Original Research Article

The Influence of e-banking on the Financial Performance of Kenyan Commercial Banks

ABSTRACT

Aims: The mobile and internet revolution has influenced creation and delivery of financial services leading to more innovative ways of linking customers and partners. Electronic Banking (e-banking) has opened up a new channel of banking resulting in new capabilities for banks as intermediaries. The research questions that the study sought to answer include, the role of mobile banking on the financial performance in Kenyan commercial banks, the effect of Electronic Funds Transfer (EFT) on the financial performance of Kenyan commercial banks.

Study design: The research adopted descriptive design with quantitative data approaches.

Place and Duration of Study: The target population was made up of 24 Kenyan Commercial Banks in the North Coast region of Kenya with a total of 240 employees. These banks are top tier lead brands listed in the stock exchange in the banking sector in Kenya between December 2022 and July 2023.

Methodology: Strata of top management (section heads), middle managers (branch managers and super agents) and operational employees (lower cadre employees & credit officers) provided 72 respondents. Both secondary and primary data sources were used with the self-administered questionnaires containing both open and closed ended questions. Data analysis included descriptive statistics, correlation and multiple regression on a model of $Y = 1.518 + 0.438 X1 + 0.136 X2 + \varepsilon$.

Results: The correlation of the independent variables and the dependent variable was high and positive at 0.697 and 0.573 for mobile banking and Electronic Funds Transfer on financial performance respectively. The value of the adjusted R squared was found to be 0.654. The value of F-statistic was found to be 44.919 and it p-value 0.000. The regression coefficient of mobile banking was found to be 0.438 with a *t*-statistic value of 6.126.
The regression coefficient of EFT was found to be 0.136 with a *t*-statistic value of 6.182.

Conclusion: There is a strong relationship between mobile banking, EFT and financial performance of commercial banks in Kenya. M-banking has significantly reduced operational costs while EFT has increased the number of daily transactions. The study established that the popularity of m-banking has is due to the intensity of technology penetration of mobile phones to bank customers which has resulted in the number of customers registering for m-banking services to increase in the last five years. Commercial banks have also experienced increased ROA and growth in market share with adoption of e-banking.

Keywords: [electronic banking, mobile banking, electronic fund transfer, financial performance, commercial banks]

1. INTRODUCTION

1.1. THE CONCEPT OF E-BANKING

In recent years, the banking industry has tapped into opportunities offered by technology and leveraged its capabilities into service. The banks have shed their traditional functions and are innovating, improving and beginning with new sorts of the services to cater to the emerging needs of their customers. There has been considerable innovation and diversification within the business of major commercial banks. Electronic Banking (e-banking) has opened up a new channel of banking through the internet which has provided an avenue for new forms of business processes within value chains creating more innovative ways of linking with customers and collaborating with partners. Financial services have been revolutionized by the uptake of technology in both creation and delivery of service [1, 2]. Electronic Banking (e-banking) services include m-banking, Electronic Fund Transfer (EFT), Automatic Teller Machines (ATMs), use of debit cards to make payments and the use of credit cards to acquire loan services [3,4]. E-banking enables the customization of service offerings while using technology based self-creative services like mobile banking and credit cards. M-banking is a term used for performing balance checks, account transactions, payment credit transactions and other banking transactions through a mobile device [5]. M-banking offers millions of people a potential solution in emerging markets that have access to a cellphone, yet remain excluded from the financial mainstream by providing an opportunity for financial institutions to extend banking services to new customers thereby increasing their market [6]. In addition to previous electronic banking delivery systems, ATMs and mobile phone transaction processing center, online banking provides banks a new and more efficient electronic delivery tool. Over the past few years, m-banking has continuously developed from simple channel of delivering information to a more sophisticated banking transaction channel providing access to services. Bottom of the pyramid populations once lacking access to conventional financial services have found their place in mobile transacting which has improved financial inclusion. The rate of uptake of mobile banking services varies in different countries based on parameters such as the type of household, the frequency of usage of the service and the pace of uptake [7,8]. The Economic Survey reports that the level of technology adoption in Kenya is high with 100% mobile penetration which is marked by over 65 million simple identifier module (SIM) registration in a country with a population of 49 million[9]. Kenya is marked as an Information and Communication Technology (ICT) ecosystem and is a technology hub together with countries like South Africa, Ghana and Egypt which have resulted from the mobile revolution impacting fin-tech, ed-tech and agri-tech [10]. Supportive firms and industries that has accelerated the growth of fintech and adoption of these technologies in financial services include mobile network operators, internet service providers, governance frameworks and telcos bringing in expertise [11]. Growth of the internet has been a leverage to the role of banks as intermediaries of payment giving rise to EFT as an organized electronic structure which enables transfer of funds from one bank account to another. EFT services include use of debit and credit cards, ATM withdrawal, bills payments and online purchases [12]. Direct deposit as one of the most commonly used EFT program involves depositing of payroll directly to the bank account of the employees, enable EFT when a pay cheque is deposited and allow a business owner to make EFT by withdrawing a cash advance from an ATM to discretionary business expenses. Benefits that have been registered by use of EFT include low administrative fees, improved efficiency, enhanced security and easier storage of documents [13, 14]. Developments in e-banking have therefore been driven by emerging business needs coupled with in mobile and internet technologies.

