E-Banking Strategy and Performance of Commercial Banks in Kenya

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ABSTRACT

Technological innovations in the aspect of electronic banking (e-banking) have progressively advanced and changed the manner in which banks offer services. The use of varied forms of technological innovations has become a key strategy that influences the competitiveness and performance of commercial banks. Subsequently, banks are investing more in adopting and implementing innovative e-banking strategies. Although numerous studies have inspected the effect of e-banking on banks across the world, the knowledge gap is that few studies have examined the impact of e-banking strategies on commercial banks' performance in Kenya. The objectives of this study were to predict the impact of agency banking, mobile banking, the use of ATMs, and internet banking on the commercial banks' financial performance in Kenya. Agency theory, contingency theory, diffusion of innovations theory, and technology acceptance theory formed the theoretical basis of this study. In its research design, the study used the descriptive approach. The target population comprised managers of 40 commercial banks and the study utilized the purposive sampling method to select 100 respondents comprising of 40 senior managers and 60 operations managers. Descriptive statistics, correlation, and regression analysis were used to analyze data. Correlation analysis indicated that mobile banking (r = 806, p = 0.000), agency banking (r = 0.737, p = 0.000), internet banking (r = 0.466, p = 0.000), and ATM banking (r = 0.547, p = 0.000) have statistically significant relationships with the commercial banks' performance. Findings indicate that e-banking accounts for 71% (R^2 = 0.710) of the variation in the commercial banks' performance. Moreover, the study found out that e-banking strategies of agency banking and mobile banking are statistically significant predictors (p<0.01, while internet banking and ATM banking are statistically insignificant predictors (p>0.01). Based on these findings, the study concludes that rely on e-banking strategies in enhancing their performance, particularly mobile banking and agency banking. Furthermore, the study concludes that ATM banking and internet banking contribute minimally to the commercial banks' performance in Kenya. Thus, the study recommends banks to optimize mobile banking and agency banking because they are statistically significant predictors while increasing awareness of internet banking and addressing insecurity issues of ATM banking. Thus, further research should consider establishing factors that account for the unexplained variances of 29% in the performance of commercial banks.

1. Introduction

The increasing level of competition in the banking industry, advancing information technology, and swelling demand of services have compelled banks to focus on electronic banking strategy in improving their performance. According to Njoroge and Mugambi (2018), electronic banking is beneficial because it reduces costs, promotes the provision of customized services, diminishes lead-time, and increases lucrative opportunities. The current business environment is quite in predictable because companies operate in dynamic and erratic condition characterized by robust changes, innovations, high demand, and provision of banking services electronically. In the banking industry, banks have embraced e-banking strategies for various reasons, including cost-effectiveness, efficiency, and extensiveness (Saunders & Cornet, 2011; Peng, Kurnia, & Liu, 2010). Hence, banks currently utilize electronic banking strategy to keep abreast with the trends of e-commerce in the business world. In the banking industry, financial businesses have been focusing on adopting techniques that expand their client base and increase their competitiveness in the financial markets (Lam, 2013; Diar, 2017). Many banks have established that an increasing proportion of customers prefer consuming banking services electronically. Moreover, many banks have started to provide banking services for 24 hours for customers to access and utilize them at their convenient time and places (Amin, 2017). Given that financial institutions progressively penetrate into the retail segment of the market, increased competition has led to improved quality of services provided to clients.

The innovative financial services focus on the provision of diverse services, unique banking items, and safety of transactions. The manner in which commercial banks provide services and manage employees to determine their capacity to undertake their functions, expand market share, achieve consumer loyalty, and attain competitiveness. In the current world, the adoption of innovations, aggressive marketing, delivery of quality services, and effective administration are some of the crucial factors that drive competitiveness of banks (Lam, 2013; Peng et al., 2010). As the majority of banks provide similar services, innovations are the key factor that would differentiate their competitiveness. Therefore, commercial banks aim to create innovative products and services that improve their competitiveness, expand their markets, and boost productivity. Developments in data science and innovations have enabled banks to make predictions regarding their performance and competitiveness of markets. Data analysis and the use of innovations have enabled banks to make accurate predictions and evidence-based decisions that aid in the improvement of performance. Forces of globalization and technological advancements compel banks to embrace current strategies in management, delivery of services, and innovations (Sikdar, Kumar, & Makkad, 2015). Currently, e-banking strategy is a major driver of performance and growth in the banking industry because it attracts and retains customers, expand markets, and enhance competitiveness (Njoroge & Mugambi, 2018). In the past two decades, the banking industry in Kenya has undergone major changes. Of importance are e-banking strategies, which have become common mode of delivering services to customers (Njoroge & Mugambi, 2018). Currently, banks use automatic teller machines (ATMs), electronic fund transfer gadgets (ETFPOS), mobile phones, point of sale gadgets (POS), internet, and traditional offices (Raina, 2014). Each of these strategies has varied effects on the commercial banks' performance.

