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ENTREPRENEURIAL BANKING INNOVATIONS AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Innovation has become an increasingly important part of banking. In Kenya, commercial banks have been quick to adopt new strategic innovations, with most now offering online and mobile banking services. The Central Bank of Kenya 2022 report indicated that the total transactions aided by mobile banking and agency banking had increased by 12.3%. Similar increase in transactions were recorded in previous years among larger banks due to adoption of technology. However, banks have not fully adopted banking innovations such as open banking while some banks face challenges integrating innovations hence, there is need to develop a more entrepreneurial approach to innovations. This study examined entrepreneurial banking innovations and financial performance of commercial banks in Kenya. The study examined how entrepreneurial banking innovations influence financial performance of the banks. Performance was measured using indicators such as profit before tax, number of customers and the net promoter score. The specific objectives were how mobile banking and e-banking influence financial performance of the banks. The study used a descriptive design with questionnaire as the instrument for data collection. Reliability of the study instrument was established using Cronbach Alpha, internal consistency method. Validity of the research instrument was determined using content and construct validity. The target population was 39 commercial banks in Kenya. The unit of observation was senior operations managers, product development managers, senior marketing managers and information technology managers from the banks. The study conducted a census on all the banks. Data collected was analyzed using SPSS version 28 to produce frequencies, descriptive and inferential statistics which were used to derive conclusions. The study conducted a multiple regression analysis to determine the relationship between entrepreneurial banking innovations and financial performance of commercial banks. Correlation results revealed that banking innovations influences financial performance of commercial banks in Kenya positively. The results indicated that there was a positive and significant relationship between e-banking and mobile banking and financial performance.

Key Words: E-banking, Mobile banking, Entrepreneurial Banking Innovations, Financial Performance of Commercial Banks

Background of the Study

In recent years, technology has become an increasingly important part of banking, with many banks now offering digital services such as online banking and mobile banking. According to Terer and Gichure (2020), innovation involves the design, the development and the implementation of innovative financial instruments and processes, and the formulation of creative solutions to problems in finance. Innovation is an essential element for competitiveness of an industry.

According to Mande and Ngonga (2020), the banking sector in Kenya has undergone tremendous changes in the last two decades. Increased competition has led to the introduction of new products and services in the market. In order to survive and grow in the market, banks have been forced to adopt new technology and innovative products. One of the most significant changes in the banking sector has been the growth of fintech. Adoption of innovations such as finctech is a new and emerging industry that uses technology to provide financial services (Kemboi, 2020). Innovations in banking provide services such as payments, lending, investments and money transfer. Fintech companies have grown rapidly in the last few years and have raised billions of dollars in investment.

The growth of technology has had a significant impact on the banking sector. Banks have been forced to adopt new technology and innovate in order to remain competitive. Advancement in technology has also led to the introduction of new products and services in the market. Banks are now offering mobile banking, online banking, and other digital services (Kemboi, 2020). The growth of technology has also led to the emergence of new players in the market. These new players are challenging the traditional business model of banks. The new players are offering innovative products and services that are disrupting the traditional banking sector.

The impact of innovation on the banking sector is expected to grow in the future. The growth of technology is expected to lead to more innovation and competition in the banking sector. The banking sector is expected to continue to adopt new technology and introduce new products and services in the market. In Kenya, commercial banks have been quick to adopt new technologies, with most now offering online and mobile banking services. However, there is still room for improvement in the way that banks use technology (Wanalo, Mande & Ng'ong'a, 2020). In particular, there is a need for banks to develop a more entrepreneurial approach to technology, one that takes into account the needs of both customers and staff. At present, many banks in Kenya appear to be using technology in a haphazard way, with little thought given to how it can be used to improve customer service or to make staff more efficient (Julius, Gudda & Agoki, 2021). This needs to change if banks are to fully realize the benefits of technology and innovation. The goal of this study is to understand the entrepreneurial banking innovations that Kenyan banks have adopted in response to the growth of banking, and to assess the impact of these innovations on the banks' performance.