1.2 THEORIES OF TECHNOLOGY INNOVATION

This study follows the Diffusion of Innovation Theory to determine the influence of e-banking on the financial performance of Kenyan commercial banks. Roger (1995), identified five key characteristics of innovations i.e. relative advantage (profitability), compatibility, complexity, observability and trialability [15, 16]. The relative advantage of e-banking as compared to traditional branch banking has been emphasized by various literature and these include economic advantages, convenience, improved service levels and accessibility [17, 18]. On the other hand, the Technology Acceptance Model (TAM) is an extension of the Theory of Reasoned Action (TRA) model which was introduced by Devis in 1996 [19]. This theory is mainly based on the idea of technology adoption ,TAM replaced TRA with two technological accepted features, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) which have been proven to be of significance to the adoption of technologies such as mobile banking, many researchers have used this model to analyze key issue pertaining to the acceptance and usage of mobile banking and many have yielded positive results which showed a correlation between the incorporated variables such as PEOU and PU. Comprehensive studies[20] show that The TAM model guided the investigation of consumer acceptance of mobile banking services by explaining relationships that exists between variables such as PEOU and PU and the results indicated that perceived usefulness, perceived credibility, perceived self -efficiency and PEOU have an influence in the adoption of mobile banking but the results revealed that PU had more significance than the rest of the variables in influencing consumers to adopt mobile banking services.

1.2 FINANCIAL PERFORMANCE & TECHNOLOGY PLATFORMS IN COMMERCIAL BANKS

Financial performance refers to measure of how well a firm can use available resources it has to generate revenues [21]. It is a term used to reflect how revenues of a firm change from one period to other, or between two or more firms in the same industry. Financial performance indicators, also known as Key Performance Indicators (KPIs), are quantifiable measurements used to determine, track, and project the economic well-being of a business. They act as tools for both corporate insiders (management and board members) and outsiders (research analysts and investors) to analyze the company performance in comparison to other industry participants. Studies show that these KPIs include gross profit, net profit, working capital, operating cash flow, current ratio, inventory turnover, debt-to-equity ratio, quick ratio and return on equity [22,23,24]. In addition to risk and profitability being two main components deciding the significance of an organization, the financial performance of the organizations can be calculated by its economic outcome and by its size of earnings. Factors affecting financial performance in India's banking sector include liquidity, ownership, age and size [25]. It is emphasized that factors that may affect financial performance and may change on the face of crisis include leverage, productivity, solvency and assets turnover [26, 27].