Electronic banking strategy comprises the delivery and accessibility of financial services through electronic devices, such as credit cards, automated teller machines, and computers. Hammoud, Bizri, and Baba (2018) expound that e-banking entails banking business performed through the Internet, which contrast the traditional way of delivery through physical offices. By using e-

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banking strategy, customers can easily monitor their accounts in real-time, pay their bills, acquire loans, transfer money, and perform other financial transactions. According to Muoria and Moronge (2018), e-banking has grown and expanded considerably in Kenya owing to the evolution and developments of innovations in the banking industry. In Kenya and across the globe, e-banking is a strategy that enables bank to register notable growth, profits, performance, and competitiveness (Njoroge & Mugambi, 2018). E- banking strategy allows banks to diversify their services and products through the adoption of technological innovations (Peng et al., 2010). Given that banking provides multiple ways of service delivery, automated teller machines, telephone banking, mobile banking, internet banking, and agency banking are common methods.

The main focus of the management process is to empower companies to recognize and augment strategies that provide a competitive advantage in the target markets. In the assessment of performance, usable methodologies comprise the evaluation of financial records, management strategies, and market share. Some of the important indicators of the organizational financial performance are income per share (EPS), profitability, returns on equity (ROE), and return on assets (ROA) (Ilyukhin, 2015). Moreover, operational activities and market share are other factors that can determine the performance of organizations (Chowdhury, Rana, Akter, & Hoque, 2018). Hence, organizational performance incorporates other measures such as stock turnover, debt ratios, turnover, and normal accumulation period.

The Kenyan Constitution, Central Bank of Kenya (CBK) Act (2015), the Banking Act (2015), the Kenya Deposit Insurance Act (2012), the National Payment System Act (2011), and the Microfinance Act (2006) are laws and legislations that regulate the establishment and operations of banks in Kenya (Central Bank of Kenya, 2019). The CBK, which is the regulator of the banking industry, has the mandate of the formulating laws, applying policies, and sustenance of an effective financial system (PWC Kenya, 2019). From the record of 31 December 2015, the baking industry had registered the existence of a mortgage finance company and 40 banks (Central Bank of Kenya, 2015). The banking industry in Kenya has received growth in the past decade due to the renewed public confidence and economic stability, resulting in over 9% growth in 2015-2019 (Central Bank of Kenya, 2019). In Kenya, financial institutions encounter various challenges, including fraud, theft, high competition, dynamic customer needs, technological developments (Njoroge & Mugambi, 2018). These challenges have compelled commercial banks to devise, adapt, and implement technology and management practices as a means of reducing costs and improving quality (Hammoud et al., 2018). Therefore, the examination of e-banking strategy is essential to establish the impact of the commercial banks' performance.

2. Statement of the Problem

Staying updated with the growth and progression of in innovations in banking industry is a critical aspect of information technology that has compelled banks to devise, adapt, and implement numerous strategies of e-banking. Banks in Kenya and all over the world have focused their competitive strategies to e-banking by implementing the use of ATMs, agency banking, mobile banking, and internet banking (Simon, 2016). However, quantification of the impact of these strategies is still debatable in the banking industry because their impact varies from one region or country to another, depending on micro- and macro-economic factors (Njoroge & Mugambi, 2018). In Kenya, growing rivalry in the banking industry has made banks adopt and implement various strategies of e-banking. Recent studies established that customers experience problems related to efficiency, reliability, usability, security, privacy, and responsiveness (Hammoud et al., 2018; Njoroge & Mugambi, 2018). Therefore, despite implementing e-banking strategies, banks

continue to experience challenges in realizing their expected benefits to customers and improving performance.

Further studies have singled out specific problems that customer encounter in the use of e-banking services. Insecurity, long queues, and high investments with low revenues are some of the factors have made banks to shift from the use of ATMs and focus on agency banking, mobile banking, and internet banking (Ayemoba, 2017). However, another study on the effect of e-banking on the liquidity exposed that the Internet banking has a negative impact, while the agency and mobile modes of banking have a positive influence (Chirchir & Oluoch, 2019). Hence, banks have challenges in improving their performance, and at the same time, satisfying diverse consumer needs using e-banking strategy. Since e-banking relies on the application of electronic devices and innovations, it has resulted in the delivery of degraded banking services. Previous studies suggest that the existence of dehumanized banking methods results in the declined personal contact, which means that there is a decline in the level of customer loyalty and satisfaction (Juwaheer, Pudaruth, & Ramdin, 2012). Nevertheless, previous studies have also indicated that customer satisfaction associates with features of services, such as convenience, security, and accessibility (Simon, 2016; Njoroge & Mugambi, 2018). Aduda and Kingoo (2012) demonstrated in their study that e-banking and bank performance have positive relationships. However, the report based its findings on the perception of growth from a bank's point of view. In the Kenyan context, limited studies have examined the collective impact of e-banking strategies, such as internet, agency, mobile, and ATMs, on the growth and performance of banks.

3. Research Objectives

The principal aim of the study is to predict the influence of e-banking strategy on commercial banks' performance in Kenya.

The specific objectives were:

(i) To measure the effect of mobile banking on commercial banks' performance in Kenya
(ii) To evaluate the effect of agency banking on the commercial banks' performance in Kenya
(iii) To scrutinize the effect of internet banking on commercial banks' performance in Kenya
(iv) To determine the impact of automated teller machines on commercial banks' performance in Kenya.