In Kenya, the growth of banking technology has been spurred by the country's mobile money infrastructure, which was created by mobile network operator Safaricom in 2007 (M-Pesa) (M-Pesa, 2018). M-Pesa is a mobile money platform that allows users to send and receive money, pay for goods and services, and access credit (M-Pesa, 2018). M-Pesa has been a success story, with over 30 million users and a 70% penetration rate as of 2018 (M-Pesa, 2018). The success of M-Pesa has attracted the attention of international investors, and Kenya has become a hotbed for fintech investment (Fintech Global, 2020).

The growth of technology in Kenya has had a profound impact on the country's banking sector. In 2016, the Kenyan central bank released a report on the impact of fintech on the banking sector, which found that fintech firms were eating into the banks' market share, particularly in the areas of mobile payments and loans (Central Bank of Kenya, 2016). The report found that fintech firms were able to offer faster and more convenient services than the banks, and that

they were able to reach customers that the banks could not, such as small businesses and rural customers (Central Bank of Kenya, 2016). In response to the threat posed by technology, Kenyan banks have been forced to re-evaluate their strategies. Some banks have chosen to embrace innovations, by investing in technology or partnering with technology firms (Kenya Bankers Association, 2017). Other banks have chosen to compete with technology firms, by launching their own mobile money platforms or offering new digital services (Kenya Bankers Association, 2017).

Statement of the Problem

According to the Kenya Fintech report 2017, innovative solutions in financial services have led to banks continuously focusing on strategies that capitalize on financial technologies models to meet the customers ever growing expectations in their given markets. This is because the increases in innovative solutions have led to adoption of these technologies by financial services hence increasing their presence in the unbanked population. Chang et al. (2020) analyzed how Indonesian banks changed business processes and found that in order to optimize the role of technology, it is necessary to build business synergies between banks and non-bank technology firms. Huebner et al. (2021), research on impacts of technology on financial intermediation and the financial services value chain, found that technology cut out financial intermediaries.

Iluba and Phiri (2021) studied effects of digital banking strategy on financial Inclusion among commercial banks in Kenya and concluded that commercial banks in Kenya had adopted diverse digital banking strategies to not only ensure their sustainability but also to reach the unbanked people in Kenya. Julius, Gudda and Agoki (2021); Wanalo, Mande and Ng'ong'a (2020); Nduta (2020) investigated the impacts of innovation strategies in the banking industry in Kenya and found that innovation strategies have positive and significant influence on competitiveness.

Studies conducted in Kenya (Ondiek, 2021; Julius, Gudda & Agoki, 2021; Wanalo, Mande & Ng'ong'a, 2020; Nduta, 2020; Mukira et al., 2022; Muoria & Moronge, 2018; Hussain et al., 2022) assess one or two entrepreneurial banking innovations but little attention has been done focusing on other entrepreneurial banking innovations hence the need of the study.

General Objective

The general objective this study was to establish the extent to which entrepreneurial banking innovations affect financial performance of commercial banks in Nairobi City County, Kenya.

Specific Objectives

i. To determine the extent to which e-banking affect financial performance of commercial banks in Nairobi City County, Kenya
ii. To establish the extent to which mobile banking affect financial performance of commercial banks in Nairobi City County, Kenya.

Theoretical Review

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 developed this theory in 1989 and employed it in assessing the extent to which customers perceive ease-of-use and helpfulness of technologies. 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 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 open banking, mobile banking, and

internet banking in the delivery of their services, but the degree of their implementations varies from one bank to another.

Banks employ strategies of e-banking to permit their customers to access and utilize financial services through multiple channels (Muoria & Moronge, 2018). The increased risks associated with electronic transactions have led to increased caution among consumers. According to this theory, consumers have to a perceive the technology as useful and able to use. Therefore, commercial banks must demonstrate that the technology does not increase consumer risks and provides them with an efficient service delivery mode. The theory supports e-banking variable under study since consumers have to perceive e-banking as useful and does not expose them to more risks to use it for performance improvement.