Technology is increasingly being employed on service delivery in financial services. Various empirical studies have been conducted to assess the effect of technology adoption on the performance of commercial banks. Earlier studies[28] examined the performance of multichannel banks in Spain between 1994 and 2002 and found that there is higher profitability for multichannel banks through increased commission, income, increased brokerage fees and gradually reduced staffing levels, thereby concluding that internet channel was a complement to physical banking. A study that evaluated the performance of Italian banks, which employ multichannel commercial strategy by offering internet banking services and concluded that it influenced the performance of banks by impacting on Return on Average Assets (RoAA) and Return on Average Equity (RoAE) [29]. It was observed the change in financial performance of internet community banks in the United States and found that internet adoption improved community banks profitability from increased revenues from deposit service charges[30]. Ibid continues to explain that internet adoption was also

associated with movement of deposits from checking accounts to money market deposit account, increased use of brokered deposits and higher average wage rates for bank employees. Regarding credit unions in Australia, studies found that internet banking was not an operating risk variable nor a performance enhancing tool [31]. Despite the introduction of technologies for service delivery lowering both staff and information technology costs after the first year of implementation [32,33], the case of Turkish banks reveal that after a period of two years since the introduction of internet banking services, overall profitability decreased as a result of increased competition and diminishing interest income [34.35]. In contrast, research shows that in the US banks, customers, the major reasons for non-usage of online banking are security concerns, satisfaction with branch banking services and inability to make direct face to face interactions. Various researches show emerging trends in banking within developing economies include, universal banking for performing all transactions in a single step, Point of Sale (POS) allowing payment for merchadise, satellite banking enabling banks to have agents deep interior without opening branches, Electronic Clearing System easening transfer of large transactions from institutions, Real Time Gross Settlement allowing the processing of payments at that time when the instructions are received, Electronic Data Interchange for computer to computer exchange of documents and Data Personalization System enabling banks to customize services based on customer profiles [36,37,38]. In spite of these evidence, banks continue to invest on technology services as cost cutting strategy and yet performance remain unknown. Thus, it was crucial for a study to determine the effect of e-banking on performance of the commercial banks in Kenya.

2. METHODOLOGY

2.1 RESEARCH DESIGN

The research adopted descriptive design which was suitable for demonstrating associations between variables. According to Creswell and Johnson (2012) descriptive research design is a scientific method that involves observing and describing the behavior of a subject without influencing it. Quantitative data approaches was used on case study basis in order to obtain in-depth information that will be adequate to project results to the Kenyan commercial banks.

2.2 TARGET POPULATION AND SAMPLE DESIGN

The target population was made up of 24 Kenyan Commercial Banks in the North Coast region of Kenya with a total of 240 employees. These banks are top tier lead brands listed in the stock exchange in the banking sector in Kenya. Through stratified sampling, the study obtained respondents from three categories of employees i.e. top management (section heads), middle managers (branch managers and super agents) and operational employees (lower cadre employees & credit officers). The three respondent groups highly engage in strategic decision making regarding e-banking, tactical decisions and business processes pertaining e-banking services respectively. The sampling method resulted in a total sample size of 72 i.e. 30% of the target population.

2.3 DATA SOURCES & COLLECTION INSTRUMENTS

This study used both secondary and primary data sources. Secondary data aiming at building credibility included journals, expert opinion magazines, books and industry reports. Primary data was obtained through questionnaires. The self-administered questionnaires had both open and closed ended questions to allow collect both in-depth information and assist in standardizing responses through a 5-point likert scale.

2.4 DATA ANALYSIS

Descriptive statistics i.e. means, mode and standard deviations Kurtosis were used with the help of Statistical Package for Social Sciences (SPSS). At a confidence level of 94%, correlation analysis was employed to relate described variables. In addition, multiple regression was used to test variables on a regression model of $Y= \beta o + \beta 1X1 + \beta 2X2 + \varepsilon$. Where: Y = the financial performance as dictated by e-banking; β_0 = constant (coefficient of intercept) the financial performance independent of any existing factors; β_1X_2 how much mobile banking as a component of e-banking influences financial performance; β_2X_2 = how much electronic fund transfer as a component of e-banking influences financial performance, ε is the random error term accounting for all other variables that affect performance but not captured in the model. The regression analysis was to estimate the relationships between a dependent variable and two or more independent variables in the study.

3. RESULTS AND DISCUSSION

3.1 DESCRIPTIVE ANALYSIS

3.1.1 Mobile Banking

The study sought to examine the respondent's level of agreement or disagreement on the various contribution of mobile banking to bank operations. Table 1 presents the relevant results with, mean and standard deviations on a 5-point likert scale (where 1= strongly disagree and strongly agree=5). Results show that M-banking has reduced the queues in the banking halls (4.36), M-banking is convenient to both customers and banks (4.35). The number of registered customers in M-banking has also increased over the last five year (4.37) while the introduction of mobile banking has reduced the operational cost of the banks (4.33). Respondents also agreed that m-banking provide a variety of services to customers (4.351). These statistics figures on average indicate that there has been increase in the usage of mobile banking among the banks customers. These results are represented in Table 1.