4. Theoretical Literature Review

In the theoretical basis, the study relied on agency theory, contingency theory, diffusion of innovations theory, and technology acceptance model. The theories were pertinent to the study since they institute a predictive impact of e-banking strategies on banks' performance in Kenya.

4.1 Agency Theory

It postulates that the association between the primary organization and agents determines organizational performance. Michael Jensen and Willian Meckling developed the agency theory to elucidate the nature of the relationship between the principal and agents in organizations (Njoroge & Mugambi, 2018). This theory applies in cases where an organization (principal) delegates some of its duties and responsibilities to another entity (agent). When organizations want to venture into new markets, they employ agents to undertake decisions and business activities on their behalf. The use of agency in the delivery of services allows organizations to sacrifice the

short-term profits for the sake of growth and higher earnings in the end (Panda & Leepsa, 2017). Hence, the principal-agent relationship determines the way organizations delegate their services to third parties who help them in improving their performance in remote markets. In this case, this theory applies in explaining that agency banking stems from the relationship between commercial banks and their agents. In their efforts to venture in remote markets in small towns, estates, and localities, banks have modeled their services in agency banking. Njoroge and Mugambi (2018) argue that banks employ agency banking as an organizational structure that allows them to penetrate and dominate competitive markets where customers demand reliable, accessible, safe, and cheap banking services. The consequence of agency banking is that agents have to make important decisions on behalf of banks, which have significant ramification the overall performance. According to Panda and Leepsa (2017), agency theory explains how organizations can reduce risks and increase their profits by sub-contracting their roles to agents who incur costs in their delivery of services and accrue profits to organizations. Therefore, agency theory effectively describes the way agency banking affects commercial banks' performance in Kenya.

4.2 Contingency Theory

This theory explicates that the performance of organizations is dependent on the management strategies employed to fit unique conditions and systems. Fred Edward Fiedler formulated in this theory to explain why specific strategies are not applicable in the management of organizations. Vidal et al. (2017) hold that contingency theory refers to a dynamic process of organizations, which changes in respond to conditions and systems employed. For effective performance to occur, organizations need to align their needs, management structures, and systems in their internal environment to varied demands of the external environment. The purpose of the management is to organize and align organizational structure and processes to fit into contingencies (Wadongo & Abdel-Kader, 2015). Thus, the way organizations organize and align their contingency factors to determine their performance. For this study, the contingency theory provides a conceptual outline that defines the association between e-banking strategies as contingency factors that influence the banks' performance in the banking industry. For organizations to register outstanding performance, they must establish good fit of constituent contingencies, such as culture, norms, and values, which characterize effectiveness and efficiency (Wadongo & Abdel-Kader, 2015). Over time, a shift in paradigm in the banking industry has led to both negative and positive impacts on the banks' performance, irrespective of the alignment and fitness of organizational structures and internal processes (Njoroge & Mugambi, 2018). Banks ought to align their contingency factors to the context of the banking industry to perform well and keep abreast with the dynamic competition. Vidal et al. (2017) argue that poor alignment of contingencies has a negative influence on organizational performance. Therefore, the application of this theory in the determination of the cooperative effects of e-banking strategies, namely, internet banking, ATM banking, mobile banking, and agency banking, on the performance of banks is necessary.

4.3 Diffusion of Innovations Theory

This theory explains how innovations spread in the market over time in a systematic manner. In 1962, Everett Rogers developed this theory to highlight the process that innovations undergo before they attain their maximum usage in their respective markets and subsequently declines as other innovations become competitive. According to the theorist, communication channels, the nature of innovation, early adopters, social system, and time are factors that determine the spread of innovations (Akca & Ozer, 2014). For innovations to spread quickly in the target market, they must be effective their usage, a significant number of customers should adopt it, robust

communication channel should exist, considerable time is necessary for adoption, and the social system should encourage adoption. Moreover, the adoption of innovations follows the five-step process of information, persuasion, judgment, execution, and validation. The diffusion of innovations theory applies in the banking industry because e-banking services comprise innovations that banks have established, espoused, and implemented in various degrees. Across the world, banks have adopted e-banking strategies to different levels, depending on the level of technology, economic status, regulations, and social systems (Al-Jabri & Sohail, 2012). Developed countries have a higher level of e-banking strategies than developing countries such as Kenya. The examination of the banking industry in Kenya shows that agency banking, ATM banking, mobile banking, and internet banking are some of the e-banking strategies adopted and implemented by banks.

4.4 The Technology Acceptance Model

This theory elucidates the extent to which organizations and customers accept information systems in their work. Fred Davis and Richard Bagozzi are theorists who developed this theory and employed it in assessing the extent to which customers perceive ease-of-use and helpfulness of technologies (Taherdoostab, 2018). Perceived usefulness is the ability of individuals or organizations to improve their performance through the acceptance of new technology. Comparatively, perceived ease of use measures how easy individuals or organizations employ technology systems. TAM applies in the banking industry because e-banking techniques constitute information technology systems that banks employ in delivering services to their customers. Banks have adopted agency banking, mobile banking, ATM banking, and internet banking in the delivery of their services, but the degree of their implementations varies from one bank to another (Johnstone, 2010). Moreover, customers access banking services from these e-banking strategies at various levels of usage. In Kenya, mobile banking, agency banking, and ATM are major drivers of performance and profitability in the banking industry (Furst et al., 2015; Jegede, 2014). Evidently, banks employ strategies of e-banking to permit their customers to access and utilize financial services through multiple channels.