Diffusion of Innovation Theory

Rogers (1962) developed this theory. It provides insights into how new technology is developed and adopted. According to Rogers (2003), diffusion is the process by which an innovation is communicated over time among the participants in a social system. He proposes four main elements influence the spread of a new idea: the innovation, communication channels, time and a social system. The innovation must be widely adopted in order to self-sustain. Rogers (2003) lists the categories of adopters as innovators, early adopters, early majority, late majority, and laggards. Adoption of a new idea does not happen simultaneously rather it is a process whereby some people are more apt to adopt the innovation than others are. According to Wayne (2016), the result of this diffusion is that people, as part of a social system adopt a new idea, behaviours, or product.

Adoption means that a person does something differently than what they had previously. The theory is applicable to this study as it demonstrates the link between technological developments and organizations' performance. Increased innovation in an organization through finance technologies is expected to enhance performance. Commercial banks in Kenya adopt technology differently with early adopter and laggards. According to Wayne (2016), adoption of new ideas leads to improvements in products, processes and services. Therefore, commercial banks that adopt new technology are likely to experience improvement in performance. The theory demonstrates the link between finance technology and organizations' performance. Adoption of new technology such as mobile banking and e-banking in an organization is expected to enhance performance. This theory supports the mobile banking variable which has been adopted by many commercial banks in Kenya as a result of innovation diffusion in the banking sector for performance improvement.

Conceptual Framework

Conceptual framework is the graphical representation of variables, which are the dependent variable and the independent variables.

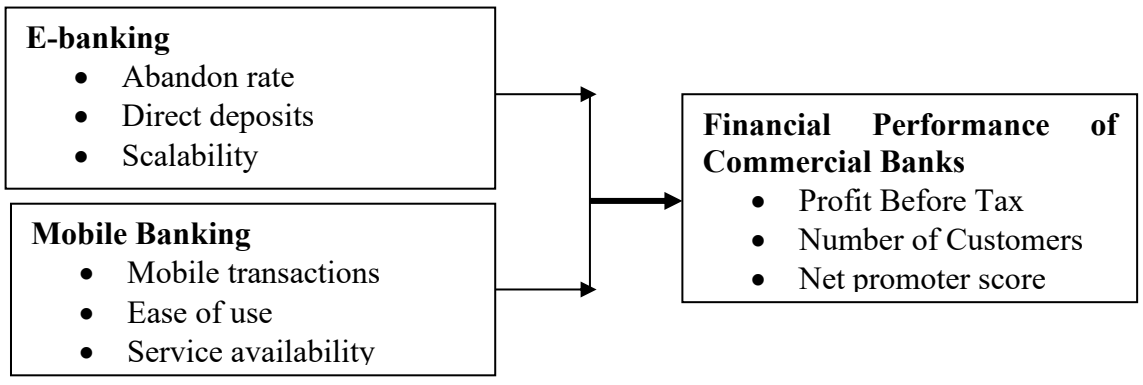

Figure 2.1 Conceptual Framework

E-banking

In recent years, the rapid development of internet finance has affected the traditional business of commercial banks and promoted the reform and development of commercial banks. The development of internet finance has increased competition in financial markets, prompting commercial banks to improve their own operational efficiency. Internet finance has expanded the scope of its business to encompass the functions of traditional commercial banks, affecting the deposit business, payment business and other core businesses of commercial banks (Muoria & Moronge, 2018).

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-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 Chowdhury et al. (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. Given that banking provides multiple ways of service delivery, automated teller machines, internet banking, and agency banking are common methods.

Mobile Banking

According to Sen and Jijian (2020), mobile and internet payments are significant mechanisms employed by persons and entities as a safeguarded and quick means of making payments through mobile phones and through internet usage. There has been an expansion in the utilization of cell phone administrations and usage of the web as another new appropriation channel for banking associations and universal trading.