Table 1: Mobile Banking

Contribution of Mobile Banking to Bank Operations	Mean	Std deviation
M-banking has reduced the queues in the banking halls	4.36	0.829
M-banking is convenient to both customers and banks	4.35	0.863
The number of registered customers in M-banking has increased over the last five year	4.37	0.864
Introduction of mobile banking has reduced the operational cost of the banks	4.33	0.957
m-banking provide a variety of services to customers	4.351	0.991

3.1.2 Electronic Fund Transfer

The study sought to examine the participant's level of agreeing or disagreeing on the various contribution of EFT to bank processes. Table 2 presents the related results indicating that on a scale of 1 to 5 (where 1= strongly disagree and strongly agree=5) the means and standard deviations were; EFT has enabled the bank link with other international banks globally (4.23), EFT offers secured method of financial transactions (4.21), EFT has increased the number of transaction offered per day (4.25) and finally, use of EFT has increased the number of Customers (4.24). These statistics are summarized in Table 2.

Table 2: Electronic Funds Transfer

Contribution of EFT to Bank Processes	Mean	Std. Deviation
EFT has enabled our bank link with other international banks globally	4.23	0.253
EFT offers secured method of financial transactions	4.21	0.198
EFT has increased the number of transaction we offer per day	4.25	0.508
Use of EFT has increased the number of Customers	4.24	0.284

3.1.3 Financial Performance

The study sought to examine the participant's level of agreeing or disagreeing on the influence of e-banking on financial performance. Table 3 presents the relevant results which show that on a scale of 1 to 5 (where 1= strongly disagree and strongly agree=5) the means and standard deviations were that there has been an increase of new accounts openings (4.42), the volume of the banks sales has increased since the bank adopted the various forms self-service technologies (4.40), the bank has experienced increased market share (4.44), the bank has experienced increase in return on assets (4.41) and finally increased in returns on assets due to electronic technology within the last three years of technology adoption(4.45). These results show that there has been an increase in the financial performance in these commercial banks as summarized in Table 3.

Table 3: Financial Performance

Influence of e-banking on Financial Performance	Mean	Std. Deviation
There has been an increase of new accounts openings in last three years	4.42	0.914
The volume of the banks sales has increased since the bank adopted the various forms self-service technologies in last three years	4.40	0.850
The bank has experienced increased market share in last three years	4.44	0.811
The bank has experienced increase in return on assets in last three years	4.41	0.772
Increased in returns on assets due to electronic technology in last three years	4.45	0.799

3.2 CORRELATION ANALYSIS

The correlation of the independent variables and the dependent variable was high and positive at 0.697 and 0.573 for mobile banking and Electronic Funds Transfer on financial performance respectively. The level of multi-colinearity between the independent variable was not very high which meant that the influence of each variable in the regression model could be estimated with low multi-colinearity. These results are presented in Table 4.

Table 4: Correlation Analysis

		Financial performance	mobile banking	Electronics fund transfer
Financial performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	94		
Mobile Banking	Pearson Correlation	0.697**	1	
	Sig. (2-tailed)	.000		
Electronic Fund Transfer	Pearson Correlation	0.573**	0.394**	1
	Sig. (2-tailed)	.000	.000	
	N	94	94	94

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

3.2.1 Model Summary

The results in Table 5 indicated that the overall model was a good fit since the value of the adjusted R squared was found to be 0.654. This suggests that there is a strong relationship between mobile banking, EFT and financial performance. This indicates that all the variables considered cause a variation of 65.4 % on performance of commercial banks in Kenya. This description is presented in Table 5.

Table 5: Model summary

Model	R	R Square	Adjusted R Square
1	0.818	0.669	0.654

a. Predictors: (Constant), mobile banking, Electronic Funds Transfer,
b. Dependent Variable: Financial Performance

3.2.1 Analysis of Variance

The results in Table 6 indicated that the overall model was a good fit since the value of F-statistic was found to be 44.919 and it p-value was found to be 0.000 which is less than the critical value of 0.05. This is summarized in Table 6.