5. Empirical Literature Review

5.1 Mobile Banking and Performance

Based on the diffusion innovations theory, a study conducted in Saudi Arabia established that mobile banking is a recent e-banking strategy adopted by banks in the provision of their services to customers (Al-Jabri & Sohail, 2012). The study reported that the growth and advancements of innovations have resulted in the emergence and dominance of mobile phones as cheap and usable electronic gadgets. Findings link mobile banking to the banks' performance due to the advent of financial applications that connect mobile users to their bank accounts. The study also points out that the acceptance of mobile banking has been affirmative and experienced significant growth in the past five years. Another study performed in the United States to evaluate factors that influence the usage of mobile banking based of technology acceptance model revealed that usefulness, ease-of-use, reliability, privacy, innovativeness, intention, attitude, enjoyment, and trust are nine factors that influence mobile banking (Zhang *et al*., 2018). Findings imply that banks that provide services while considering these factors to the customers enhance the acceptance and utilization of mobile banking.

In Asia, the use of mobile phones has expanded and grown exponentially in the banking industry. According to Puschel et al. (2010), trends in the banking industry shows that bankers have noted

the shift in the accessibility of banking services as more customers own and prefer using their mobile phones in performing tasks every day. For instance, in Japan, Jibun Bank in Japan has realized the trend of mobile banking and decided to provide extensive services through mobile banking (Kim & Mirusmonov, 2010). With mobile banking, the Japanese banks have seen their customers increased by over half a million. In the United States, Chase bank has adopted mobile banking, which has given its competitive advantage in the market as its customers have increased significantly in the past decade (Business Wire, 2014). Hence, across the world, mobile banking appears to be a major driver in the banking industry. In Kenya, mobile banking is increasingly gaining acceptance in the banking industry because customers have mobile phones and enjoy mobile transfer services. According to Mbiti and Weil (2011), M-Pesa has improved the adoption of mobile banking because it encourages money transfers and accessibility of money in the financial markets. The use of the mobile phone has revolutionized Kenya because statistics show that 93% of Kenyans own phones, 73% use their mobile phones to transfer money, and at least 23% transfer money daily (Demombynes & Thegeya, 2012). Banks in Kenya has noted the opportunity presented by the use of mobile phones to transfer money and have devised mobile banking to meet unique needs of customers. According to Njoroge and Mugambi (2018), mobile banking has a significant effect on the commercial banks' performance because it is accessible, convenient, affordable, and usable. Therefore, it is evident that mobile banking has a powerful effect on commercial banks' performance.

5.2 Agency Banking and Performance

Agency banking authorizes banks to expand and penetrate local markets and enhance their competitive advantage and market share while promoting accessibility of banking services and promoting financial inclusion. According to the World Bank (2018), about 1.7 billion people globally do not have access to formal banking. Agency banking targets these unbanked populations in various localities across the world. In Bangladesh, a country with 155 million population with most of them living in rural areas, agency banking has proved to be an efficient method of delivering financial services to people in remote areas (Siddiquie, 2014). Agency banking has boosted agricultural sector for farmers in remote areas of Bangladesh can easily access financial services. In developing countries where financial inclusion is low, agency banking has proved to be a significant promoter of financial inclusiveness among people. In Tanzania, a descriptive study demonstrated that agency banking enhances financial inclusion by increasing accessibility to banking services and enhancing convenience (Lotto, 2016).

In a study performed by Mugo et al. (2018) among Equity Bank, Cooperative Bank, and Kenya Commercial Bank in Thika Municipality showed that agency banking improves the commercial banks' performance because it increases accessibility and reliability financial services in localities within the town. In this study, researchers demonstrated that agency banking has an affirmative influence on commercial banks' performance. However, the study identified that insecurity and increasing competition of mobile banking are major factors threatens the growth of agency banking. In their study, Mugo et al. (2018) found out that the structure of startup capital accounts for 56.6% of the variation in the performance of banks agents. This finding implies that banks have to leverage on the way agency banks optimize their resources so that they can derive optimal profits and boost performance (Kandie, 2012). According to Ayumba (2018), agency banking explains 55.6% of the variation of the performance among small businesses. Further studies demonstrated that agency banking enhances accessibility to banking services, promotes quality of banking services, decreases costs, and improves profits (Kalinda et al., 2017; Mbugua & Omagwa, 2017).

Hence, empirical review shows that agency banking is a significant determinant of performance in the banking industry.

5.3 Internet Banking and Performance

In their study, Malhotra and Singh (2009) found out that internet banking improves performance because it targets global customers, efficient, reliable, and profitable. Furthermore, researchers pointed out that Internet banking is one of the e-banking strategies that modern banks have adopted and implemented in the provision of banking services. Tchouassi (2012) employed empirical studies from a sample of sub-Saharan countries to determine if internet banking contributes to extending banking services to the unbanked. An empirical study by Kumbhar (2011) examined alternative modes of banking and established that internet banking is increasing gradually. In their study regarding the use of internet banking in Dubai, Obeidat and Saxena (2016) revealed that security, safety, and convenience are significant drivers whereas slow computers, poor quality of internet and lack of customer care are main barriers.