Payne *e al.* (2021) assert that telephone banking service is provided by the banks which is a financial transaction performed by its customer without visiting a bank branch and without any cash or financial instrument. Telephone banking and market share have a positive relationship (Jagathi, 2021). Modern world customers want easy services and on the spot payment without delay and transportation cost (Mahardini et al, 2022).

Al Shawi *et al*. (2022) suggested that the private banking market share is relevant to the mobile banking, telephone banking, and ATM transaction. The main reason is on the spot transaction without delay and waiting for the check clearance. The importance of telephone banking after the COVID-19 situation increased (Hussain et al., 2022). Consumers with smartphones can use the phone banking facility to monitor their balances, pay bills, as well as send money via texting, and this type of banking has a solid association with boosting the market share of banks. Mobile banking means to use any mobile device to carry on the financial transaction (Uddin, 2022). Financial institutions allow their customers to carry forward remote transactions with the help of devices such as mobiles or tablets (Isik et al., 2021;Uddin, 2022). Mobile banking enhances the market share due to easy transaction and on the spot sale (Ma and Zhu, 2022).

Empirical Review

E-banking

Kagan et al. (2020) carried out a research on the impact of internet banking on the functioning of community financial institutions in America. The paper established that banks that offered

a broad array of banking services over the internet performed better than those without and also that the technology provides a higher return on equity.

Nader (2021) assessed the effect of banking innovations on the functioning of the commercial banks in Saudi Arabia. He concluded that mobile phone in banking, ATM networks and presence of branch networks positively impacted the profits and the efficiency of the banks in Saudi. The study established that in contrast to internet financial institutions, the traditional community financial institutions registered lower profits owing to lower business volumes and they also incurred high costs of labour.

According to Young et al (2021) study, most banks in the United States reported an increase in financial profitability after adoption of internet banking. The study found that there was significant increase in performance. The study further noted that the relationship between internet delivery channels and bank's performance, it was established that adoption of internet as a delivery channel involves gradual reduction in overhead expenses particularly, staff, marketing and IT which translates to an improvement in banks´ performance.

Tshukudu et al. (2022) studied finance technology among commercial banks in South Africa. The study assessed the impact of finance technology adoption on the financial performance of the banks and concluded that finance technology that include mobile banking and internet banking had a positive effect on the financial performance of commercial banks. They recommended adoption of efficient e-banking and mobile banking technology in commercial banks to improve competitiveness.

Wanalo, Mande and Ng'ong'a (2020) assessed technology innovation strategy in commercial banks in Kenya. The study concluded that technology innovation such as e-banking, agency banking and mobile banking had a significant and positive influence on the banks. Banks that implemented advanced technology achieved higher productivity and customer growth. The study recommended adoption of technology strategies among banks to increase their growth.

Ondiek (2021) assessed the effect of digital technology on performance of commercial banks in Kenya. The study assessed the adoption of mobile banking technology to achieve competitiveness and concluded that the technology led to improved performance of commercial banks. In addition, mobile banking technology led to increased market share and increased efficiency. The study recommended adoption of digital technology in commercial banks to improve performance.

According to Kombo and Wafula (2021) study, internet banking improved performance of banks by reducing transaction time and improving quality of services. The study found that internet banking has a positive impact on the banks' performance. In addition ,the study 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.

Mobile Banking

Boateng and Nagaraju (2020) examined the effect of digital banking on the profitability of commercial banks in Ghana. The study examined cashless banking, mobile banking and its impact on financial performance and concluded that the digital banking technology had significant and positive effect on the profitability of commercial banks. The study recommended adoption of efficient digital banking models to improve financial performance of commercial banks.

Ehijiele et al. (2022) conducted a study on banking technology and performance of firms in Nigeria. The study assessed use of mobile channels and its effect on customer experience in Nigeria. The research study employed a research survey design and questionnaires was used in

collecting primary data. Study findings showed that the use of mobile channels in banking positively enhances customer experience.

