalized assistance, enhancing customer satisfaction while reducing operational costs. Prioritizing ease of use and building trust in technology when deploying chatbots and virtual assistants is crucial. Banks should ensure that these tools have intuitive interfaces and provide relevant, timely information. Building trust through transparent communication and proactive customer support will encourage broader adoption among customers.

Lastly, banks should maintain their commitment to investing in technological innovations such as Real-Time Gross Settlement (RTGS) systems and in-app payment capabilities. By staying at the forefront of emerging technologies and adopting customer-centric approaches, banks can enhance operational efficiency, improve customer satisfaction, and maintain competitiveness in the rapidly evolving digital banking landscape.

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