A study undertaken among 31 employees of Kenya Commercial Bank indicated that internet banking improves performance of banks by reducing transaction time and improving quality of services (Kombo & Wafula, 2015). Similar empirical studies in Kenya found out that internet banking has a positive impact on the banks' performance (Furst et al., 2015; Kombo & Wafula (2015). Furst et al. (2015) noted that the advent of the internet in Kenya has revolutionized the banking industry because it allows customers to make international financial transactions without necessitating their physical presence in banks halls. In addition, Njoroge and Mugambi (2018) established that internet banking is a strategic tool that enables banks to achieve higher efficiency, manage operations and decrease of costs by automating transactions and eliminating the use of paper works. Therefore, there is increasing adoption of internet banking, which offers a promising impact on the commercial banks' performance in Kenya.

5.4 Automatic Teller Machines and Performance

A survey conducted among 353 bank managers in Malawi indicated that ATM banking explains 40% of the variation in customer satisfaction, which is a key attribute of the performance of commercial banks (Mwatsika, 2016). The advancement in information technology has brought about the development of innovations such as ATMs. Additionally, a study done in Pakistan among 100 employees of banks revealed that the quality of ATM services predicts the customer satisfaction because of their price, security, reliability, and convenience (Akhtar et al., 2016). This finding means that the quality of ATM services influences the performance of commercial banks. According to study by Mwatsika, (2016), in the modern business world, banks have been using ATMs Automated to improve reliability and accessibility of financial services. The analysis of empirical literature indicates that the use of ATMs has become the second leading channel that customers use to access banking services after the use of banking halls

Kamau and Oluoch (2016) performed a correlational study in 43 commercial banks in Kenya and established that ATM had the highest impact on the financial performance of commercial banks in Kenya when compared to internet banking, agency banking, and mobile banking. In this view, this study predicts that ATM has a positive effect on the banks' performance in Kenya. This study highlighted that Kenyans banks have adopted and employed ATM banking in offering their banking services and most of them have situated their ATMs at strategic branches across the country to promote accessibility of banking services (Kamau & Oluoch, 2016). According to another correlational study done in 11 commercial banks, Mutiso (2017) found out that ATM

accounts for 76% of the variation in return on assets (ROA). These findings show that ATM plays a substantial role in the performance of banks.

6. Conceptual Framework

The conceptual framework depicts the way variables, and extraneous factors relate to highlight a concept (Kothari, 2010; Wong & Wai-Yee, 2015). Figure 1 portrays the conceptual framework indicating the links between the e-banking strategies as independent variables and performance of banks as dependent variables of the study.
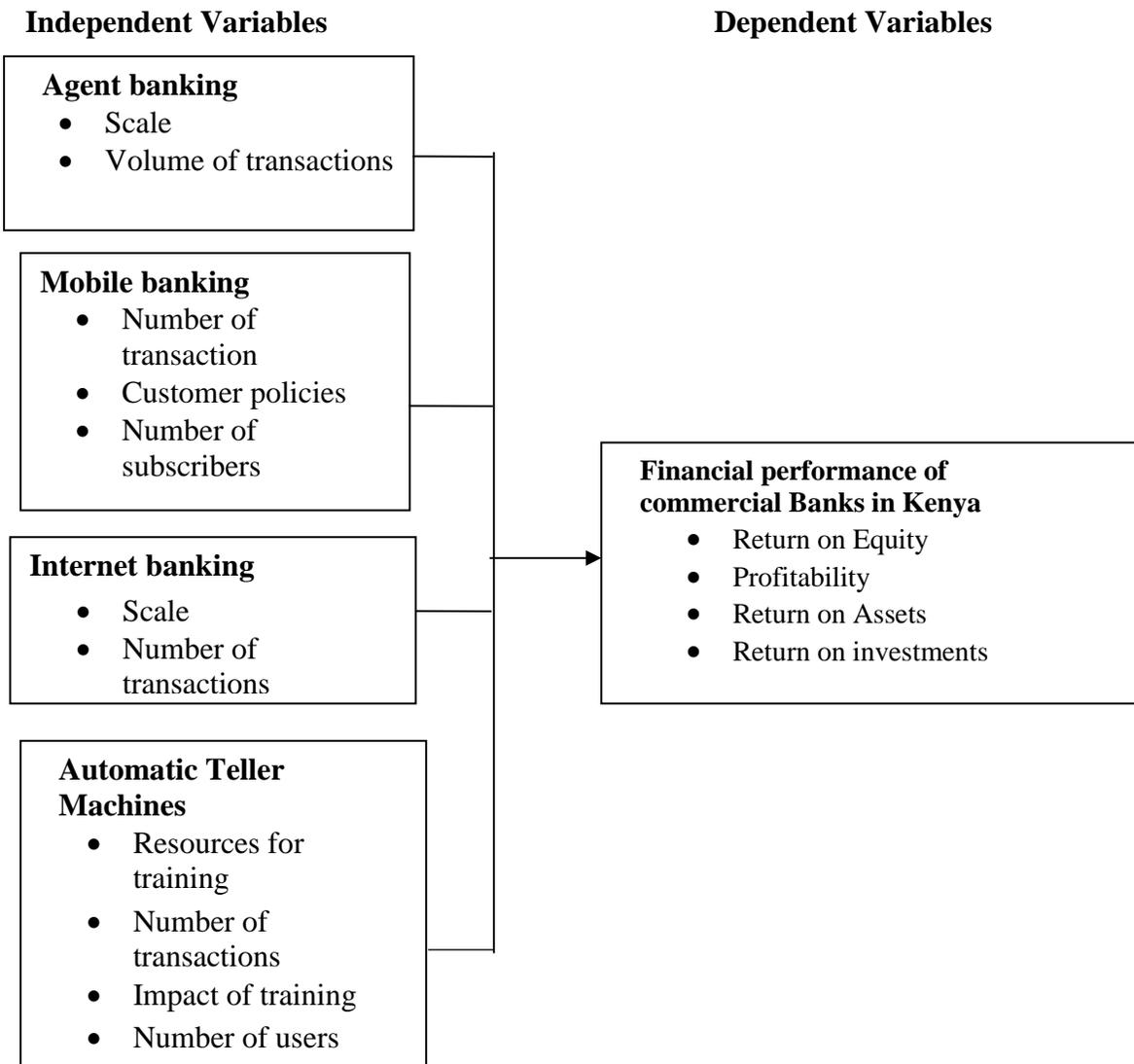
Independent Variables   **Dependent Variables**