Nyanga (2023) conducted a study on the effect of mobile money facilities on the functioning of small along with medium sized firm in town centers in Kenya and concluded that Mobile banks has great impact on the functioning of small and medium sized firms in town centers in Kenya. The study found out that mobile banking could be an important innovation to the developing world by offering ways to lower the costs of moving money from place to place and a way to integrate more users into formal financial systems.

Gitau (2021) studied the connection amid monetary improvement with economic achievement of commercial financial institutions in Kenya over 5 years. The paper made a conclusion that there is a positive connection amid monetary innovation and financial achievement of commercial financial institutions in Kenya. The study explained that the adoption and use of mobile phones is as a result of a social process which emanates from the social practices of individuals and businesses which leads to economic benefits.

Kilonzi (2020) study on mobile banking technology, innovation plan and competitive benefits of commercial financial institutions in Kenya concluded that investment in mobile banking technology will give banks a competitive advantage. Study found out that mobile banking services could be strategic tool that organization could use in response to certain challenges like competition due to technological advancement.

According to Shu and Strassmanm (2020) study, there is a positive association between adoption of innovations and performance of commercial banks. The study examined adoption of information technology and financial performance of commercial banks. Findings showed that adoption of mobile banking had significant and positive impact on financial performance of commercial banks. Increased use of mobile banking had led to increased market share and growth in revenue.

According to Kozak (2020) study on mobile banking and performance of commercial banks, banks had reported increased mobile banking transactions translating to increased sales and revenue. The study applied profit after tax to represent financial performance while number of ATMs, debits together with credit cards dispensed to customers, number of selling points and the adoption levels of internet banking, mobile banking, and electronic transfer of funds, were constituents of electronic banking. The study established that electronic banking which comprised mobile banking has a strong and significant impact on the profitability of Kenyan commercial banks.

RESEARCH METHODOLOGY

Research Design

A descriptive design was used to show the current state of finance technology strategy in commercial banks in Kenya. Render et al. (2019) indicate that this design provides a description of the elements under study. It enabled the researcher collect data from the population to test the hypothesis. According to Flick (2019) this design helps answer questions. It is effective in collecting data on the components of the study as observed in the population.

Target Population

The target population was 39 commercial banks in Nairobi City County, Kenya. According to the Central Bank of Kenya (2024), there are 39 local and foreign commercial banks operating in Kenya. The target population was drawn from the bank headquarters due to the presence of senior personnel from whom the data was collected. According to the Central Bank of Kenya (2023), Nairobi County hosts majority of the bank headquarter offices in Kenya. The unit of analysis was the 39 commercial banks in Kenya. In order to collect data, the unit of observation was top management who include one operations manager, product development manager,

senior marketing manager and information technology manager from each bank. The senior managers were chosen since they have the relevant information on adoption and implementation of banking innovations. They represent the key informants on variables under study.

Sampling Frame, Technique and Sample Size

A list of 156 senior operations managers, senior product development managers, senior marketing managers and senior information technology managers from the 39 commercial banks comprise the sampling frame. The study adopted a census approach to collect data from all 156 subjects of study since the number is small. Scholars such as Bernard (2011); Seltman (2014), state that the approach is effective with a small target population that is below 200 respondents. They also argue that a census reduces bias, which could otherwise arise due to sampling.

Table 1: Commercial Banks

Tier	Number of Banks
Tier 1	9
Tier 2	13
Tier 3	17
Total	39

Source: Central Bank of Kenya (2024)

Table 2: Sampling Frame

Category	Population
Senior Operations managers	39
Senior product development Managers	39
Senior Information technology managers	39
Senior marketing managers	39
Total	**156**

Source: Central Bank of Kenya (2024)

Data Collection Instruments

The instrument for data collection was e-questionnaires. According to Kowalczyk (2015), questionnaires are free from any interviewer's bias and errors, which may undermine reliability and validity of the results emerging from the survey. The use of questionnaires made it easier to approach the respondents since they did not have any distribution bias as they do not show any particular preference or dislike for a certain individual. Secondary data was collected from company reports on financial performance, and published reports by the central bank on bank performance. Data was recorded in data entry tables. A data collection schedule will be used.