Table 6: Analysis of variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	62.193	4	15.548	44.919	0.000
	Residual	30.807	89	.346		
	Total	93.000	93			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), mobile banking, Electronic Funds Transfer

3.3 REGRESSION COEFFICIENTS

The fitted regression model of Y = 1.518+ 0.438 X1 + 0.136 X2 + ε was used to derive the regression coefficients. Where; Y = Operations Performance, X1 = mobile banking, X2 = Electronic Funds Transfer, ε = Error Term. The regression statistics are presented in Table 7.

Table 7: Regression statistics

Model	Coefficients	Std. Error	t-statistic	probability value
(Constant)	1.518	0.201	7.552	0.000
Mobile banking	0.438	0.072	6.126	0.000
Electronic Funds Transfer	0.136	0.022	6.182	0.000

Standard Error 0.201 0.072 0.022
t-Statistics 7.552 6.126 6.182
p-value 0.000 0.000 0.000

3.3.1 Mobile Banking

The regression coefficient of Mobile banking was found to be 0.438 indicating that in holding other variables in the model constant, an increase in m-banking by one unit affects the bank performance with an increase of 0.438 units. The value of the coefficient is also positive and shows that there is a positive relationship between m-banking and bank financial performance. The coefficient was positive statistically significant with a *t*-statistic value of 6.126. The variable was also found to be leading influential variable on the bank performance in Kenya. These results are shown in Table 7.

3.2.1 Electronic Fund Transfer

From Table 7 the regression coefficient of EFT was found to be 0.136. This value shows that holding other variables in the model constant, an increase in EFT by one unit causes an increase on bank performance by 0.136 units. The value of the coefficient is also positive and is evidence that there is a positive relationship between EFT use and bank performance. The coefficient was positive statistically significant with a *t*-statistic value of 6.182. This is summarized on Table7.

4. CONCLUSION

The study concluded that e-banking in Kenya has got a substantial influence on the financial performance of commercial banks in Kenya. Strategies for investing on e-banking by commercial banks in Kenya is therefore a worthy undertaking that enhances their financial performance. M-banking and EFT are the most common technologies employed under e-banking and have a significant effect on commercial bank financial performance. The study established that the popularity of m-banking has is due to the intensity of technology penetration of mobile phones to bank customers which has resulted in the number of customers registering for m-banking services to increase in the last five years. These findings supports literatures (Muthoka NI, Oluoch, Njoroge MN, Mugambis, Kamau JG, Senaji) that emphasize how that the major business drivers that have significantly

contributed towards mobile banking evolution include customer experience and cost saving in banking operations. Through mobile banking technology, customers are able to access services as they become more empowered to carry out transactions remotely including accessing bank statements, account balance enquiries, funds transfer, alerts on account limits and payment of several utility bills. EFT as a form of e-banking enables transfer of funds from one bank account to another thereby paving way for paperless transactions making paper bills, checks and stamps unnecessary while significantly increasing the number of daily transactions. Benefits of EFT have been recognized as low administrative fees, improved efficiency, enhanced security and easier trail and storage of documents. Commercial banks have experienced increased ROA and growth in market share with adoption of e-banking. It is therefore vital for commercial banks in Kenya to invest in e-banking supported operations as they improve on the financial performance of the banks.

CONSENT (WHERE EVER APPLICABLE)

No Consent was required for this research.

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

Ethical considerations were made by the researchers in the selection of respondents and the design of the data collection instruments.

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ABBREVIATIONS

EFT : Electronic Fund Transfer
ATM : Automated Teller Machines
ROA : Return on Assets
ROE : Return on Equity
ROAA : Return on Average Asset
ROAE : Return On Average Equity
CBK : Central Bank of Kenya
IB : Internet Banking
ICT : Information and Communication Technology
IT : Information Technology
TAM : Technology Acceptance Model
TRA : Theory of Reasoned Action
PoS : Point of Sale
PU : Perceived Usefulness
PEOU : Perceived Ease Of Use
SPSS : Statistical Package for Social Science