Agent banking
- Scale
- Volume of transactions

Mobile banking
- Number of transaction
- Customer policies
- Number of subscribers

Internet banking
- Scale
- Number of transactions

Financial performance of commercial Banks in Kenya
- Return on Equity
- Profitability
- Return on Assets
- Return on investments

Automatic Teller Machines
- Resources for training
- Number of transactions
- Impact of training
- Number of users

Figure 1: Conceptual Framework

In this conceptual framework, the independent variables were agency banking, mobile banking, internet banking, and ATMs. The commercial banks' performance was the dependent variable comprising of return on asset, profitability, return on investment, and return on equity.

7. Research Methodology

As a research design, the study utilized descriptive design in the analysis of the effect of e-banking strategies on the commercial banks' performance in Kenya. This research design is appropriate because the study adopted quantitative approach. Descriptive research design is advantageous because it permits collection of quantitative data, allows hypothesis testing, and supports establishment of relationships (Kothari, 2010). Other studies show that they have employed descriptive research design in determining the role of internet banking (Mateka et al., 2016) and the effect of e-banking (Njoroge & Mugambi, 2018) on the banks' financial performance in Kenya. The target population of the study comprised managers and operations staff of the commercial banks that operate in Kenya. According to the Central Bank of Kenya (2018), as of 31 July 2018, there were 40 commercial banks registered and authorized to operate in Kenya legally. Managers and operations staff from an appropriate target population of the study because they understand e-banking strategies and performance of their respective commercial banks when compared to other employees. In 40 commercial banks, there are 40 senior managers and operation managers in each of the five department, namely, credit, finance, corporate affairs, supervision, and risk and compliance management. In this view, the target population is 240 employees comprising of 40 senior managers and 200 operations managers. The study calculated the sample size based on the target population. Field (2017) asserts that sample size calculation ensures representation of the target population and promotes the external validity of the study. Fisher's formula was used to calculate the sample size of the study (Njoroge & Mugambi, 2018).

A sample size was 144 was identified; however, due to financial and logistical restrictions, the study decided to use the size of 120. The study stratified the target population to two groups of senior managers and operations managers. Using purposive sampling method, the study selected 40 managers from each of the commercial bank (n = 40) and two operations managers from (n = 80). Mugenda and Mugenda (2012) explain that purposive sampling enables selection of appropriate respondents from the target population who meet certain criteria. The sources of data for the study were senior managers and operations managers of registered commercial banks in Kenya. Mugenda and Mugenda (2012) assert that the questionnaire is advantageous in data collection since it enables researchers to collect accurate data from respondents. Moreover, Field (2017) holds that Likert scales allow quantification of qualitative data. The study employed questionnaire in the data collection. The collected data were recorded and coded in Statistical Package for the Social Sciences (SPSS) for quantitative statistical analysis. Descriptive statistics were exploited to produce frequencies, means, standard deviations. Linearity, collinearity, and reliability tests were performed to explore the data and determine if the data met key regression analysis. Field (2017) states that robust regression analysis requires variables to have linear relationship, exhibit reliability, and lack collinearity. Multiple regression analysis was an infesretial statistics used to evaluate the predictive effect e-banking strategy on the banks'performance. The coefficients of regression were used to test the hypotheses of the study and formulate the regression model of the study. The regression model that the study utilized was: $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_{3x3} + \beta_4 x_4 + e$. In this case, the dependent variable was the performance of banks (y), while the dependent variables comprised of mobile banking (x1), agency banking (x2), internet banking (x3), ATM banking (x4), intercept (β_0), and stochastic term (e). In the regression equation, β_1, β_2, β_3, and β_4 are coefficients showing the degree of variation in performance when the dependent variable changes by a unit. F-test and t-test was done at the significance level of 5% and a confidence level of 95%.