Data Collection Procedure

A letter of research approval was provided by the university to conduct research. Permission was sought from all the banks to collect data from the employees in the bank headquarters. The method of administering the e-questionnaires was through emails. E-questionnaires forms were emailed to the managers of the banks.

Pilot Study

Seltman (2014) argue that a pilot study is crucial in assessing the reliability and validity of an instrument to answer questions and test hypothesis. A pilot study was conducted from a section of the population to test any weaknesses. According to Render et al. (2012), a test ranges from 1-10% of the sample size. Sixteen e-questionnaires were administered to respondents, which

will not be included in the final study sample. Sixteen questionnaires represent 10% of the sample population.

Data Analysis and Presentation

Seltman (2014) posits that data collected should be interpreted and presented to draw conclusions. Data was analyzed using descriptive statistics to produce percentages and means and frequencies. The tool used for analysis was SPSS version 28. Data was also be analyzed using inferential statistics which are regression and correlation analysis. Analyzed data was presented in form of tables and diagrams prepared from SPSS. ANOVA was used to determine the significance of the analysis model. In addition, the relationship between entrepreneurial banking innovations and performance was checked using a multiple regression analysis (Hair, 2010).

RESEARCH FINDINGS AND DISCUSSION

Descriptive Findings and Analysis

E-banking

The first objective was to determine the extent to which e-banking affect financial performance of commercial banks in Nairobi City County, Kenya. The results of the study were as shown in table 3. From the results, the respondents agreed that the organization has implemented e-banking. This is supported by a mean of 4.43 (std. dv = 0. 758). In addition, as shown by a mean of 4.26 (std. dv = 0. 734), the respondents agreed that e-banking services are always available. Further, the respondents agreed that customers can access e-banking services easily. This is shown by a mean of 4.31 (std. dv = 0. 855). With a mean of 4.12 (std. dv = 0. 949), the respondents agreed that e-banking has increased number of customers. The respondents agreed that the organization does not experience e-banking service failures. This is supported by a mean of 4.14 (std. dv = 0. 882). In addition, as shown by a mean of 4.34 (std. dv = 0. 755), the respondents agreed that e-banking has led to increased net promoter score. Further, the respondents agreed that e-banking has enabled direct deposits. This is shown by a mean of 4.55 (std. dv = 0. 572). Majority of the respondents agreed with the statements on e-banking as shown by a mean of 4.28. The responses given by the respondents had little variation (standard deviation=0.779).

Table 3: E-banking

	Mean	Std. Deviation
The organization has implemented e-banking	4.43	.758
E-banking services are always available	4.26	.734
Customers can access e-banking services easily	4.31	.855
E-banking has increased number of customers	4.12	.949
The organization does not experience e-banking service failures	4.14	.882
E-banking has led to increased net promoter score	4.34	.755
E-banking has enabled direct deposits	4.55	.572
E-banking services have enhanced banking efficiency	4.04	.802
E-banking services have led to improved profits	4.30	.705
Aggregate	**4.28**	**.779**

Mobile Banking

The second objective was to establish the extent to which mobile banking affect financial performance of commercial banks in Nairobi City County, Kenya. The results of the study were as shown in table 4. From the results, the respondents agreed that the organization has

implemented mobile banking . This is supported by a mean of 4.33 (std. dv = 0. 782). In addition, as shown by a mean of 4.19 (std. dv = 0. 858), the respondents agreed that customers deposits through mobile banking have increased. Further, the respondents agreed that customers can manage their finances through mobile banking. This is shown by a mean of 4.40 (std. dv = 0. 754). The respondents also agreed that mobile banking services are always available. This is shown by a mean of 4.40 (std. dv = 0. 754). With a mean of 4.44 (std. dv = 0. 636), the respondents agreed that the organization does not experience mobile banking service failures. The respondents agreed that customers can access mobile banking services easily. This is shown by a mean of 4.43 (std. dv = 0. 768). The respondents also agreed that mobile banking has led to increased number of customers. This is shown by a mean of 4.59 (std. dv = 0. 581). Majority of the respondents agreed with the statements on mobile banking as shown by a mean of 4.39. The responses given by the respondents had little variation (standard deviation=0.750).

Table 4: Mobile Banking

	Mean	Std. Deviation
The organization has implemented mobile banking	4.33	.782
Customers deposits through mobile banking have increased	4.19	.858
Customers can manage their finances through mobile banking	4.40	.754
Mobile banking services are always available	4.40	.754
The organization does not experience mobile banking service failures	4.44	.636
Customers can access mobile banking services easily	4.43	.768
Mobile banking has led to increased number of customers	4.59	.581
More customers use mobile banking	4.18	.850
Mobile banking has led to increased bank profitability	4.45	.764
Aggregate	**4.39**	**.750**

Inferential Analysis Results

Correlation Results

The study carried out correlation tests to determine the relationship between the independent and dependent variables. Pearson correlation, which ranges between -1 and +1 was used because the data was discreet. A positive Pearson correlation value indicates a positive relationship while any negative Pearson correlation value indicates a negative relationship. The association between the variables becomes stronger as the Pearson correlation value approaches either +1 or -1. The results of the correlation analysis are shown in table 5.

Person correlation coefficient for e-banking is 0.795 and a significance value of (0.000<0.05), indicating that there is a strong and positive association between e-banking and financial performance of commercial banks in Nairobi City County. The findings agree with findings by Wanalo, Mande and Ng'ong'a (2020) which concluded that technology innovation such as e-banking had a significant and positive influence on the banks.

Person correlation coefficient for mobile banking is 0.857 and a significance value of (0.000<0.05), indicating that there is a strong and positive association between mobile banking and financial performance of commercial banks in Nairobi City County. The findings are consistent with findings by Tshukudu et al. (2022) which concluded that finance technology that include mobile banking had a positive effect on the financial performance of commercial banks.

Table 5: Correlation Analysis

		E-banking	Mobile banking	Financial performance
E-banking	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	129		
Mobile banking	Pearson Correlation	.693**	1	
	Sig. (2-tailed)	.000		
	N	129	129	
Financial performance	Pearson Correlation	.795**	.857**	1
	Sig. (2-tailed)	.000	.000	
	N	129	129	129

Regression Results

Model Summary

The model summary was used to test the amount of variation in the dependent variable (financial performance of commercial banks in Nairobi City County, Kenya) resulting from the changes in the independent variables (constructs of banking innovations). Thus, the amount of variation on financial performance of commercial banks in Nairobi City County, Kenya resulting from e-banking and mobile banking was determined, as detailed in table 6.

The R-Squared value of 0.846 indicates that approximately 84.6% of the variation in the financial performance of commercial banks in Nairobi City County is explained by the combined effect of e-banking and mobile banking. The remaining 15.4% is explained by other factors not part of this model. The regression results show that R was 0.920 which shows that the correlation between the independent variables and the dependent variable is positive. The adjusted R-square of 0.841 indicates that model retains its predictive power even when the number of predictors and sample size are adjusted. Thus, the model incorporating e-banking and mobile banking provides a reasonably good fit for predicting the financial performance of commercial banks in Nairobi City County.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.920[a]	.846	.841	1.47051

a. Predictors: (Constant), Mobile banking, E-banking

Analysis of Variance

Analysis of variance was to assess the significance of the model in predicting the influence of banking innovation at 95% confidence interval. The aspect of banking innovations included in the model were e-banking and mobile banking. The results were presented as shown in table 7.

The results confirmed that the model incorporating the two aspects of banking innovations exhibits the desired level of statistical significance to explain the variation in the financial performance of commercial banks in Nairobi City County ($F = 346.862$; $p = 0.00$; $p < 0.05$). Therefore, the model is statistically significant in explaining the influence of banking innovations on the financial performance of commercial banks in Nairobi City County.