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8. Data Analysis Results

Correlation and regression analysis were used to do inferential statistics and define the implication of the strength of associations and the impact of e-banking on the banks' performance. The following sections cover the correlation and regression analyses. The study used Pearson correlation analysis to assess the nature of asociations between the variables. The correlation coefficients allow the determination of the direction and degree of the relationship between the variables of interest. Table 1 illustrates the outcomes of correlation analysis.

Table 1: Pearson Correlation Analysis

	Inferential Test	MB	AB	IB	ATM	PB
Mobile Banking (MB)	Correlation	1				
	Significance. (2-tailed)					
	N	100				
Agency Banking (AB)	Correlation	.695**	1			
	Significance (2-tailed)	.000				
	N	100	100			
Internet Banking (IB)	Correlation	.580**	.387**	1		
	Sig. (2-tailed)	.000	.000			
	N	100	100	100		
Automatic Teller Machine (ATM)	Correlation	.607**	.579**	.585**	1	
	Significance (2-tailed)	.000	.000	.000		
	N	100	100	100	100	
Performance of Banks (PB)	Correlation	.806**	.737**	.466**	.547**	1
	Significance (2-tailed)	.000	.000	.000	.000	
	N	100	100	100	100	100

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

Correlation analysis reveals that e-banking strategies have positive relationships with the performance of banks. According to Warne (2017), correlation analysis plays a central role in statistical analysis because it indicates the strength and the direction of relationships. Mobile banking has a very strong positive relationship with the performance of banks, which is statistically significant ($r = 0.806$, $p= 0.000$). This finding is consistent with that of Kathuo, Rotich, and Anyango (2015), which indicated that mobile banking has a strong relationship with the banks' performance due to the augmented utilization of mobile phones by customers. The banks' performance has a strong and statistically significant positive relationship with agency banking ($r = 0.737$, $p = 0.000$). ATM banking has a moderately positive relationship with the performance of banks ($r = 0.547$, $p = 0.000$). The existence of moderate positive relationships implies that agency banking and ATM banking play a considerable role in the performance of banks. According to Kalinda, Rukangu, & Rintaugu (2017), agency banking and ATM banking have strong positive relationships because they promote the accessibility of banking services. Internet banking has a moderate positive relationship, which is statistically significant ($r = 0.466$, $p = 000$). Kombe and Wafula (2015) internet banking has positive relationships because it improves the quality and convenience of banking services. The least strength of relationship implies that most customers in the banking industry do not utilize internet banking.

Multiple regression analysis was used to develop a model that predicts the effect of e-banking strategies on the performance of banks in Kenya. The regression model was used to test the following null hypotheses in line with the research objectives and questions.

H01: Mobile banking is not a statistically significant predictor of the commercial banks' performance in Kenya.

H02: Agency banking is not a statistically significant predictor the commercial banks' performance in Kenya.

H03: Internet banking is not a statistically significant predictor of the commercial banks' performance in Kenya.

H04: ATM banking is not a statistically significant predictor of the commercial banks' performance in Kenya.

Table 2 shows the outcomes of multiple regression analysis examining the impact of internet banking, agency banking, mobile banking, and ATM banking on the performance of banks.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.843[a]	.710	.698	.4992

(Survey Data, 2019)

The regression model indicates that mobile banking, agency banking, internet banking, and ATM banking have a very strong relationship with the performance of banks (R = 0.843). Moreover, R-square indicates that these e-banking strategies account for 71% of the variation in the performance of banks (R = 0.710). This variance implies that e-banking strategy accounts for most of the effects, leaving about 29% of the variance unexplained. Consequently, banks should adopt and implement e-banking strategies to boost their performance in the banking industry.

Table 3 indicates the Analysis of Variance (ANOVA) outcomes of the regression model in predicting the influence of internet banking, agency banking, mobile banking, and ATM banking on the performance of banks.

Table 3: ANOVA of the Regression Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	57.972	4	14.493	58.155	.000[b]
1	Residual	23.675	95	.249		
	Total	81.648	99			

(Survey Data, 2019)

The ANOVA shows that the regression model is statistically significant in forecasting the combined influence on e-banking strategies on the performance of commercial banks in Kenya, $F(4,95) = 58.155$, $p = 0.000$. This shows that the model is fit for predicting the combined influence on strategies of e-banking on the performance of banks in Kenya

Table 4 depicts the coefficients of mobile banking, agency banking, internet banking, and ATM banking as predictors of the performance of banks.