Table 7: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1476.249	2	738.123	346.862	.000[b]
	Residual	268.139	126	2.128		
	Total	1744.388	128			

a. Dependent Variable: Financial performance
b. Predictors: (Constant), Mobile banking, E-banking

Coefficients

The role of the coefficients in this study was to unveil the effect of each independent variable on the dependent variable in terms of magnitude, direction, and significance. The computed results are presented in table 8. The constant value of the model is 4.870. The value indicates that without considering banking innovations, the financial performance of commercial banks in Nairobi City County, which is accounted for by other factors, is positive.

The coefficient of e-banking is .234 ($p = 0.00$; $p<0.05$), suggesting that e-banking has a positive and significant relationship with financial performance of commercial banks in Nairobi City County. The result implies that increasing e-banking is likely to have a positive influence on financial performance of commercial banks in Nairobi City County. The findings agree with findings by Tshukudu et al. (2022) study, which found that e-banking had a positive effect on the financial performance of commercial banks.

The coefficient of mobile banking is 0.353 ($p = 0.00$; $p<0.05$), suggesting that mobile banking has a positive and significant relationship with financial performance of commercial banks in Nairobi City County. The result implies that increased mobile banking is likely to have a positive influence on financial performance of commercial banks in Nairobi City County. The findings are consistent with findings by Ondiek (2021) which concluded that adoption of mobile banking technology led to improved performance of commercial banks through increased market share and increased efficiency.

Table 8: Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.870	1.068		4.558	.000
	E-banking	.234	.045	.280	5.204	.000
	Mobile banking	.353	.058	.385	6.086	.000

a. Dependent Variable: Financial performance

Optimal Regression Model

Performance of commercial banks = 4.870+ 0.353 (Mobile banking) + 0.234 (E-banking)

Summary of Findings

The first objective was to determine the influence of e-banking on financial performance of commercial banks in Nairobi City County, Kenya. Correlation analysis revealed that there is a significant strong positive association between e-banking and financial performance of commercial banks in Nairobi City County, Kenya ($r = 0.795$; $p = 0.00$). The regression analysis results confirms that e-banking has a significant positive effect on the financial performance of

commercial banks in Nairobi City County, Kenya (β = 0.234; p = 0.000). Thus, it is evident that e-banking is a predictor of financial performance of commercial banks in Nairobi City County, Kenya.

The second objective was to assess the influence of mobile banking on financial performance of commercial banks in Nairobi City County, Kenya. Correlation analysis revealed that there is a significant strong positive association between mobile banking and financial performance of commercial banks in Nairobi City County, Kenya (r = 0.857; p = 0.00). It is evident from the regression analysis results that mobile banking has a significant positive effect on the financial performance of commercial banks in Nairobi City County, Kenya (β = 0.353; p = 0.000). Hence, mobile banking is a significant predictor of the financial performance of commercial banks in Nairobi City County, Kenya.

Conclusion

The study findings revealed that e-banking has a significant positive influence on the financial performance of commercial banks in Nairobi City County, Kenya. Therefore, the study concludes that increased e-banking can positively impact the financial performance of commercial banks in Nairobi City County, Kenya.

The study findings also revealed that mobile banking has a significant positive influence on the financial performance of commercial banks in Nairobi City County, Kenya. Therefore, the study concludes that that adoption of mobile banking can positively impact the financial performance of commercial banks in Nairobi City County, Kenya.

Recommendations

E-banking

The study recommends that management of commercial banks need to have effective e-banking since it play a significant role in determining the performance of commercial banks. There is a need to improve e-banking by emphasizing on service availability, direct deposits and scalability.

Mobile Banking

The study recommends that the management of commercial banks in Kenya need to consider investing in increased mobile banking such as improving mobile transactions, enhancing service availability and ease of use to improve performance.

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