Table 4: Coefficients of the Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.658	.334		1.972	.052	-.004	1.320
	Mobile Banking	.548	.086	.563	6.397	.000	.378	.718
	Agency Banking	.359	.085	.341	4.226	.000	.190	.527
	Internet Banking	.006	.102	.005	.062	.950	-.196	.209
	Automatic Teller Machine	.005	.086	.005	.064	.949	-.164	.175

(Survey Data, 2019)

The examination of the coefficients of the regression model indicates that mobile banking ($\beta = 0.548$, $p = 0.000$) and agency banking ($\beta = 0.359$, $p = 0.000$) are statistically significant predictors, while internet banking ($\beta = 0.006$, $p = 0.950$) and ATM banking ($\beta = 0.005$, $p = 0.949$) are statistically insignificant predictors of the performance of banks. The examination of the coefficients of the regression model (Table 4.15) indicates that mobile banking ($\beta = 0.548$, $p = 0.000$) and agency banking ($\beta = 0.359$, $p = 0.000$) are statistically significant predictors, while internet banking ($\beta = 0.006$, $p = 0.950$) and ATM banking ($\beta = 0.005$, $p = 0.949$) are statistically insignificant predictors of the performance of banks. Based on the coefficients in Table 4.15, the regression equation for the model is:

Bank Performance = 0.658 + 0.548 (Mobile Banking) + 0.359 (Agency Banking) + 0.006 (Internet Banking) + 0.005 (ATM Banking)

The regression equation implies that by holding each of the independent variable constant, a unit increase in the mobile banking, agency banking, internet banking, and the ATM banking cause the performance of the banks to increase by 0.548, 0.359, 0.006, and 0.005 units, respectively. Table 4.16 provides a summary of the regression analysis and hypothesis testing to determine the effect of e-banking strategies on the performance of banks.

Table 5: Summary of Hypotheses Testing using Regression Analysis

Hypotheses	Coefficient	p-value	Results	Remarks
H_{01}: Mobile banking is not a statistically significant predictor of the performance of commercial banks in Kenya.	0.548	0.000	Significant	Rejected

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Hypotheses	Coefficient	p-value	Results	Remarks
H02: Agency banking is not a statistically significant predictor of the performance of commercial banks in Kenya.	0.359	0.000	Significant	Rejected
H03: Internet banking is not a statistically significant predictor of the performance of commercial banks in Kenya.	0.006	0.950	Insignificant	Failed to reject
H04: ATM banking is not a statistically significant predictor of the performance of commercial banks in Kenya.	0.005	0.949	Insignificant	Failed to reject

(Survey Data, 2019)

Regression analysis results demonstrate that mobile banking and agency banking are statistically significant predictors of the performance of commercial banks in Kenya. In their study, Jorge and Mugabe (2018) established that mobile banking has a significant impact on commercial banks' performance because customers prefer it most due to its accessibility, convenience, and affordability. When compared to ATM banking and Internet banking strategies, mobile banking is more accessible and safe. Flexibility and convenience are attributes that make mobile banking a statistically significant predictor of the banks' financial performance (Too, Ayuma, & Ambrose, 2016; Kathuo, Rotich, & Anyango, 2015). M-PESA is the major driver of mobile banking in Kenya since it encourages customers to adopt and utilize banking services (Mas & Radcliffe, 2015). Therefore, the study shows that mobile banking has an influential effect on the performance of commercial banks. Moreover, the regression analysis indicated that agency banking is another statistically significant predictor of the commercial banks' performance in Kenya. This finding is consistent with that of Kalinda, Rukangu, and Rintaugu (2017) who found out agency banking is a substantial predictor of banks' performance as it decongests banking hall and enhances the accessibility of banking services to customers in small towns and localities where bank branches are not present. In their study, Mbugua and Omagwa (2017) revealed that agency banking is effective in the delivery of banking services because it decreases operating costs and increases revenue to both agencies and banks. Therefore, agency banking has a substantial role in the commercial banks' performance in Kenya.

In contrast, the regression analysis shows that internet banking and ATM banking are not statistically significant predictors of the commercial banks' performance. These findings contradict that of Kombe and Wafula (2015), which report that internet banking has a significant effect on the banks' performance. Limited internet usage among customers is a factor that diminishes the impact of the internet baking on the performance of banks. Further findings show that ATM banking does not predict the performance of banks. These findings reflect why Equity Bank is shifting its e-banking strategy from the focus on ATM banking to the focus on mobile banking and agency banking (Ayemoba, 2017). However, the findings are not consistent to those of Mutiso (2017) who found out that ATM accounts for 76% of the variation in return on assets. Insecurity and the susceptibility to fraud and theft are some of the seatbacks of ATM banking (Ayemoba, 2017; Kathuo, Rotich, & Anyango, 2015). Overall, the advancement in information technology points out that e-banking strategies play a significant role in determining the performance of commercial banks in Kenya.

9. Conclusions

The study established that e-banking strategies predict commercial banks' performance in Kenya. Agency banking and mobile banking and were found to be statistically significant predictors of the commercial banks' performance in Kenya. In this perspective, the study concludes that mobile banking and agency banking are two e-banking strategies that drive the growth and performance of banks in Kenya. However, the study found out internet banking and ATM banking are insignificant predictors of the commercial banks' performance. In this case, we conclude that banks do not get significant benefits from internet banking and ATM banking owing to numerous challenges associated with their use. For instance, limited numbers of customer have access to the internet, while ATM banking is prone to fraud and inconveniencing long queues.

10. Recommendations

Given that mobile banking and agency banking are statistically significant predictors of the performance, commercial banks should focus on these two e-banking strategies and optimize revenues from them. Banks should increase awareness of internet banking and advocate for the provision of fast, safe, and secure internet for customers to access and utilize in accessing banking services. Banks should overcome safety issues related to the use of ATM banking services, such as fraud, theft, long queues, and inaccessibility.

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